

on the bridge, in the engineroom, and in several other conspicuous places aboard ship. This form will be stocked at COMSTS and requisitioned through normal supply channels:

A. ABC Attack Likely.

1. Alarm.

- a. Sound ABC defense alarm.
- b. Pass word over the PA system "Atomic (Biological and/or Chemical) attack likely."

2. Action.

- a. If alongside dock or at anchor, prepare to get underway.
- b. Set "Emergency" (Buttoned-Up) condition of readiness securing ventilation system, watertight doors, ports and deadlights, scuppers, hatches (particularly when working cargo), ventilation dampers, blowers and fans. Allow ventilation required for operation of machinery space.
- c. Rig hoses for and start the washdown countermeasure (water curtain).
- d. Remove all flammable material from topside.
- e. Evacuate all unnecessary personnel from weather decks.
- f. Ready protective clothing, gas masks, and radiac instruments for monitor teams and decontamination squads.

B. ABC Attack Imminent.

1. Alarm.

- a. Sound the ABC defense alarm.
- b. Pass word over public address system "Atomic (Biological, Chemical) attack is expected or imminent."

2. Action.

- a. Set "Emergency" (Buttoned-Up) condition of readiness, including securing ventilation in machinery spaces.
- b. Start washdown countermeasure (water curtain).
- c. Remove (time permitting) flammable material from topside.
- d. Monitor teams and decontamination squads don protective clothing, gas masks and ready radiac instruments.
- e. Get all unnecessary personnel inside and as soon as ABC defense procedures have been set, evacuate all the remaining topside personnel.
- f. Unmoor and proceed out (as dictated by circumstances) of restricted or possible target areas. At sea, maneuver to avoid possible target areas, preferable getting to windward of such areas.

C. ABC Attack.

1. Alarm.

- a. Sound ABC defense alarm.

b. Pass word over the PA system "Atomic (biological, chemical) attack", plus any additional information, range and bearing of burst, air, surface, or underwater.

2. Action. (immediate).

a. All personnel, drop to deck and take cover behind bulkheads or interior of ship for a period of at least 3 minutes from time of blast.

b. Maneuver ship away from the direction of burst in order to avoid the base surge.

3. Air Burst. Avoid collision with immobilized ships, or ships whose steering controls are disabled.

4. Underwater Burst. When ship is within range of base surge, ignore direction of wind, proceed at maximum speed on a course in the opposite direction to the explosion to delay the entry time and possibly avoid the base surge. Radioactivity of base surge decreases greatly during the early seconds of the explosion. Large contaminated droplets fall out as the base surge travels outward. When ship is engulfed in base surge or fallout, carefully consider wind direction and force and proceed on a course which will increase the distance between the water column and the ship, and thus provide the earliest exit from the fallout area. Other factors being equal, it will generally be best to steam upwind or crosswind.

5. ABC defense officer will establish "dose-rate" after the explosion and "allowable time of stay" in contaminated areas for monitor teams.

D. After ABC Attack.

1. No eating, drinking or smoking until notified.

2. Material condition "Emergency" (Button-Up) shall be modified when circumstances permit (when the base surge has passed and ship is clear of the fallout pattern). Any modifications of "Emergency" condition will ensure that the ventilation system does not carry contamination from weather decks into the interior of the ship.

3. Weather deck stations and topside areas will remain clear of personnel until declared safe and when authorized by master.

4. Repair parties and zone area personnel repair and control critical damage to the ship (fire, flooding and structural damage) before starting monitoring and decontamination.

5. Monitor teams commence survey and report their findings to damage control central for plotting and evaluation.

6. Personnel decontamination stations are manned to direct personnel to showers on and below the main deck.

7. Personnel exposed during attack proceed to decontamination stations.

8. Decontamination of exposed areas is started.

9. Receptacles are prepared to jettison contaminated material.

VIII. TRAINING.

A. Responsibility of Master. The master shall be responsible for continuing shipboard instruction of the crew in ABC defense and general decontamination as a part of Phase II damage control training. This training is a long range continuing program for the entire crew.

B. Equipment. Emphasis should be placed upon adapting equipment which is already aboard ship for surface decontamination, (washdown countermeasure, steam, salt water detergents, soap solutions, solvents, caustics, acids, hypochlorite (laundry bleach) and scrubbers).

C. Formal Training. The first officer (damage control officer), first assistant engineer (ABC defense officer), and all radio officers (O-in-C of monitoring teams) should attend formal training schools ashore for atomic, biological and chemical defense.

D. Indoctrination. All ship's personnel shall be indoctrinated in the basic fundamentals of ABC defense, including rigging for the washdown countermeasure. MN-8923, Radiological Defense in Civilian-manned Ships, is an MSTTS film specifically produced for this purpose. Emphasis will be placed on indoctrination in decontamination routes, traffic control and decontamination procedures.

E. General. The first officer (damage control officer) with the assistance of the first assistant engineer (ABC defense officer) shall schedule, instruct, and exercise ship' personnel in their respective duties as follows:

1. The effects of atomic weapons--blast, heat and radiation.
2. The use of radiac instruments to detect and measure radiation hazards.
3. Monitoring and decontamination procedures.
4. Determination of total exposure dosage by means of the non-self-indicating personnel dosimeter and the radiac computer-indicator.
5. Familiarity with ABC defense bill.
6. Means of preventing the spread of contamination.
7. Handling and disposing of contaminated material.
8. ABC detection.
9. Emergency control measures--buttoning-up, washdown countermeasure, decontamination stations, routes and procedures.
10. The effects and characteristics of biological agents.
11. The use of the biological sample kit (if aboard).
12. The effects and characteristics of chemical agents.
13. The use of the chemical detection kit (if aboard).
14. Protection of personnel, gas masks and protective clothing.
15. Instructor training to facilitate shipboard instruction of crew members.



CHAPTER I

EMERGENCY BILLS

Section 1.6

ENGINEERING CASUALTY BILL

I	Purpose	V	Emergency Procedures
II	Organization	VI	Damage Control Fittings, Equipment and Markings
III	Responsibilities	VII	Engineering Casualty Training
IV	Conditions of Readiness		

I. PURPOSE. This engineering casualty bill organizes ship's personnel to prevent, minimize and correct the effects of operational casualties to the ship's machinery, electrical and piping installations. The objectives of shipboard engineering casualty control are to:

- A. Prevent damage to machinery before it occurs by:
 - 1. Continuous detailed inspection procedures.
 - 2. Maintenance of all machinery in a state of readiness.
 - 3. Elimination of fire hazards.
 - 4. Realistic drills in proper use of machinery and piping.
- B. Minimize damage which may occur by:
 - 1. Speedy corrective action.
 - 2. Combating fire.
 - 3. Maintenance of stability and buoyancy.
- C. Protect personnel in emergencies by:
 - 1. Safeguarding personnel.
 - 2. First-aid treatment of injured personnel.
- D. Make emergency repairs as quickly as possible to permit the ship to accomplish its mission.
- E. Train personnel in engineering casualty control techniques.

II. ORGANIZATION.

A. Shipboard engineering casualty control depends upon watch personnel in engineering spaces under the chief engineer.

B. Control of the engineering department is centered in the engineroom (or control engineroom).

C. Engineering casualty control is primarily the responsibility of engine department personnel as follows:

1. Chief engineer (in over-all charge of engineering casualties).
2. First assistant engineer (in charge of engineroom or the control engineroom in twin screw ships).
3. Second assistant engineer (in charge of other engineroom in twin screw ships).
4. Watch engineers (in charge of engineroom on assigned watch). Assist as directed when chief or first assistant engineer arrives.
5. Junior engineer (as directed in fireroom--if assigned).
6. Chief electrician (at main switchboard).
7. Assistant electricians (station bill assignment or as directed).
8. Engine department personnel not on watch (assist as directed when required).

III. RESPONSIBILITIES.

A. Chief Engineer.

1. The chief engineer is responsible for the proper operation, maintenance and, within the limits of the ship's resources, the repair of propulsion and auxiliary machinery, and of all mechanical and electrical equipment aboard ship not specifically assigned to other departments. He is also responsible for piping and wiring, and for maintenance and control of damage to the compartments in which machinery under his cognizance is located, unless such compartments are assigned to other departments.

2. He shall insure that men in his department, particularly new men, are thoroughly instructed and drilled in safety precautions to be taken against fire. He shall inspect fire extinguishing and steam smothering systems for which he is responsible and assure that they are in working order prior to sailing.

3. He shall not permit the speed of the engines to be altered except on orders of the bridge watch officer or when emergencies require the engine watch to change speed to safeguard vital machinery. In such case he shall so notify the bridge, indicating the cause, corrective action and probable duration of any stoppage.

4. He shall anticipate and maintain required allowances of spare parts and shall submit timely requests for replacement parts.

5. He shall insure the continued indoctrination, training and drills of engine officers and crew in engineering casualties.

6. He shall be subordinate only to the master of the ship and shall conform to the policies and comply with the orders of the master.

7. The chief engineer is responsible for determining the adequacy of the engineering casualty bill and shall make appropriate changes and recommendations to the master.

B. First Assistant Engineer.

1. He shall be prepared to assume the duties and responsibilities of the chief engineer and act in his place when the chief engineer is absent from the ship.

2. He shall assign and supervise the engineering casualty control duties of the second, third and fourth assistant engineers, also licensed junior engineers and engine crew as directed by the chief engineer.

C. Watch Engineers.

1. They shall be in charge of engineering personnel assigned to their watches and shall see that they are properly trained and instructed in their regular and emergency duties.

2. They shall check the operational condition of machinery in the engine department before relieving the watch, and shall report immediately to the chief engineer any defects which may affect the operation of the ship. They shall not alter engine speed, except on orders from the bridge watch officer or in an emergency requiring change of speed to safeguard vital machinery. They shall carry out all instructions and orders of the chief engineer concerning the operation and maintenance of machinery.

3. They shall take immediate corrective action in engineering casualties occurring on their watches, notifying the chief engineer and the bridge as soon as possible.

D. Chief Electrician.

1. He shall maintain assigned electrical machinery and equipment in good operating condition under the concept of preventing electrical and resulting engineering casualties through preventive maintenance.

