

CHAPTER 7 EMERGENCY AND DAMAGE CONTROL

Section I FIREFIGHTING

7-1. GENERAL.

This chapter contains information on emergency and damage control procedures including fire extinguishing systems and their operation, breathing apparatus and its operation, fire fighting recommendations, life saving equipment and damage control data. Action to be taken in rough weather or abandon ship conditions shall be determined by the commanding officer.

7-2. FIRE FIGHTING RECOMMENDATIONS.

A definite fire fighting plan should be established that is general in nature but assigns specific tasks to all personnel. Each member of the crew should be familiar with the locations of all fire extinguishers, as well as fire stations and fire axes.

1. Familiarize each crew member in the locations of emergency fuel shutoff T-handles so that in case of fire fuel shutoff will be accomplished immediately to prevent further damage to the craft.
2. All crew members should be trained in the use and operation of fire extinguishers, PE-250 fire pump and fire stations.
3. All personnel should be made aware of hatches, scuttles and passageways which would lead them out of damaged areas or allow them access to areas for fire fighting duty.

7-3. PORTABLE FIRE EXTINGUISHERS.

Two types portable fire extinguishers and foam liquid cases are installed on the craft for use on specific types of fires.

7-3.1. CARBON DIOXIDE EXTINGUISHERS.

Carbon dioxide extinguishers are installed where necessary for extinguishing flammable liquid fires, fires in electrical equipment and other fires by smothering. Extinguishers are installed so that fires in the compartment will not render the extinguishers inaccessible. The extinguishers are hung in the brackets with quick-release wire straps and are installed in the following locations:

1. In the passageway on the main deck, outside the washroom.
2. In the mess/lounge aft of frame 12.
3. In the engine room aft of frame 16, port side.
4. In the engine room aft of frame 20, port side of centerline.
5. In the engine room on frame 18, starboard side.
6. In the passageway on the bulkhead outside of the observer's berthing.

7-3.2. POTASSIUM BICARBONATE EXTINGUISHERS. Twenty pound potassium bicarbonate fire extinguishers are installed to extinguish fires of flammable and combustible liquids, oils, grease or flammable gases. The extinguishers are located as follows:

1. Two at frame 15 port and starboard on the main deck.
2. In the galley aft of frame 10.
3. In the C.O. and C.P.O. staterooms aft of frame 6.
4. In the engine room forward of frame 23, port side of centerline.
5. In the engine room at frame 18, centerline.
6. In the observer's berthing space forward of frame 10.
7. In the crew berthing space port side at frame 9-1/2.

7-3.3. FOAM EXTINGUISHERS. For foam extinguishing of machinery fires, a inline foam inductor with pickup tube is provided at each fire station. A mechanical foam nozzle with pickup tube is located in the pump room. Storage of 5-gallon cans of foam liquid are located as follows:

1. Aft of frame 10, bridge deck (3 cans).
2. Frame 4-1/2, main deck, port side (3 cans).
3. Frame 15, main deck, port side (3 cans).
4. Forward of frame 16, port side of pump room (2 cans).
5. Frame 14, starboard side of pump room (2 cans).
6. Frame 10, port side of first platform passageway (3 cans).
7. Aft of frame 20, port and starboard side of engine room (3 cans total).

7-4. FIRE EXTINGUISHER OPERATING PROCEDURES.

The standard carbon dioxide extinguishers have a squeeze-grip type release valve. The dry chemical extinguisher has a push-on lever and a squeeze nozzle. To operate the fire extinguishers, proceed as follows:

1. Carry the extinguisher in an upright position and approach the fire as closely as heat permits.
2. Remove the locking pin from the valve.
3. Grasp the horn handle or nozzle.
4. Squeeze the release lever on the CO₂ extinguisher. On dry chemical extinguishers, push the release lever and squeeze the nozzle.
5. Always direct the discharge at the base of the fire.
6. Release lever or nozzle to discontinue discharge as soon as conditions permit. Continue to open and close the valve as necessary until the fire is extinguished.

- When fire fighting in electrical equipment or on a bulkhead, direct the carbon dioxide at the bottom of the flaming area. Slowly move the horn from side to side and follow the flames upward as they recede.

WARNING

Carbon dioxide is dangerous to life and causes suffocation. Always wear oxygen breathing apparatus when entering a compartment that contains a dangerous concentration of carbon dioxide or any other harmful gas.

7-5. BREATHING APPARATUS.

The oxygen breathing apparatus should be used by personnel whenever it is necessary to enter space where air is contaminated by carbon dioxide or other fumes. The breathing apparatus is stowed in a locker in the mess/lounge at frame 13-1/2 port side.

WARNING

Since the Type A-1, A-2 and A-3 oxygen breathing apparatus are not exactly alike, the firefighter is cautioned to understand the construction differences, principles of operation, method of use, and limitations. Under normal conditions the wearer of the Type A-1 and A-3 oxygen breathing apparatus will return to fresh air at the end of 45 minutes to effect the necessary change of canisters.

7-5.1. FACEPIECE ADJUSTMENT. To obtain a firm and comfortable fit against the face at all points, adjust the head straps as follows:

- See that straps lie flat against head.
- Tighten lower or neck straps.
- Tighten the side straps. (Do not touch forehead or front straps.)
- Place both hands on head harness pad and push it toward the neck.
- Repeat operations 2 and 3.
- Tighten forehead or front straps.
- Test for tightness of facepiece by squeezing both breathing tube and inhaling gently. The facepiece must collapse against the face or be readjusted until it does.

CAUTION

Do not attempt to use any type facepiece with this apparatus other than the one furnished with the apparatus.

WARNING

Soap and water only are to be used in cleaning the face mask, **DO NOT USE ALCOHOL.** Alcohol will lie in the lower part of the set and cause a dangerous gas to form when the canister is punctured. **DO NOT GREASE OR OIL ANY PART OF THE APPARATUS.**

7-5.2. STARTING PROCEDURES. As explained in Buships Manual, Chapter 93, Art. 93-409, oxygen is provided the wearer as a result of a reaction between the chemical in the canister and the moisture and carbon dioxide in the exhaled breath. After the facepiece has been adjusted and checked for an airtight fit, start the chemical reaction in the canister by the following method:

7-5.2.1. Standard Canister (Normal Temperature). While starting the standard canister, the wearer breathes the 21-per cent oxygen in air. Bodily requirements would soon deplete this supply of oxygen from the air contained in the breathing bags, and it, therefore, must be changed to maintain an adequate oxygen content until the oxygen producing reaction starts in the canister.

- Grasp both breathing tubes with one hand, squeeze tightly, depress starter valve and inhale deeply, release starter valve and tubes and then exhale into apparatus.
- Repeat this procedure until breathing bags are fully inflated. (Usually 3 or 4 breaths.)
- Depress starter valve and deflate breathing bags with arms.
- Repeat 1, 2, and 3 until bottom of canister feels warm, then repeat 1 and 2 and proceed with work to be done.

7-5.2.2. Quick Starting Canister. The firing of a chlorate candle in the quick-starting canister provides an immediate supply of pure oxygen. This is sufficient to last until the reaction starts in the canister, except under unusual circumstances, such as extreme cold. Starting instructions are, therefore, different for normal temperatures 50°F. and above and cold temperatures below 50°F.

- Pull lanyard with steady pull away from body, removing cotter pin from uncovered chlorate candle.
- Starting of the candle may be accompanied by a slight amount of harmless smoke. The breathing bag will be inflated with oxygen and the wearer may proceed with work to be done.
- Vent as necessary by depressing starter valve to prevent over-inflation of breathing bags during time (2 to 4 minutes) chlorate candle is burning.

WARNING

The bottom of the canister will be HOT, DO NOT TOUCH WITH HANDS. Manual check of canister is not necessary.