2. He shall plan and make preparations for emergency electrical repairs under casualty conditions.

IV. CONDITIONS OF READINESS. When conditions of readiness are set, the engineering plan will be placed in readiness as follows:

A. "Emergency" Condition (Steamship).

1. Fuel Oil Service System.

a. Fuel oil service suction shall be shifted to the full settling tank and the other tank shall be filled immediately.

b. Fuel oil transfer system will be secured. The transfer shall be kept in a condition of readiness.

c. Standby fuel oil pump will be warmed up and have suction lines up to the high suction on the standby settler.

2. Fire Pumps.

a. Both the electric and the steam fire pumps in the engine room will be put in operation on the firemain and will maintain a minimum pressure of 100 psi at the discharge manifold.

b. Emergency diesel fire pumps fore and aft will be manned and cut in.

3. Bilge Pumps.

a. Electric bilge pump shall be tested and lined up to bilge main.

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- b. Submersible bilge pump shall be tested and lined up to pump port and starboard engineroom bilges.
- c. General service pump shall be warmed up and kept in standby to bilge or fuel oil system.

4. Warm Up the Following Machinery

- a. Idle ship's service generators.
- b. Standby lube oil pump.
- c. Port fuel and auxiliary feed pumps.

5. Put Both Main Circulators in Operation.

B. "Emergency" Condition (Diesel Ships).

1. Fuel Oil Service System.

- a. Fuel oil service suction shall be shifted to full service tank. The slack tank shall be filled from settling tank by purifying. Settlers shall then be filled from double bottoms.
- b. Emergency diesel generator fuel tank shall be pumped full.

2. Fire Pumps.

- a. Fire pumps in engine spaces will be put in operation on the fire-main. A minimum pressure of 100 psi at the discharge manifold will be maintained.
- b. Emergency diesel fire pumps, if installed, shall be manned and cut-in, maintaining a minimum of 100 psi at the discharge manifold.

3. Bilge Pumps. Bilge pumps shall be tested and lined up to the bilge main. In ships with pumps which are used for both fire and bilge mains, these pumps shall be operated as deemed necessary.

4. Warm Up the Following Machinery

- a. When cruising with one generator on the line, a second generator shall be warmed up and paralleled. Other generators, if installed, shall be lined up ready for starting.
- b. All auxiliary pumps shall be on standby.

C. "Cruising" Condition (In Both Steam & Diesel Ships).

1. During normal "cruising" condition, machinery required to operate the plant in the most efficient and economical manner will be used.

2. When the ship is in confined or inland waters, in heavy traffic, heavy weather, low visibility, or in a combat zone, additional machinery shall be started or warmed up as advisable.

V. EMERGENCY PROCEDURES. The following is a list of engineering casualties which may occur while operating a ship's engineering plant, and the indicated corrective action in each case. All emergencies cannot be anticipated, so engineering personnel must familiarize themselves with data in Manual of Engineering Instructions and other publications pertinent to engineering casualty control. The basic requirement is to know your plant thoroughly.

A. Bilge Fire in Machinery Spaces (Steam & Diesel Ships).

1. Responsibility.

- a. All engine personnel on watch.
- b. Chief engineer.
- c. Repair party, on arrival (Repair II in transports). The repair party will be under direction of the chief engineer in engineering spaces.

2. Action.

- a. Notify bridge and chief engineer.
- b. Close WTD's.
- c. Secure ventilation
- d. Attempt to extinguish fire with dry chemical or CO2 portable extinguishers, foam, water fog, or fixed CO2, in that order.
- e. If it gets out of control, secure the plant and evacuate the space.
- f. Push all stop buttons and close all remote controls at engine-room emergency stop station.
- g. When all personnel are out, turn on the fixed CO2 smothering system.
- h. If necessary, use foam from topside and cool surrounding bulkheads with water.
- i. When under control, re-enter with fog nozzle, extinguish remainder of fire and cool down compartment. The fire party entering must wear OBAs.
- j. Ventilate compartment and check oxygen content with flame safety lamp.
- k. Pump out compartment and light off boilers using diesel oil if no steam available.
- l. Post reflash watch.

B. Electrical Fire in Main Switchboard (Steam & Diesel Ships).

1. Responsibility.

- a. All watch personnel.
- b. Chief Engineer.
- c. Repair party on arrival, under direction of chief engineer (Repair II in transports).

2. Action.

- a. Notify bridge and chief engineer.
- b. Secure power to affected section of switchboard.
- c. Secure ventilation and close WTDs.
- d. Start all steam-driven auxiliaries, if available.
- e. Approach as close to fire as possible. Open panels, protective covers or guards to gain access to source of fire.
- f. Use dry chemical or CO2 to extinguish fire. (Use CO2 hose reel if possible.)
- g. Use water fog only as second choice where switchboard is located on upper platform (water or foam will damage electrical equipment).
- h. If fire gets out of control, secure plant and evacuate.
- i. Push all stop buttons and close all remote controls at engine-room emergency stop station. Seal off compartment.
- j. When all personnel are out, turn on the fixed CO2 smothering system.
- k. Cool surrounding bulkheads and deck with water.
- l. Send OBA man to investigate area.
- m. Evaluate extent of fire and the situation and use extinguishing agent(s) required to control the fire.
- n. Ventilate the area and check oxygen content with flame safety lamp.
- o. Post reflash watch and observe all safety precautions.
- p. Investigate for extent of damage and make temporary repairs if possible.
- q. Chief engineer advise master regarding extent of damage and operational readiness.

C. Flooding of Engineroom (Steamships).

1. Responsibility.

- a. All watch personnel.
- b. Chief engineer.
- c. Repair party, on arrival, under direction of chief engineer (Repair II in transports).

2. Action.

- a. Notify bridge and chief engineer and make required closures.
- b. Open main bilge injection valve and close main circulator sea suction.
- c. Evacuate space if necessary.
- d. Emergency generators:

- (1) Start emergency generator manually if not already running on automatic start.
- (2) Make sure feedback switch to engineroom switchboard is open.
- (3) When voltage is built up, check to see that emergency generator breaker is closed.

NOTE: In P2 electric-drive ships, the feed to emergency switchboard will automatically transfer to the other engineroom. Also in P-2 electric-drive ships, both main motors can be operated at reduced speed from the operating engineroom.

- e. Line up valves to the submersible bilge pump by remote control and close switch at emergency switchboard.
- f. Rig electric submersible portable pumps and peri-jet eductors.
- g. Determine cause of flooding and sound all adjoining compartments to determine extent of flooding. Report to damage control central.
- h. Trim ship, if possible, as necessary.
- i. Establish flooding boundaries.
- j. Repair damage causing flooding (if possible).
- k. Pump out machinery space.
- l. Check affected machinery and repair where necessary.
- m. Build small fire in boiler firebox to dry out brickwork.
- n. Take samples of settlers and all fuel oil tanks to determine serviceable fuel.
- o. Test boiler water and feed water. If possible fill boiler with reserve feed.
- p. Light off boiler using diesel oil.
- q. If steam is available, check turbine lube oil for water and start steam standby pump, if available. Use gravity tank by-pass if upper lube oil piping system is damaged.
- r. Use either or both main turbines if possible.
- s. Try to get electric power to steering gear. Otherwise use hand steering.
- t. Initiate drying out and repair of affected electric machinery.
- u. Chief engineer advise master regarding extent of damage and operational readiness.

D. Flooding of Engineroom (Diesel).

1. Responsibility.

- a. All watch personnel.
- b. Chief engineer.
- c. Repair party, on arrival, under direction of chief engineer.

2. Action.

- a. Notify bridge and make required closures.
 - b. Evacuate space if necessary.
 - c. Emergency generator:
 - (1) Start emergency generator manually if not already running on automatic start.
 - (2) Make sure feedback switch to engineroom switchboard is open.
 - (3) When voltage is built up, check to see that emergency generator breaker is closed.
 - d. Line up valves to submersible bilge pump by remote control and close switch at emergency switchboard (C1-MAV-1 passenger ships only).
 - e. Rig electric submersible portable pumps and peri-jet eductors.
 - f. Determine cause of flooding and sound all adjoining compartments to determine extent of flooding and report to damage control central.
 - g. Trim ship, if possible, as necessary.
 - h. Establish flooding boundaries.
 - i. Repair damage causing flooding.
 - j. Pump out machinery space.
 - k. Check all affected machinery and repair where necessary:
 - (1) Wash out generators and motors which were submerged in salt water, and dry them.
 - (2) Refill contaminated engine sumps with clean oil.
 - (3) Check out necessary electrical circuits and motors.
- Secure other circuits until time is available for repair.
1. Start generator and place power on necessary available circuits.
 - m. Start necessary auxiliaries and get underway if possible.
 - n. Use power feed through emergency board if direct feed line to steering motors is damaged.
 - o. Sound all double bottoms to check on possible other damage and serviceable fuel.
 - p. Repair all unserviceable machinery as soon as possible.
 - q. Chief engineer advise master regarding extent of damage and operational readiness.

E. Water in Fuel Oil (Steamships).

1. Responsibility.

- a. All engine watch personnel.
- b. Chief engineer.
- c. First assistant engineer.
- d. Chief electrician.

2. Action.

- a. If burning off low suction, change to high suction.
- b. If water is still present, change to the other settler.
- c. If both settlers are contaminated with water, ring telegraph on stop.
- d. Secure all burners.
- e. Secure steam to main engine and trip the generators.
- f. Leave auxiliary steam line open.
- g. Electrician start emergency diesel generator.
- h. Strip main switchboard except for forced-draft blower.
- i. Line up emergency diesel generator for feeding main switchboard.

- j. Take suction from any double bottom tank having warm fuel oil, using the transfer or general service pumps as booster pumps to the service or standby fuel oil pump. The settler fuel oil tank valves must be closed.
- k. Start forced-draft blower and air out boiler.
- l. Recirculate oil to burners, and light off boiler.
- m. If steam is lost, use regular cold-start procedure, using diesel oil.

NOTE: Fuel oil service pump takes diesel oil suction and recirculates to fuel oil system for cleaning lines of water and fuel oil.