NOTE

For starting procedure for cold temperatures, see Buships Manual, Chapter 93, Article 93-415-B.

WARNING

Used canister is very hot. DO NOT handle without suitable protection for hands. DO NOT allow any liquid, especially oil, grease or gasoline, etc., to enter opening of used canister and do not hold face over canister opening. Should the canister be opened, do not handle chemical without suitable care and protection to hands and body, as chemical is caustic, injurious to the skin, and should not be permitted to come in contact with the person. Do not allow unexpended or expended chemicals to spill on deck. If accidentally spilled, clean up immediately and dump overboard using a metal or nonflammable material for scoop. This chemical, due to the large percentage of oxygen it contains, will cause combustion of any flammable materials with which it is brought into direct contact, especially if such materials are moist. Expended canisters should be dumped overboard after several holes have been punched in the bottom with a clean tool.

WARNING

Oil, gasoline or similar materials coming in contact with the chemical in either the expended or the unexpended canisters, may cause an explosion.

WARNING

Canisters should not be dumped overboard where there is an oil slick present on the water. Disposal overboard should not be made until the ship is underway. Do not throw spent canisters in bilges of any space which may contain oil or oil and water.

7-5.3. STANDARD SIGNALING METHODS. The following information has been extracted for Bureau of Ships Manual, Art. 88-845. The use, care and maintenance of oxygen breathing apparatus should be

stressed in the training of all personnel. All repair party personnel should adhere closely to the instructions as set forth in Chapter 93, Bureau of Ships Manual. The tenders should be trained to work with the wearer, using the same signals as are used by divers, and listed below (Ch. 94, Bureau of Ships Manual). Signals to be used with diving equipment, airline masks, and oxygen breathing apparatus are listed below:

7-5.3.1. Signals From Breatherman.

1 pull —	I am all right.
2 pulls —	Lower or give me slack.
3 pulls —	I am coming up.
4 pulls —	Haul me up.
5 pulls —	Send me a rope.
2-1 pulls —	I understand, or answer telephone.
3-2 pulls —	More air.
4-3 pulls —	Less air.
2-2-2 pulls —	Diver (Breatherman) is fouled, send assistance.

7-5.3.2. Signals From Tender.

1 pull —	Are you all right? When diver (Breatherman) is ascending, stop.
2 pulls —	You have come up too far, go down until I stop you.
3 pulls —	Stand by to come up.
4 pulls —	Come up.
2-1 pulls —	I understand you, or answer the telephone.
4-4-4 pulls —	The emergency signal.

7-6. EMERGENCY FIRE PUMP.

The emergency fire pump is a self-contained, gasoline engine driven, portable fire pump. The pump is located on the main deck at frame 15 port side. The purpose of the pump is to draw water from the sea, or other sources and pump it through suitable hoses and nozzles under pressure to combat fire. The pump can also be used for large volume pumping at low pressure. Pump accessories are stowed aft of frame 14-1/2 on the main deck. The suction and exhaust hoses for the PE-250 fire pump are stowed on hooks attached to the outside of the handrails on the bridge deck. For operation, maintenance and repair instructions on the fire pump, refer to onboard Technical Service Manual NAVSEA 0947-LP-238-5010.

7-7. FIRE AXES.

Fire axes are provided for use during fires or for damage control. One axe is located in the mess/lounge space between frames 8 and 9 on the forward bulkhead. The other axe is located in the passageway between frames 9 and 10 next to the crew berthing area. Brackets are installed on the bulkheads to hold the axes in position, but allow easy access during an emergency.

7-8. HALON EXTINGUISHING SYSTEM.

The Halon extinguishing system is installed in the engine room and can be activated automatically or manually from the control panel in the pilothouse (Figure 7-1) and manually at two breakglass stations or T-handles (Figure 7-2). The two breakglass stations are installed on the main deck frame 14, centerline. When the glass is broken, the station switch activates to release halon in the engine

room and also start the warning horn. The manual release T-handles, which function in the same way, are located at the top of the inclined ladder in the pump room.