- n. When contamination has been corrected on settlers, shift to fuel oil suction.
- o. When steam is raised, cut in fuel oil heaters.

F. Rupture of Main Steam Piping (Steam Vessels).

1. Responsibility.

- a. All engine watch personnel.
- b. Chief engineer.
- c. First assistant engineer.
- d. Repair party, on arrival, under direction of the chief engineer.

2. General. Rupture of main steam piping in any space can be expected to fill that space with steam to such an extent that it will have to be evacuated and secured from the outside.

3. Action.

- a. Notify bridge via telegraph.
- b. Close main boiler stop valve locally if possible; use remote control if installed.
- c. Simultaneously close the throttle valve; stop the engine and secure the fires.
- d. Open safety valves on boiler by hand, using remote control if possible.
- e. Continue to feed the boiler so as to maintain water level, if possible.
- f. If evacuation is necessary:
 - (1) Start the steam lube oil pump if it is not already running, and open atmospheric exhaust valve.
 - (2) Speed up vent fans.
 - (3) Leave by means of shaft alley escape or lower engine room escapes.
- g. Repair party enters, protected by water fog curtain. They secure all valves and open safety valves and/or attempt to check the leak with an asbestos blanket cinched around the pipe with chains.
- h. After the space has cooled, the damage can be isolated and as much of the plant operated as possible.
- i. Power panels may have to be dried out before they can be used.

G. Loss of Lube Oil to Main Engine (Steamships).

1. Responsibility.

- a. All watch personnel.
- b. Chief engineer.
- c. Assistant engineer.

2. Action.

- a. Ring telegraph on stop.
- b. Stop the engine immediately; use astern throttle to keep engine from rotating.
- c. Engage and lock the jacking gear and/or apply the shaft brake if so equipped.
- d. At the same time make every effort to regain lubricating oil pressure.
- e. Immediately inspect all bearings and try to determine which have been overheated.
- f. Secure gland sealing steam and the main air ejectors to minimize rotor distortion.
- g. Shift strainers and clean lubricating oil strainer basket in use at time of casualty. Notice if flakes of bearing metal are present.
- h. Start lube oil purifier if not in use.
- i. Continue circulation until bearings are cool.
- j. Take bearing-wear micrometer readings of all bearings and axial clearances where means are provided.
- k. Proceed with removal and inspection of bearings.
- l. If bearings are not wiped, return to normal operation.
- m. Chief engineer advise master regarding damage and operational readiness.

H. Loss of Lube Oil to Main Engine (Diesel).

1. Responsibility.

- a. All watch personnel.
- b. Chief engineer.
- c. First assistant engineer.

2. Action.

- a. Ring telegraph on stop.
- b. Stop main engine and notify bridge.
- c. Check for lube oil failure as follows:
 - (1) Pump.
 - (2) Dirty strainers.
 - (3) Pump suction line from sump flanges, slack, or gasket deterioration.
 - (4) Rupture in lube oil line.
- d. Restore lube oil pressure as soon as possible.
- e. Check for hot bearings and for bearing metal in strainers. Indications of overheating of bearing metal will necessitate inspection of all bearings and journals.
- f. Resupply sump to normal level.
- g. Notify bridge when conditions are normal for getting underway.

I. Loss of Vacuum Main Condenser (Steam).

1. Responsibility.

- a. All watch personnel.
- b. Chief engineer.
- c. First assistant engineer.

2. Action.

- a. Ring telegraph on slow and slow down engine.
- b. If vacuum drops below 20", ring telegraph on stop and stop the main engine.
- c. Shift all auxiliary exhaust to auxiliary condensers.

d. Causes of loss of vacuum may be:

- (1) Excessive air leakage into the vacuum system.
- (2) Insufficient gland sealing steam.
- (3) Vent valve on idle condensate pump open.
- (4) Loop-seal valve closed.
- (5) Bypass valve on drain tank open.
- (6) Drain-tank float valve stuck open.
- (7) Taking make-up feed from empty feed bottom.
- (8) Leakage of flanges, fittings or valve stem packing under vacuum.
- (9) Failure of condensate pump.
- (10) Insufficient steam to air ejectors.
- (11) Foreign matter lodged in the air ejector nozzle.
- (12) In case of lowered vacuum over a period of time, erosion of the air ejector.
- (13) Improper drainage of condensate from condenser.
- (14) Low speed of condensate pump.
- (15) Condensate pump airbound due to the vent connection from the first stage being closed or not opened wide.
- (16) Insufficient flow of circulating water.
- (17) Main injection valve and overboard discharge valve not wide open.
- (18) Inadequate speed of main circulating pump.
- (19) Plugged tubes due to mud, shells, small fish or kelp being trapped against the injection strainer bars or in the inlet water chest.
- (20) Air trapped in condenser.
- (21) High injection temperature.
- (22) Dirty condenser on water side and steam side.

J. Loss of Water in Boiler (Steam).

1. Responsibility.

- a. All watch personnel.
- b. Chief engineer.
- c. First assistant engineer.

2. Action.

- a. Cut off fuel oil supply to all burners on boiler affected.
- b. Notify bridge by ringing telegraph on half speed and slow down engine according to steaming capacity of other boiler.
- c. Close feed check valves.
- d. Open superheater circulating valve to atmosphere.
- e. Open actuating valve on steaming boiler, and close it on affected boiler.
- f. Close main boiler stops and completely isolate from other boiler.
- g. Lift safety valves by hand to relieve the pressure gradually.
- h. Close the burner register shutters and if possible diminish the air supply to the boiler by stopping the blowers.
- i. It is essential that no attempt be made to restore the normal water level by increasing the supply of feed water. By allowing the boiler to cool gradually, any parts that may have become overheated will be subjected to an annealing process, thus minimizing possible damage to the boiler pressure parts.
- j. When the boiler has cooled, make a careful inspection of water and fire sides of the boiler.
- k. Chief engineer to advise master regarding extent of damage and operational readiness.

K. Boiler Tube Failure (Steam).

1. Responsibility.

- a. All watch personnel.
- b. Chief engineer.
- c. First assistant engineer.

2. General. To prevent serious injury to personnel and to reduce to a minimum the extent of damage to the boiler whenever a serious steam leak occurs from the sudden leaking of a tube or other cause, the action below shall be taken, to the extent that circumstances permit.

3. Action.

- a. Cut off fuel oil supply to all burners on the boiler affected.
- b. Notify bridge by ringing telegraph on half speed and slow down engine according to steaming capacity of the other boilers.
- c. Continue to feed boiler through auxiliary feed check and secure main feed check valve.
- d. Open superheater circulating valve to atmosphere,
- e. Open actuating valves on steaming boiler and close on affected boiler.
- f. Close boiler steam stops and isolate affected boiler completely.
- g. Gradually open the safety valves as soon as possible to relieve the pressure.
- h. If the blowers are running, increase their speed to drive the escaping steam up the smoke pipe and thus keep it out of the fireroom.
- i. Start the auxiliary feed pump and continue feeding the affected boiler. Special care must be taken to maintain the water at the proper height in all other boilers in use and to provide additional water from the reserve tanks, if necessary, to prevent a shortage in the main feed tank.
- j. After the pressure has decreased and the fires are out, stop the blowers and close all possible sources of air flow into the boiler furnace. Allow the boiler to cool off slowly.
- k. When the boiler has cooled sufficiently, make necessary repairs as circumstances permit.
- l. Chief engineer advise master regarding damage and operational readiness.

L. Diesel Generator Engine Failure (Diesel).

1. Responsibility.

- a. All watch personnel.
- b. Chief engineer.
- c. First assistant engineer.

2. Action.

- a. Ring telegraph on stop.
- b. Stop main engine.
- c. Check probable causes of failure.
 - (1) Check throttle.
 - (2) Check overspeed trip.
 - (3) Shift fuel oil filter.
- d. Attempt to restart generator and check pressures, temperatures, and RPM for normal operation (If generator won't start or abnormal condition exists, light off standby generators).
- e. When full power is restored to main switchboard, start main engine lube oil pump and circulate.

f. Check main engine bearings for overheating and for wiped metal in strainers. (Indications of overheating of wiped metal will require further inspection of bearings and journals).

g. Notify bridge.

h. Start all necessary machinery.

i. Notify bridge when ready to get underway.

j. Stop emergency generator and inspect transfer panel on emergency switchboard.

M. Main Engine Failure (L.P. Turbine) (Steam).

1. Responsibility.

a. All watch personnel.

b. Chief engineer.

c. First assistant engineer.

2. Action.

a. Ring telegraph on stop and stop main engine.

b. Disengage coupling to L.P. pinion.

c. Remove expansion joint between H.P. and L.P. turbines.

d. Blank off the end of the crossover pipe.

e. Remove the blank flange underneath the crossover pipe and on top of the condenser.

f. Install the emergency piping on the H.P. exhaust directly to the condenser.

g. Make sure the guarding valve is closed and locked.

h. In such case, the unit should be operated on reduced steam temperature and not with superheat as under normal conditions.

i. Under these conditions, not more than half power can be maintained with the H.P. turbine alone.

j. Chief engineer advise master regarding damage and operational readiness.

N. Main Engine Failure (H.P. Turbine) (Steam).

1. Responsibility.

a. All watch personnel.

b. Chief engineer.

c. First assistant engineer.

2. Action.

a. Ring telegraph on stop and stop main engine.

b. Disengage coupling to H.P. pinion.

c. Remove the expansion joint between the H.P. and L.P. turbines.

d. Blank off receiver pipe at H.P. turbine.

NOTE: To operate the L.P. turbine alone, a special flange is provided for the L.P. steam inlet. This flange will accommodate an inlet elbow through which steam at throttle pressure is admitted through an orifice to the L.P. turbine.

e. Install emergency piping from main steam to L.P. turbine.

f. Under these conditions, not more than half full power can be maintained with the L.P. turbine alone.

NOTE: When operating under these emergency conditions, the pressure in the L.P. turbine should not be permitted to exceed about 25 lbs. gage.

h. Chief engineer advise master regarding damage and operational readiness.

NOTE: These connections, together with the blind flanges, elbows and bolts that belong with them, should be kept in a convenient place and never used for any other purpose. Although they may never be used during the life of the ship, if they are required the need will be urgent. Therefore, all items of this equipment must be immediately available.

O. Loss of Main Engine Jacket Cooling Water Pressure (Diesel).

1. Responsibility.

- a. All watch personnel.
- b. Chief engineer.
- c. First assistant engineer.

2. Action.

- a. Check water temperature from main engine. If temperature is high, reduce RPM to slow.
- b. Ring up telegraph.
- c. Check probable causes of failure:
 - (1) F.W. circulating pump stoppage or loss of suction.
 - (2) Loss of water due to leak in piping or cooler.
- d. If pump has stopped, light off standby pump and circulate water.
- e. When temperatures are normal, notify bridge of readiness to resume full speed.
- f. Check pump for cause of failure and repair if necessary.
- g. If engine water temperature continues to rise while running slow, and recovery of water pressure will be delayed, STOP main engine.

P. Fracture of Main Engine High Pressure Fuel Line to Injector (Diesel).

1. Responsibility.

- a. All watch personnel.
- b. Chief engineer.
- c. First assistant engineer.

2. Action.

- a. Reduce engine speed (If emergency conditions exist, maintain RPM).
- b. Notify bridge.
- c. Cut out cylinder fuel injection pump, and secure fuel to pump (main engines with individual pumps only).
- d. Replace fractured line with spare.
- e. Open fuel valves to injection pump and place pump back in service.
- f. Notify bridge.
- g. Resume speed.
- h. Check pyrometer and firing pressure of cylinder involved.

VI. DAMAGE CONTROL FITTINGS, EQUIPMENT AND MARKINGS.

A. Fittings and Equipment.

- 1. The chief engineer shall assure, through frequent personal inspections or by qualified subordinates, that firefighting equipment and stations, the emergency generator, pumps and all other damage control equipment under cognizance of the engine department are in proper operating condition.

2. He shall inspect, test, mark, maintain and repair all damage control equipment for which he is responsible.

B. Damage Control Markings.

1. Label plates shall be installed in accordance with the effective revision of COMSTS INSTRUCTION 9280.3 on the following:

- a. Fire stations.
- b. Compartments.
- c. Watertight doors.
- d. Fire extinguishers.
- e. Frame numbers.
- f. Decks and levels.
- g. Tank labels.
- h. Watertight bulkheads.
- i. Remote controls.
- j. General alarm.
- k. Emergency exits.
- l. Fire alarm, smoke-detecting alarm.
- m. Zone areas.
- n. Oxygen breathing apparatus.
- o. Gas mask.
- p. Emergency lighting system.
- q. Carbon dioxide alarm.
- r. Ventilation fire dampers.
- s. Carbon dioxide fire apparatus.
- t. Fire main cutout valves.
- u. Reefer breather plugs.
- v. Ventilation system.

2. Stencil system identification on all piping, indicating direction of flow in each compartment.

3. Operating instructions shall be provided for damage control machinery.

4. Identification markings shall be provided for all stowed damage control equipment, fixed and portable.

5. All other markings as directed in the effective revision of COMSTS INSTRUCTION 9280.3 shall be made.

VII. ENGINEERING CASUALTY TRAINING.

A. Engineering Casualty Drills. These shall be held at least once a week while the ship is at sea and shall include training of all engineering watch officers and other watch personnel in the action necessary to correct engineering casualties.

1. All drills shall be made as realistic as possible and shall be conducted as though an actual emergency existed.

2. Whenever necessary to improve proficiency in drills, crew members shall be mustered before and after drills and given appropriate instruction or practice.

3. Whenever possible, personnel casualties will be simulated during drills.

4. All drills shall be held in accordance with the effective revision of COMSTS INSTRUCTION 3120.2.

B. Engineering Casualty Readiness.

1. Factors in evaluating readiness.

- a. Alertness of engineering watch personnel in noting and identifying engineering casualties.
- b. Time required to complete each drill or exercise.
- c. Knowledge of and effective use of equipment.
- d. Any errors or omissions of corrective action or equipment.
- e. The effectiveness of the drill or exercise in controlling and correcting the engineering casualty.



GEIGER Phase III - Emergency Steering

CHAPTER I

EMERGENCY BILLS

Section 1.7

STEERING CASUALTY BILL

I Purpose	IV Condition of Readiness
II Organization	V Procedure
III Responsibilities	VI Signals
	VII Training

I. PURPOSE. This steering casualty bill specifies responsibilities and procedures during a steering casualty.

II. ORGANIZATION. The personnel involved at the time of a steering casualty during normal steaming conditions are as follows:

Master	Junior deck officer on watch
First officer	Junior engineer officer on watch
Chief engineer	Electrician
Senior deck officer on watch	Wheelsman
Senior engineer officer on watch	Master-at-arms.

III. RESPONSIBILITIES.

A. Master. The master shall plan procedures and organize personnel to cope with steering casualties. Upon being notified of a steering casualty, he shall take charge on the bridge.

B. First Officer. The first officer shall report to the bridge and supervise activities.

C. Chief Engineer. The chief engineer shall be responsible for the readiness of the steering engine machinery. He shall coordinate with the first officer in training all personnel involved in the various methods of "change-over".

D. Senior Deck Officer on Watch. The senior deck officer on watch shall be responsible for the alternate shifting of steering on the bridge, passing the word "steering casualty" and notifying the master. He shall display the proper signal or lights and direct any emergency maneuvering until relieved by the master. He shall then direct his junior deck watch officer to report to the steering engine room. In ships without junior deck watch officers, the watch officer, when directed by the master, shall go immediately to the steering engine room, man the sound-powered phone and keep the bridge informed. In heavy traffic, the master may retain the watch officer on the bridge to plot and advise him and may dispatch another deck officer to the steering engine room.

E. Senior Engineering Watch Officer. The senior engineering officer on watch, upon hearing the "steering casualty" alarm, shall send the junior watch engineer to the steering engine room. He shall then notify the chief engineer and alert the watch to stand by to answer all bells. In ships not carrying junior engineers, the chief engineer and first assistant engineer shall report to the steering engine room themselves or else shall relieve the watch engineer so that he can report to the steering engine room.

F. Wheelsman on Watch. The wheelsman on watch shall report to the steering engine room and shall take over the trick wheel when directed.

IV. CONDITION OF READINESS. The condition of readiness shall generally remain as it was prior to the steering casualty. However, at the discretion of the master, the condition of readiness ("cruising" or "modified cruising") will be changed to "emergency" if the steering casualty occurs in heavy traffic. In fog or heavy traffic, it is a good idea to have a qualified man on standby in the steering engineroom, ready to take immediate action in event of a steering casualty.

V. PROCEDURE.

A. On the Bridge.

1. The wheelsman, upon noting that the rudder does not respond, will notify the watch officer and will shift over to alternate steering control.
2. The senior deck officer on watch shall:
 - a. ~~Pass the word "steering casualty".~~ *Pass the steering emergency signal.*
 - b. Send the wheelsman to the steering engineroom.
 - c. Notify the master, the engineroom watch engineer, and the first officer.
 - d. Put the engine telegraph on standby.
 - e. Direct the junior deck watch officer to report to the steering engineroom. (If the ship has no junior deck watch officers, the watch officer will report to the steering engineroom after being relieved by the first officer or master.)
 - f. Direct emergency maneuvering of the ship, steering with engines, stopping engines, or backing down to take the way off the ship.
 - g. Direct the lookout to hoist two black balls if in daytime or, if at night, turn off the masthead and range lights and turn on the two red not-under-command lights. (The sidelights are left on as long as the ship is making way through the water.)
 - h. Notify the master of surrounding traffic, course and speed.
3. The first officer will report to the bridge and supervise activities.

B. In the Engineroom.

1. The senior engineering watch officer shall:
 - a. Notify the bridge and chief engineer of a steering failure whenever the steering alarm sounds.
 - b. Direct the junior engineering officer on watch to report to the steering engineroom and shift over to regain steering control.
 - c. Open guarding valve and be ready to answer all bells.

C. In the Steering Engineroom.

1. The engineer shall regain steering control by trick wheel and shift to bridge or emergency steering station as directed by the bridge.
2. The deck officer shall contact the bridge, keep the bridge informed, and shall relay to the engineer officer orders to change over steering to bridge or emergency steering station.
3. The wheelsman shall man the designated trick wheel and shall adjust and check the gyro repeater.
4. The electrician shall check out the defective unit and estimate how long the unit will be out of commission.

D. At Emergency Steering Station.

1. The master-at-arms on watch shall proceed to the emergency

steering station, remove the covers from the wheel, compass and phones. He shall then man the sound-powered telephone and shall stand by for further orders.

VI. SIGNAL. The signal for a steering casualty is one long and two short rings on the general alarm bells ("D"), announcement on the PA system in ships so equipped, one long and two short rings on the general alarm bells. When other ships are in the vicinity, international code flag hoist "D" and/or one long and two short blasts on the ship's whistle will be used to advise: "Keep clear of me - I am maneuvering with difficulty."

NOTE: If danger to the ship is imminent, as in heavy traffic, the master may also sound the general alarm afterwards, in order to alert all hands.

VII. TRAINING. Steering engine casualty drills, including the change-over to emergency steering units, shall be held for each watch (deck and engine) at least once each month as required by section 19 of operating instructions, effective revision of COMSTS INSTRUCTION P3120.2. The drills shall be conducted as though an actual emergency exists and all personnel concerned shall be thoroughly familiarized with change-over procedures. Changeover instructions shall be posted in the steering engine room and all changeover valves, pins, and levers shall be clearly marked, as required by USCG.



CHAPTER I

EMERGENCY BILLS

Section 1.8

MAN OVERBOARD BILL

I	Purpose	V	Emergency Procedures
II	Organization	VI	Signals
III	Responsibilities	VII	Training
IV	Condition of Readiness		

I. PURPOSE. This man-overboard bill prescribes responsibilities and procedures to assure the recovery of personnel lost overboard.