Refer to onboard Technical Service Manual S9555-BH-MMC-010 for complete details of the Halon extinguishing system. See Figure 2-18 for Halon system diagram.

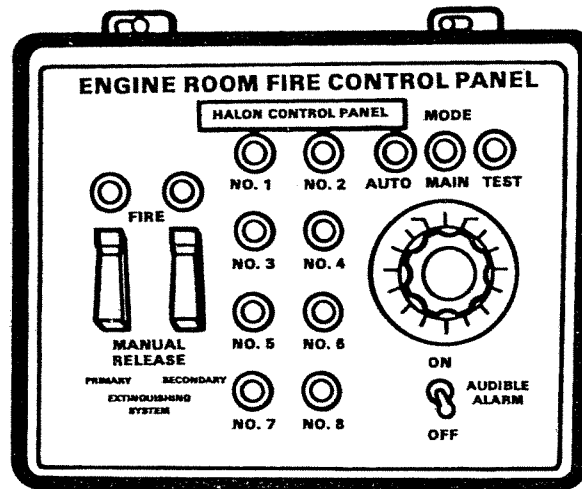


Figure 7-1. Engine Room Fire Control (Halon) Panel (Pilothouse, Frame 7-1/2, Port)

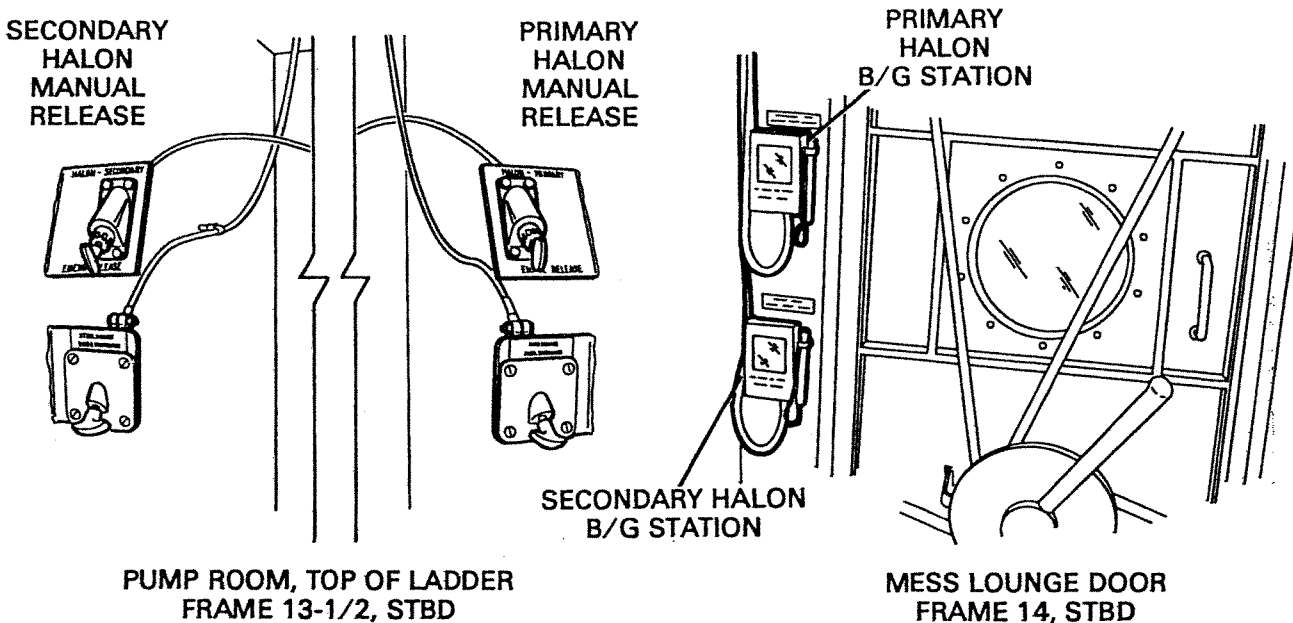


Figure 7-2. Halon Break Glass Stations and T-Handles

7-8.1. CONTROL PANEL - AUTO OPERATION. The control panel in the pilothouse has mode indicator lights which light to show the system mode. Mode switch must be in AUTO position for the system to respond automatically to a fire. When Halon is released from one of the primary or secondary cylinders, the indicator light for that cylinder will go on to show agent discharge. When a cylinder is discharged, an audible alarm will sound in the pilothouse and the engine room. This alarm warns all personnel in the engine room to evacuate immediately.

7-8.2. CONTROL PANEL - MANUAL OPERATION. Manual release of Halon from the panel will be possible only when mode switch is in manual position. The input signal from the flame detectors will light a red FIRE indicator lamp on the control panel. The switches below the FIRE lights are guarded and guards must be lifted to expose switch. Pressing one switch on the panel will activate a primary cylinder and pressing the other will activate the secondary cylinder. The cylinder light to the cylinder that is discharging will light. The audible warning will sound in the engine room and the pilothouse to warn personnel that halon is being discharged.

NOTE

The control panel can be used to check the system by turning the mode switch to "TEST." The test switch is then turned to each detector number to verify system integrity and operation of detection components.