II. ORGANIZATION. Emergency crews for man overboard shall be organized for action as follows:

A. Launching Crews. Assignment of personnel and their duties shall be as provided in the ship's station bill.

B. Emergency Boat Crew. Assignment of personnel and their duties shall be as provided in the ship's station bill.

III. RESPONSIBILITIES.

A. Reporting Man Overboard. Anyone who sights a person falling overboard or in the water shall throw the nearest ring buoy(s) over the side (at night, the ring buoy should have a waterlight attached) and immediately notify the bridge, stating side of the ship from which man fell overboard. After making this initial report he shall:

1. Keep man overboard in sight.
2. Make additional reports regarding location of man overboard.

B. Senior Deck Watch Officer/Master. On receiving a man overboard report, the senior deck watch officer (unless relieved by the master) shall:

1. Maneuver the ship as necessary to avoid the man in the water (throw stern away from man overboard).
2. Throw ring buoy(s) over the side man fell overboard. At night use ring buoy with waterlight attached.
3. Drop man overboard signal marker. (Other smoke distress signals and/or sea-dye markers may also be used during daylight.)

4. Sound man overboard alarm.
5. Station additional lookouts to locate and keep the man in the water in sight.
6. Maneuver the ship as necessary. Approach directly if man is clearly seen, coming right around or backing down. When man cannot be seen, or at night, use the Williamson turn.
7. Man ship's searchlight at night. Train it continuously on ring buoy, raft or other floating object to provide a reference point toward which man can swim and cling to.
8. Designate emergency boat to be launched for recovery of man overboard.
9. Designate alternate standby boat to be cleared away.
10. Station qualified armed personnel to ~~watch for sharks and to drive off by rifle fire any which are sighted. Be prepared to fire at sharks as directed.~~
11. Reduce speed, as necessary, for launching of emergency boat.
12. Direct launching of boat by whistle signal.
13. Direct the boat to the man in the water by ship's radio, whistle, blinker or flag signals.
14. Maneuver to recover and hoist boat.

C. First Officer. The first officer is in charge of launching the emergency boat. He immediately proceeds to the emergency and standby boats and supervises their preparation for launching as follows:

1. Turns on embarkation lights (if necessary).
2. Clears away and lowers boats to the embarkation deck.
3. Fraps boats in to position, with sea painters led forward (and aft if necessary).
4. Receives readiness report from emergency boat commanders.
5. Assigns additional or replacement personnel if needed.
6. Directs embarkation of emergency boat crew.
7. Reports readiness to launch emergency and standby boats to bridge.
8. Directs winch controlman, supervises launching, and gives "lower away" when directed by master.
9. After launching of boat, assures readiness of standby boat if needed, has cargo net, embarkation ladder, and heaving lines available for use in recovery.
10. Overhauls falls to assure sufficient slack for recovery.
11. Readies bow and stern sea painters for recovery of boat.
12. Directs hoisting of boat after boat commander signals "hoist away."
13. Directs debarkation of crew.

D. Emergency Boat Commander. The emergency boat commander shall immediately muster his crew at the designated boat and:

1. Report readiness or discrepancies to the first officer after checking the following:
 - a. Engine in good order.
 - b. Life jackets donned and clothing adequate.
 - c. Blankets, lifeline and ring buoy in boat.
 - d. Emergency radio in boat.
 - e. Hospital corpsman in boat (passenger ships only) with first-aid kit.
2. In accordance with COMSTS "Lifeboat Training Guide," man designated emergency boat and lower it to a safe distance above the water, ready for immediate launching.
3. Launch boat when directed and immediately clear away from the ship's side.
4. Establish communication with the ship.

5. Maneuver boat to man overboard; if not in sight, maneuver as directed by ship's signals.
6. Approach man overboard, generally keeping him on the windward side.
7. Have a good swimmer ready, with a lifeline and ring buoy, to assist in water if necessary.
8. Recover man overboard, wrap in blankets and provide medical assistance while returning to ship.
9. Recover boat safely and expeditiously.

E. COMILDEPT (Passenger Ships Only). The COMILDEPT shall:

1. Direct one of the medical officers or hospital corpsman, with necessary first-aid equipment, to embark in boat.
2. Have stretcher and resuscitator ready at boat station.
3. Station additional medical personnel to receive man when he is brought aboard.
4. Assign additional guards to help master-at-arms keep personnel not engaged in man overboard operation clear of assigned areas.

F. Master-At-Arms (Passenger Ships Only). The master-at-arms shall keep all personnel not concerned with manning or launching of boats clear of assigned areas.

G. Chief Engineer. The chief engineer shall:

1. Assign sufficient engineroom personnel to maneuver the ship.
2. Assign the electrician to stand-by with tools for electrical casualties, particularly while hoisting boats.

H. Senior Engineer Watch Officer.

1. Turns electricity on for searchlights, emergency boat winches and embarkation lights.
2. Stands by on operating platform.

IV. CONDITION OF READINESS.

A. Emergency boats shall at all times have their sea painters led out, ready for immediate launching.

B. For man overboard operations, special floating heaving lines can be made by enclosing the "monkey fist" in a ball of kapok about 5 inches in diameter. These floating lines are useful in recovery of a man overboard, for a survivor alongside, or in assisting a lifeboat coming alongside.

V. EMERGENCY PROCEDURES.

A. Ship Maneuvering. General procedures are covered above under responsibilities. Obviously the immediate maneuver in man overboard is to put the rudder hard over to swing the ship's stern away from the man in the water. Then ring buoys and signal markers should be dropped, the alarm sounded, look-outs stationed, and the ship maneuvered to get back to the man in the water quickly and surely. Under favorable conditions, it will be best to stop and back down when clear of the man in the water or to come right around on hard-over rudder. At night, in reduced visibility or in heavy weather, it will probably be best to use the Williamson turn, which requires about 5 minutes longer than backing down or circling, but is a sure method of returning to the exact spot at which the man fell overboard. Meanwhile, the emergency boats are cleared away and readied for launching.

1. Description of Williamson Turn. The Williamson turn consists of putting the rudder hard over towards the side from which the man fell overboard while maintaining normal cruising speed. As the ship's head approaches 60° from the original course, the rudder is eased. At the precise instant the ship's head reaches 60° (70° in geared P-2s, 65° in electric P-2s and C-4s) from the original course, the rudder is reversed and the ship circles and steadies on the reciprocal of the original course. As soon as the ship steadies on the reciprocal course, the engines are stopped and the ship will drift to approximately the position at which the man fell overboard. Ships using this maneuver at normal cruising speeds report that it is effective in various conditions of wind and sea although it requires about 5 minutes more time than backing down or circling. The advantages of the Williamson turn during darkness or reduced visibility are obvious.

2. Use of Lifefloat. A recent proposal for improvement of the man overboard procedure advocates the use of a raft or or a float. If dropped overboard immediately after the alarm is sounded, it provides a larger marker for the ship to return to as well as a haven for the man in the water to swim to, if he can. Thus both ship and man will be aiming for the same point. The ship will have a better reference point and the man a resting point, if he can make it. The ship can keep its searchlight on the float at night, as a guide for both ship and man.

B. Lifeboat Handling. The Lifeboat Training Guide (COMSTS INSTRUCTION 12230.3A) contains general lifeboat handling procedures. Since procedures for recovery of a man overboard will vary according to prevailing conditions, good seamanship will dictate the best procedure to be followed under specific situations.

VI. SIGNALS.

A. Man Overboard. Three long rings on the general alarm bells ("O"), announcement on the PA system in ships so equipped; once again, three long rings on the general alarm bells ("O"). ~~This signal is repeated twice.~~ Also make the proper visual and sound signals if in sight of other ships - International code flag "Oscar." The danger signal may be sounded on the ship's whistle to alert other ships in the vicinity.

B. Whistle Signals for Handling Boats.

Lower boats	- - - - -	One short blast
Stop lowering boats	- - - - -	Two short blasts
Recall and recover boats	- - - - -	A short, a long and a short blast ("R").

C. Signals for Directing Emergency Boat. The boat is directed to the man in the water by means of the radio whenever possible. Otherwise the following whistle, blinker or flag signals are used:

Turn to starboard	- - - - -	One
Turn to port	- - - - -	Two
Dead ahead	- - - - -	Three
Towards ship	- - - - -	Four
Stand off, we are maneuvering	- - - - -	Five or more short blasts (danger signal).

D. Dismissal. Three short blasts of the ship's whistle and the same signal on the general alarm bells, followed by PA announcement in ships so equipped.

CHAPTER I

EMERGENCY BILLS

Section 1.9

2541.5

TOWING AND SALVAGE BILL

I	Purpose	V	Emergency Procedures
II	Organization	VI	Communications and Signals
III	Responsibilities and Duties	VII	Precautions
IV	Condition of Readiness	VIII	Training

I. PURPOSE. This towing and salvage bill prescribes basic procedures, responsibilities and duties for towing and salvage.

II. ORGANIZATION. Ships' force shall be organized for towing and salvage as follows:

Master - - - - -	-In command on bridge.
First officer - - - - -	- In charge of operations on fore-castle or fantail.
Chief engineer - - - - -	-In charge of engineroom.
Second officer - - - - -	-On bridge.
Deck Watch officer - - - - -	- Phone talker with master.
Designated officer or seaman - - - - -	-Phone talker on forecastle or fantail.
Radio officer - - - - -	- Establish and maintain radio-telephone and/or radio communi-cations.
Boatswain - - - - -	- Assist first officer on forecastle or fantail.
Electrician - - - - -	- Supply and maintain emergency lighting and electrical equipment on forecastle or fantail.
Deck department - - - - -	- Report to forecastle or fantail to assist as directed by the first officer.

III. RESPONSIBILITIES.

A. Master. The master is in command of towing and salvage operations and is responsible for preparation, organization and training of the crew in towing and salvage procedures. He shall inspect towing gear and equipment periodically to insure its readiness.

B. First Officer. The first officer, under the master, is in charge of towing and salvage operations on the forecastle or fantail. He shall organize and train personnel and shall insure on-board allowances and maintenance of towing and salvage equipment.

C. Chief Engineer. The chief engineer shall assign additional engineers to each engine room and a qualified crewman in the steering engine room during the towing-maneuvering periods.

D. COMILDEPT. The COMILDEPT is responsible for assigning additional guards to keep personnel away from rails and clear of assigned areas.

E. Senior Radio Officer. The senior radio officer is responsible for the testing and efficient operation of the radio-telephone and radio equipment. He shall contact the other ship(s) and maintain communication as directed by the master.

F. Second Officer. The second officer is responsible for readying and/or displaying the proper signal flags, and/or flashing signal lights as directed by the master. He shall arrange with the other ship for whistle signals which may be used in lieu of or to supplement flag or signal lights.

IV. CONDITION OF READINESS. Ships engaged in towing or salvage operations will set and maintain "cruising" condition.

V. PROCEDURES.

A. Ship's Towing Gear. A ship not specially designed for towing with towing engine, etc. can tow another ship only by means of a fixed towline. In this method the only means of cushioning stresses is by veering the tow to a scope of hawser long enough to provide a good catenary in the line. Present practice, though not standard for MSTs, is to secure the towline to a towing pad, conveniently located for the purpose, usually on the ship's center line.

B. Approaching Disabled Ship for Towing. Maneuvering to approach a tow from windward or leeward depends upon the relative drift factors of the towing ship and the tow. A margin of safety should be maintained when maneuvering close to the tow in order to permit hauling off from a dangerously close position. The following are recommended approach procedures after determining the relative rate of drift of the tow and towing vessel:

1. If the tow drifts slower than the towing ship--approach to windward and on the same heading.

2. If the tow drifts faster than the towing ship--approach to leeward and on the same heading.

3. Care must be taken not to risk drifting into collision and not to get so close together that the rudder cannot be put hard over to haul off without danger of the stern colliding with the tow.

4. Where wind and sea are not a factor, come alongside from astern of the tow, on the same heading and as close as prudent. Pass a heaving line as soon as possible and haul in the tow's messenger line. Maneuver your stern in passing, as close as safely possible to the tow's bow to facilitate hauling in the towing cable.

C. Taking a Ship in Tow. In good weather this presents no special difficulty. The towing vessel starts ahead slowly on the same course as the disabled ship and uses every precaution to prevent a sudden strain on the line. This is the critical point in towing. Strain on the towline can be eased by veering it slowly and manipulating the engine(s). In bad weather, towing should not be attempted unless exceptional circumstances make it necessary. In such cases, storm oil can be used to advantage in maneuvering to pick up a tow as well as in towing during heavy weather.

D. Scope of Hawser. When towing, it is important to keep the ships "in step"; that is, to adjust the scope of the towline, if possible, so that the ships meet and ride over seas at the same time. If one vessel is in the trough and the other is on a crest, the towline will first slacken and then come taut with a sudden jerk, which produces a much heavier stress. When a large vessel is being towed, 200 fathoms is about the minimum distance between ships for a good shock-absorbing catenary. If a sufficiently long scope is not available, speed must be reduced. X

E. Towing Speed. In general, under normal conditions, a large vessel may be towed at from 5 to 9½ knots. A slight increase in speed may be obtained if the towed ship's screw is allowed to turn over freely (to idle).

F. Towing Ship.

1. Hold conference for all officers, boatswain and other key personnel so that all understand the entire task.
2. Prearrange communications between ships for routine and emergency orders. *THIS WILL BE SECURED TO THE MESSENGER ABOARD THE TOW.*
3. Ascertain readiness of both ships for towing.
4. Position pelican hook (if on board) on fantail near stern chock and secure with wire preventors to both port and starboard bitts. Present practice is to use a towing pad conveniently located and installed for this purpose.
5. Prepare and secure towing wire pendant or bridle properly.
6. Determine relative rate of drift of the two ships.
7. When in position, fire the line-throwing gun or, if close aboard, use a weighted heaving line. Pass messenger to the tow (usually 3 inch manila).
8. When the tow has secured its towline to the manila messenger, heave it in on the stern capstan. Shackle the towline eye to your ship's towing pad, pendant or bridle.
9. Advise bridge of readiness to proceed.
10. Pass engine orders by RPM speeds.
11. Direct towed ship, when towline is secured, to veer its towline as necessary in getting under way for length and for a good catenary.
12. Set towing watch on fantail; assign additional personnel required; and show proper towing lights at night.
13. To let go the tow, simply trip the pelican hook. The manila messenger is attached to the towline and is hauled in at the same time. Of course, the ship's stern is maneuvered as close to the tow's bow as possible to facilitate the tow's heaving in the towline.
14. Advise bridge.

G. Ship being towed.

1. Hold conference for all officers, boatswain and other key personnel so that all understand the entire task.
2. Prearrange communications between ships for emergency and routine orders.
3. Maintain, if possible, sufficient power for anchor windlass, steering engines and emergency lighting.
4. Hang off one of the anchors and break the anchor chain in preparation for towline.

5. Break out towing wire. Lead its end forward, along the side that the towing vessel will approach, in through the bow chock, and shackle it on to the anchor chain. Attach the manila messenger to the other end and lead it aft.

6. Receive heaving line from towing ship, and bend it on to the messenger. Pass the messenger and then the towline.

7. Tow veers chain to desired length and is towed by the chain on the windlass wildcat, with the windlass brake set up and stoppers or preventors secured to bitts.

8. Set towline watch; show proper lights at night.

9. To cast off; towing vessel trips the pelican hook and tow hauls in towline and messenger.

H. Salvage Operations.

Masters of ships diverted or undertaking salvage, rescue, or mercy missions shall keep their home port command fully advised regarding the situation as required by the effective revision of COMSTS INSTRUCTION 3120.2. They shall consider any danger to their ship and personnel and shall not unnecessarily endanger either. The specific course of action in each case will, of course, be governed by the circumstances, the practice of good seamanship and the master's judgment.

VI. COMMUNICATIONS AND SIGNALS. Communications by radio-telephone and/or radio, between the towing ship and the tow is essential. Under favorable conditions, power-megaphones can be used for direct communication. Signals specified in International Code of Signals (H.O. No. 87), Volume I, Appendix D, shall be used in towing operations. These signals are to be made:

By day---by a single flag, exhibited by hand or by hoisting.
By night--by flashing light. Whistle signals can also be used at night.
(Avoid confusing other ships with blinker or whistle signals).

A. Signals by Towing Ship:

<u>Flag or Blinker</u>	<u>Meaning</u>
A - - - - -	Is the towing hawser fast?
B - - - - -	Is all ready for towing?
C - - - - -	Yes (or affirmative).
D - - - - -	Shorten in the towing hawser.
E - - - - -	I am altering my course to starboard.
F - - - - -	Pay out the towing hawser.
G - - - - -	Cast off the towing hawser.
H - - - - -	I must cast off the towing hawser.
I - - - - -	I am altering my course to port.
J - - - - -	The towing hawser has parted.
K - - - - -	Shall I continue the present course?
L - - - - -	I am stopping my engines.
M - - - - -	I am keeping away before the sea.
N - - - - -	No (or negative).
O - - - - -	Man overboard.
P - - - - -	I must get shelter or anchor as soon as possible.
Q - - - - -	Shall we anchor at once?
R - - - - -	I will go slower.
S - - - - -	My engines are astern.
T - - - - -	I am increasing speed.
U - - - - -	You are standing into danger.
V - - - - -	Set sails.
W - - - - -	I am paying out the towing hawser.
X - - - - -	Get spare towing hawser ready.
Y - - - - -	I can not carry out your order.
Z - - - - -	I am commencing to tow.

B. Signals by Ship Towed:

<u>Flag or Blinker</u>	<u>MEANING</u>
A- - - - -	-Towing hawser is fast.
B- - - - -	-All is ready for towing.
C- - - - -	-Yes (or affirmative).
D- - - - -	-Shorten in the towing hawser.
E- - - - -	-Steer to starboard.
F- - - - -	-Pay out the towing hawser.
G- - - - -	-Cast off the towing hawser.
H- - - - -	-I must cast off the towing hawser.
I- - - - -	-Steer to port.
J- - - - -	-The towing hawser has parted.
K- - - - -	-Continue the present course.
L- - - - -	-Stop your engines at once.
M- - - - -	-Keep away before the sea.
N- - - - -	-No (or negative).
O- - - - -	-Man overboard.
P- - - - -	-Bring me to shelter or to an anchor as soon as possible.
Q- - - - -	-I wish to anchor at once.
R- - - - -	-Go slower.
S- - - - -	-Go astern.
T- - - - -	-Increase speed.
U- - - - -	-You are standing into danger.
V- - - - -	-I will set sails.
W- - - - -	-I am paying out the towing hawser.
X- - - - -	-Spare towing hawser is ready.
Y- - - - -	-I can not carry out your order.
Z- - - - -	-Commence towing.

NOTE: The meanings of these signals are not in all cases the same as those of the single-letter International Code signals.

C. Whistle (sound) signals can also be used during towing operations at night. They are sometimes preferable to flag or blinker signals because they can be used in fog as well as at night. Arrange between ships, in advance, regarding the signals to be used and their meanings. The following are suggested sound signals between ships towing and being towed:

<u>Whistle Blasts</u>	<u>MEANING</u>
1 short - - - - -	-I am putting my rudder right.
2 short - - - - -	-I am putting my rudder left.
2 long - - - - -	-Go ahead.
1 long, 2 short - - - - -	-Stop.
2 long, 1 short - - - - -	-All fast.
2 short, 1 long - - - - -	-Haul away.
1 short, 2 long - - - - -	-Pay out more line.
2 long, 5 short - - - - -	-Let go.
3 short - - - - -	-Avast hauling.
5 short, 5 short, 5 short - - - - -	-I am letting go (emergency)

A short blast must not exceed 2 seconds.

A long blast must not be less than 6 seconds.

NOTE: These suggested sound signals are taken from Knight's "Modern Seamanship."

VII. PRECAUTIONS.

A. If the propeller shaft(s) on the towed ship is not locked, the main engine lubricating system must be operating to prevent bearing failures when propellers start to turn.

B. An emergency may arise which may require casting off the towline immediately. Such tools as sledge hammers, axes and knives should always be on hand for emergency use.

C. When towing in freezing temperatures with ice on deck, remove ice from towing stations, if possible, and have sand available.