7-9. GALLEY FIRE EXTINGUISHING SYSTEM.

The galley fire extinguishing system (Figure 3-22) is an automatic mechanical unit. To function properly the unit requires no outside power, although the galley exhaust fan does assist in movement of the dry chemical through the system.

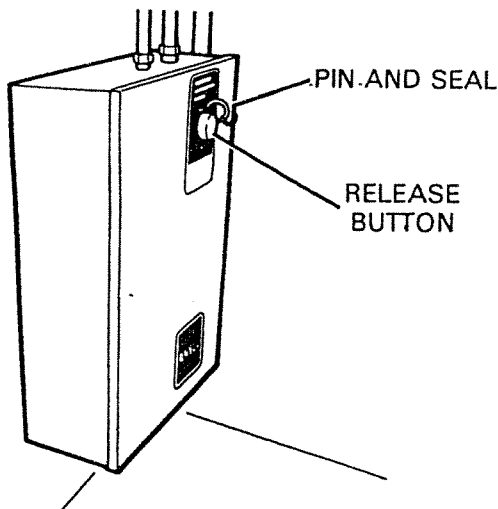


Figure 7-3. Galley Fire Suppression Release (Galley, Frame 10)

7-9.1. OPERATION.

1. A 360° fusible link and detector is installed behind the exhaust hood filters to detect fire on the range or in the hood. Upon separation of the fusible link due to extreme temperature, tension on the wire rope is relaxed allowing the cartridge to activate the flow of dry chemical to the nozzles in the range area. Nozzles are located in the plenum, the duct and at the top of the range.
2. Dry chemical will flood the plenum area, the duct and filter area and the range top. The sodium bicarbonate reacts with the grease in these areas to form a soap foam, which suppresses the fire and helps to prevent any combustible vapors from escaping.
3. If fire at the range does not activate the system, a manual release is provided at the release enclosure. To activate manually, remove ring pin and seal and push strike button (Figures 7-3 and 7-4).

WARNING

If manual activation is necessary, immediate repair procedures must be performed to correct the malfunction.

7-9.2. MAINTENANCE. The system is tested at installation and the strike button secured with a ring pin and a lead and wire seal. The dates of installation and any additional maintenance service are recorded on the inside of the release box cover. Refer to onboard Technical Service Manual for complete details on the system.