D. Use line-throwing gun to pass shot line where heaving lines cannot be used. On order of first officer, all hands will take cover when line-throwing gun is fired.

E. During towing, if the towline comes clear out of the water, it has an excessive strain on it and may part. All hands at towing stations should then take cover.

VIII. TRAINING. In accordance with the effective revision of COMSTS INSTRUCTION 3120.2, towing and salvage drills shall be conducted every 3 months. These will include the instruction of the crew in towing and salvage procedures and the preparation and inspection of gear for towing and salvage operations.

A. Case Studies. The best possible instruction and preparation for towing and salvage is the discussion of appropriate lessons from casualties or MSTs casualty reviews from chapters 7 & 8. The facts in each case can be reviewed up to the point where action had to be taken or the casualty occurred. Then the case should be discussed on the basis of what you would do under those circumstances. Reviewing the case as it actually occurred, the lessons to be derived can be discussed as well as preventative measures and a plan of action to cope with similar casualties.

B. Study of Procedures. Deck personnel should study the various towing procedures and techniques described in seamanship texts available in ships' training libraries so that the best method for any particular situation may be employed when necessary.

CHAPTER I

EMERGENCY BILLS

Section 1.10

3541.10

DARKEN SHIP BILL

I	Purpose	V	Emergency Procedures
II	Organization	VI	Signal
III	Responsibilities	VII	Training
IV	Condition of Readiness		

I. PURPOSE. The darken ship bill provides for securing of all outside lights and improvising to darken ship during an emergency. It designates the responsibilities and procedures for setting and maintaining darken ship condition.

II. ORGANIZATION. The following personnel are primarily concerned with setting and maintaining darken ship condition:

Master.
Damage control officer (first officer).
Chief engineer.
Zone area officers.
Deck officer on watch.
Engineering officer on watch.
Master-at-arms on watch.

III. RESPONSIBILITIES.

A. Master. The master is responsible for the planning, organization, training and setting of darken ship condition.

B. Damage Control Officer. The damage control officer will direct darkening of the ship, under the master's orders. He is responsible for the tight closing of all hatches, doors, portholes and deadlights. He shall assure that all portholes in cabins are equipped with deadlights. He will see that the appropriate lighting switches in the wheelhouse used for darkening ship are identified by appropriate labels.

C. Chief Engineer. The chief engineer shall designate the appropriate lighting switches for use in setting darken ship condition and shall familiarize all engineering watch officers with the darken ship procedures. He shall also assure that the running lights, anchor lights and breakdown lights can be energized from the emergency circuit.

D. Zone Area Officers. The zone area officers will be responsible for setting darken ship condition within their respective zones. They shall assign necessary personnel from their zones to make the proper closures. Zone area officers will inspect their zones for light-tightness immediately after darken ship condition is set. Ports, doors, hatches or other closures found to be leaking light shall be reported to the damage control officer for corrective action.

E. Deck Officer on Watch. The senior deck officer on watch shall pass the word "Prepare to darken ship" 30 minutes before sunset under emergency darken ship conditions. At sunset, he shall pass the word, "Darken ship, the smoking lamp is out on all weather decks." He shall also secure any darken ship switches located in the wheelhouse.

F. Engineering Officer on Watch. The senior engineering officer on watch shall secure all designated lighting switches, except for emergency and other authorized below-deck circuits. He shall report to the deck officer on watch when this has been accomplished.

IV. CONDITION OF READINESS.

A. Condition. Darken ship switches on the bridge and in the engineroom shall be clearly identified and labeled. Running lights, anchor lights and breakdown lights shall not be on the darken ship circuits.

B. Circuits. The material condition of readiness for darken ship will be modified "cruising" or "emergency" condition as directed by the master.

C. Classification of Darken Ship Fittings. The marking classification of darken ship fittings "D" is not presently required by COMSTS but will be required in the event of emergency wartime mobilization. At such time, masters will mark all closures used in darken ship with the black letter "D".

D. Emergency Blackout Procedure. In the event of mobilization, masters shall paint black all ports and windows not equipped with deadlights, shall designate certain doors to be used for access to and from weather decks, and shall install inside these doors canvas painted black, or other suitable blackout material.

V. PROCEDURES.

A. In Peacetime (For Drill Purposes).

1. Pass the work "Darken Ship."
2. Trip out appropriate darken ship light switches.
3. Check navigational lights and leave them in operation.
4. Zone area commanders set darken ship in their zones and report completion to the bridge.

B. In Mobilization.

1. Paint black all ports and windows not provided with deadlights and rig blackout curtains at designated entrances.
2. Thirty minutes before sunset, pass the work "darken ship."
3. Zone area commanders make closures in their zones and report to bridge when darken ship has been set.
4. At sunset, pass the word "darken ship--the smoking lamp is out on all weather decks."

5. Master-at-arms on watch will patrol the ship to assure that all doors and ports are closed and maintained light-tight, that the no smoking rule is enforced, that no flashlights are used, that the stack does not throw sparks, and that darken ship is rigidly maintained.

6. Use of navigational lights will be determined by area commands or operating forces.

VI. SIGNAL. The "darken ship" signal will be given by announcement over the PA system or by passing the word in ships not equipped with a PA system.

- * VII. TRAINING. The Master shall ensure that all hands are familiar with darken ship provisions and are prepared to carry them out when emergency situations so require. When darken ship requirements can be anticipated, darken ship drills shall be held (except for running lights) to ensure proficiency and blacking out of the ship to the extent possible.





CHAPTER I

EMERGENCY BILLS

Section 1.11

HIGHLINE TRANSFER BILL

I	PURPOSE	V	PROCEDURES
II	ORGANIZATION	VI	SIGNALS
III	RESPONSIBILITIES	VII	TRAINING
IV	CONDITION OF READINESS		

I. PURPOSE. This bill establishes a plan for preparation and rigging of the nylon highline and for communications between two ships transferring personnel and/or light freight.

II. ORGANIZATION. MSTS ships shall be organized for highline transfers as follows:

A. Bridge. Sufficient personnel shall be detailed to hoist signals, man sound-powered phones and the radio-telephone, to serve as messengers, and for other duties as directed by the Master. The most experienced helmsman shall be at the wheel.

B. Transfer Station. Sufficient men shall be provided at the transfer station on deck to tend the highline, the inhaul or outhaul lines, the sound-powered phones and distance line, the stretcher and/or chair, and to serve as signalman and line thrower. Men shall be dressed and equipped for ready identification as provided by this bill.

C. Engine Room(s). The engine room shall have an additional engineering officer (1st assistant engineer) on the platform, the most experienced throttleman at the throttle, and one qualified man in the steering engine room during transfer operations.

D. Steward Department. Steward department personnel will be assigned to assist the deck crew as directed by the First Officer.

III. RESPONSIBILITIES.

A. Master. The Master is responsible for the organization and training of the crew in highline procedures. He shall ensure that highline allowances are on board, properly marked and ready for use. He shall review this bill and section 5.1 of this Manual periodically for proper transfer procedures and latest revisions. The Master shall conn the ship during the approach for the highline transfer and throughout station-keeping, casting-off, and maneuvering-clear periods. While ship-to-ship transfers are relatively simple under favorable conditions, transfers may become difficult and dangerous during high winds, heavy seas, or freezing weather. Under such adverse conditions, the Master will exercise his good judgment in using the best transfer procedure for the particular rescue, mercy, or supply mission -- by highline if too rough for boats and if the other ship is so equipped, or by any of the other methods which good seamanship may dictate (see section 1.15, Mercy and Rescue Bill). When helicopters are available they should be used to the maximum extent possible.

B. First Officer. The First Officer, under the Master, is in general charge of the crew on deck at the transfer station. He is responsible for training all personnel involved in highline transfer operations. He shall inspect all highline transfer equipment periodically to assure its proper marking and readiness for use. He shall familiarize himself with all provisions of this bill

and section 5.1 of this Manual, including latest revisions. He is responsible for the preparation, rigging and readiness of all highline equipment.

C. Chief Engineer. The Chief Engineer will assure the proper performance of the engineering plant and auxiliaries during highline transfers. He shall assign an additional engineer in each engine room and a qualified crewman in the steering engine room during the approach, station-keeping and maneuvering-clear periods. He shall ensure the proper operation of the electric portable megaphone, sound-powered telephones, and all lighting for night transfers.

D. COMILDEPT. The COMILDEPT will clear troops and passengers from the transfer station and from other areas as directed by the Master. When patients are transferred, the medical officer will prepare or receive the patient(s) and provide the necessary corpsmen and medical facilities.

E. Chief Steward. The Chief Steward will assign appropriate steward department personnel to training in highline transfer procedures and to assist in transfer operations as requested by the First Officer.

F. Senior Radio Officer. The Senior Radio Officer will test and operate the radio-telephone and will establish contact with the other ship when directed by the Master. He shall man the radio-telephone throughout the operation as directed by the Master.

G. Second Officer. The Second Officer shall break out this bill, section 5.1 of this Manual, and NWP 38(A) for ready reference; he shall ready the required signal flags, and shall make the appropriate signals as directed by the Master. He or another deck officer shall check the ship's course and speed as directed by the Master.

IV. CONDITION OF READINESS. In ships preparing to engage in a highline transfer with another ship, "cruising" condition shall be set and maintained throughout the approach, station-keeping, and maneuvering-clear periods.

- * V. PROCEDURES. Deck personnel should study applicable provisions of this bill and section 5.1 of this Manual for detailed information on highline transfer procedures. Highline transfer allowances are listed in Part II, Group S27-4. While three-inch manila (350 feet) was formerly used as the highline, three-inch nylon is now authorized, providing greater strength, increased safety, and longer use. However, it should be noted that nylon, being more elastic than manila, tends to have more "bounce" and that new nylon is "slick" and requires more care in handling until it has been worn in. Current manila highlines may be continued in use until replacement is necessary, when nylon will be substituted. Highline equipment will be maintained ready for immediate use. All padeyes, links, pelican hooks, blocks, and the bridle will be painted white for ready identification. MSTS ships may serve as either the delivering or receiving ship and should be prepared to furnish the transfer gear as delivering ship.

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A. Preparation by Delivering Ship.

1. Break out highline gear and ready it for use on the appropriate side. See that all lines are faked down and clear for running. Provide the transfer station with the tools required for emergency breakaway, rigging, and unrigging.
2. Rig groups of three fenders each, suspended from the deck by vertical lines and held in place by fore-and-aft preventers.
3. Detail men to tend the highline, inhaul line and sound-powered phones.
4. Test line-throwing gun. Use only the shoulder .45 caliber gun with bouyant, illuminated projectiles.
5. Test sound-powered phones.

6. Test and ready electric portable megaphone for use on the bridge.
7. Rig station marker on the rail or at another appropriate location. This marker is a three-foot square green bunting by day, or a red light station marker box by night.
8. Equip the line thrower with a highly visible red life jacket (or shirt) and red helmet, and all other personnel (except the signalman) with orange life jackets.
9. Equip the signalman with a light green jacket (or shirt) and green helmet.
10. Rig portable sound-powered phones from transfer station to the other ship's corresponding station, and from your ship's transfer station to the bridge. *
11. **Rig snatch blocks to provide a direct lead for the inhaul line.** Ch#8
B. Preparation by Receiving Ship.
 1. Detail men to receive the messenger line as well as each of the lines attached to the bridle:
 - a. The three-inch nylon highline with 5/8" (or up to 1") shackle. *
 - b. The outhaul line.
 - c. The distance line with attached sound-powered phone cable. The men tending the distance line must haul it on board, keep it taut, and must not hold the bitter end. The "zero" end is secured to the rail of the delivering ship; the distance apart is read at the rail of the receiving ship. Rig the distance line with markings as indicated in section 5.1 of this Manual.
 - d. When receiving from a commissioned ship, be prepared to receive an additional bridge-to-bridge phone line, generally as the phone distance line combination. This extra phone is generally used during fueling operations, usually not during highline transfers. *
 2. Equip the signalman with a light green jacket (or shirt) and green helmet.
 3. Other topside personnel exposed in the vicinity of the transfer station shall wear orange life jackets and helmets.
 4. Clear the working deck area of all unassigned personnel.
 5. Test sound-powered phones.
 6. Test and ready electric portable megaphone for use on the bridge.
 7. Rig station marker on the rail or at another appropriate location. This marker is a three-foot square green bunting by day, or a red light station marker box by night.
 8. Rig portable sound-powered phones from transfer station to the other ship's corresponding station, and from your ship's transfer station to the bridge. *
 9. Rig snatch blocks to provide a direct lead for the ^{out}haul line. Ch#8
 10. Provide the transfer station with the tools required for emergency breakaway, rigging and unrigging. *
- C. Maneuvering.
 1. Course and speed are selected in relation to wind and sea. It is generally advisable to maintain a cruising speed of at least eight knots since *

steering control is difficult below this speed. Change in speed while on station should be made by number of revolutions.

- * 2. A distance of 60 to 80 feet between ships should be maintained during station-keeping, depending upon wind and sea conditions. Large ships may open to 120 feet.

- a. When steady on course and speed, the delivering ship (or the receiving ship when the delivering ship makes the approach) hoists signal flag ROMEO at the dip on the side her transfer gear is rigged. When ready for the approach, ROMEO is hoisted close-up.

- b. The receiving ship, having taken station 300 to 500 yards on the other ship's quarter, will hoist ROMEO at the dip on the side her gear is rigged when ready to come alongside. She will hoist ROMEO close-up after the delivering ship's ROMEO is close-up and when commencing her approach.

- c. As soon as the first line has been received, both ships haul ROMEO down.

- *
 - d. If the transfer involves light freight only, YANKEE is used instead of ROMEO.

D. Transfer Procedures. Transfer procedures will be as indicated in section 5.1. These procedures have been summarized from NWP-38(A), which may be consulted for more detailed instructions in unusual circumstances or for fueling-at-sea procedures not covered herein.

VI. SIGNALS. Communication between ships will be established by radio-telephone and the signal flag ROMEO will be used as described above. Electric portable megaphones may be used for emergency communication. After the distance line and phones are passed, signals between ships will be given via sound-powered phones, paralleled by hand-flag or light signals. The following equipment for hand and light signaling will be used:

- A. By day, the signalman will use colored flags or paddles.

- B. At night, the signalman uses red, green, and amber flashlights or wands. (See Replenishment Operation Signals in section 5.1.).

- C. All communications and signals to be used in highline transfer operations are explained in section 5.1 of this Manual. These include sound-powered phones, electric megaphones, visual flag hoist signals, hand and light signals, and emergency breakaway signals.

- D. It is a good idea to reproduce these signals on a convenient board for ready reference and to mark the hand and light signals on the back of the signal paddles.

VII. TRAINING. All personnel engaged in the highline transfer operation shall be instructed and drilled in their duties. As required by the effective revision of COMSTS INSTRUCTION P3120.2, highline dummy practice drills will be conducted quarterly and a highline transfer drill will be included in annual Phase III damage control exercises. If an assisting ship is not available, a dry-run will be held with the transfer gear rigged on the foredeck. Since the highline is used frequently in rescue and mercy missions, and must be ready for transfer-at-sea operations, it is important that the gear be ready for immediate use and that personnel be well trained in transfer procedures. This can only be done by instructing all hands in the overall transfer operation and in their particular duties, and then by checking them and the readiness of the transfer gear during a practical "dry-run" transfer with the gear rigged on the foredeck.



CHAPTER I

EMERGENCY BILLS

Section 1.12

COMMUNICATIONS BILL

I	Purpose	IV	Procedure
II	Organization	V	Training
III	Responsibilities		

I. PURPOSE. This communications bill establishes a plan for effective communication during drills and in emergencies.

II. ORGANIZATION. Personnel primarily concerned with emergency communications are:

Master.
First officer (damage control officer).
Senior deck watch officer.
Senior engineering watch officer.
Senior radio officer.
Telephone talkers--as provided in ship's station bill.

III. RESPONSIBILITIES.

A. Master. The master shall assure the testing and satisfactory operation of all means of communication leading to the bridge.

B. Damage Control Officer. The damage control officer, the first officer, shall direct the use of all means of communication during drills and in emergencies (except that the master shall direct the use of radio for distress messages). The first officer shall control the sound-powered damage control circuit and shall see that telephone discipline is maintained during drills and in emergencies. He will train telephone talkers in accordance with BUSHIPS Manual, Chapter 88, Section II, Part 8. The damage control officer is also responsible for equipping and training deck personnel in the use of signal flags, blinker, semaphore, sound and other signals.

C. Chief Engineer. The chief engineer is responsible for the efficient operation and maintenance of the following communication systems:

1. Sound-powered and ship's service telephones.
2. Public announcing (PA) system.

3. Ship's general alarm system.
4. Ship's whistle and its remote controls.
5. Emergency talk-back system.

D. Senior Radio Officer. The senior radio officer will maintain radio and radio-telephone equipment in good operating condition and shall transmit communications to other ships and stations as directed by the master. He shall advise the master immediately of all pertinent messages received during emergencies. In ships with but one radio officer, the first officer shall familiarize himself with the radio equipment and operating instructions to a sufficient degree to enable him to operate the transmitter in an emergency when the radio officer is incapacitated.

IV. PROCEDURES. The following procedures apply to communications during drills and in emergencies:

A. Radio and Radio-telephone. The senior radio officer will standby in the radio room to receive or to transmit messages as directed by the master. The senior radio officer shall assure the readiness of radio equipment during emergencies, including the radio transmitter in the motorboat and the portable lifeboat radio.

B. Emergency Signals and Communication Procedures. The signals used to call all-hands to emergency stations are listed in standard station bills and in individual emergency bills. Most general emergencies will be announced by the fire, collision, and ABC defense signal. This is the steady ringing of the general alarm bells and rapid ringing of the ship's bell for at least 10 seconds followed by appropriate announcement on the PA system. In ships not equipped with a PA system, the information will be relayed by the ship's officers and crew members. For ABC defense, the general alarm signal is followed by short and long rings (A) on the general alarm bells for another 10 seconds. Supplementary PA announcements are made in ships so equipped. Other emergency signals are concerned primarily with handling boats; these signals are spelled out in other instructions and bills and are well understood. For limited casualties, such as engineering casualties, the word will be passed on the PA system, by telephone, voice tube, or by messenger. Generally, use of ship's whistle and the general alarm bells for announcing emergencies will be restricted to major casualties in order to avoid confusing other ships or alarming passengers.

1. Ship's crew, on reporting to their assigned emergency stations as indicated in the ship's station bill, shall make appropriate reports to damage control central, using installed sound-powered phone circuits, or by messenger. The advantage of the sound-powered phone circuit is its independence from all shipboard sources of power.



2. Communication between repair parties, damage control central, and zone areas shall be maintained over the built-in, sound-powered phone circuit, emergency portable leads fitted with headsets and should-powered phone jacks, by messengers, loudspeaker (PA) system, by voice tube systems where installed, and supplemented by the ship's service telephone system, where necessary and appropriate.
 3. Communication from boat stations to the bridge shall be over the emergency talk-back speakers of the PA system, where so equipped.
 4. During drills and emergencies, passengers shall not be alarmed and shall be kept fully informed over the PA system or otherwise advised. In drills, the drill should be preceded by an announcement over the PA system that it is a drill. In cases of actual emergencies, announcement should be made to the effect that it is not a drill but is an actual emergency. Passengers shall be instructed and advised regarding the status of the emergency situations.
 5. Dismissal from any or all drills is indicated by three short blasts on the ship's whistle and three short rings on the general alarm bells, followed by PA announcement in ships so equipped.
 6. All other means of communication and signaling will be used as appropriate. These include: Radio, radio-telephone, signal flags, signal lights, blinker light, whistle, signal flares (distress signals), power megaphone, and semaphore.
 7. In event of abandon ship, provision shall be made for the destruction or disposal overboard in weighted bags of all classified material.
- V. TRAINING. The master shall assure that all appropriate deck personnel are thoroughly familiar with all means of communication and signaling methods; with the use of communications and signaling in emergencies as specified in emergency bills; and that they are profully utilize indicated signaling and communication methods.