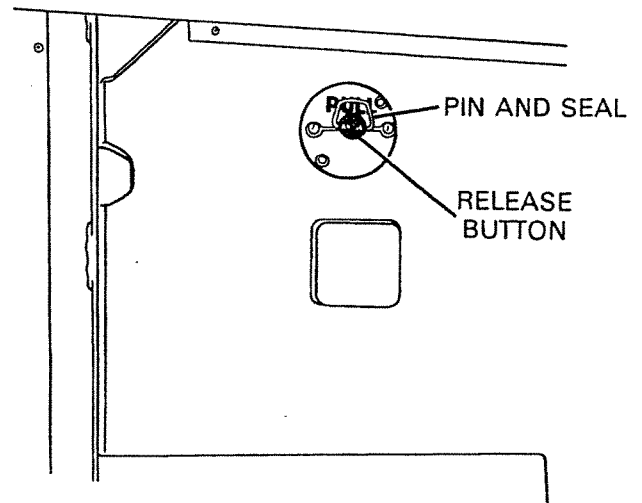


Figure 7-4. Galley Fire Suppression Release (Mess/Lounge, Frame 11)

Section II LIFESAVING

7-10. LIFESAVING EQUIPMENT.

7-10.1. LIFE PRESERVERS AND RING BUOYS. A total of 19 U.S. Coast Guard approved life preservers are stowed in the life preserver locker located on the main deck port side of centerline at frame 15. Each life preserver is equipped with a personnell light and a whistle. Six 30-inch ring buoys are provided on the craft as follows:

1. On the transom starboard side of centerline.
2. Between frames 23 and 24 port and starboard, main deck.
3. Starboard side of deckhouse at frame 6 (equipped with waterlight).
4. Port side of deckhouse at frame 8 (equipped with waterlight).
5. Front of deckhouse forward of frame 5 (equipped with waterlight).

7-10.2. LIFE RAFTS. Two fifteen-man compressed air inflatable life rafts are stowed and secured to the bridge deck between frames 11 and 12 port and starboard. The life rafts are secured to steel racks with special quick-release devices which allow the raft to fall clear of the main deck when released (Figure 7-5).

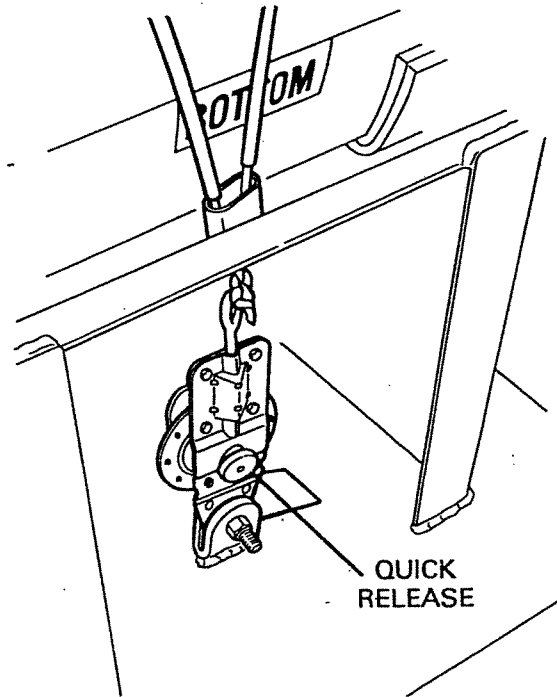


Figure 7-5. Life Raft Release

Section III DAMAGE CONTROL

7-11. DAMAGE CONTROL DATA.

7-11.1. FLOODING. The TWR was built to be able to survive the total flooding of any one main watertight compartment. These compartments include the following:

1. Fore peak tank, bosun's stores, bow thruster space.
2. Forward crew's quarters.
3. Pump room.
4. Engine room.
5. Lazarette.

The vessel is able to survive the flooding of any one compartment only if the draft is less than the limiting draft and if the watertight doors below the main deck are closed. The vessel should never be loaded to a draft greater than the limiting draft. The watertight doors below the main deck should be closed at all times while the ship is under way except as allowed on the applicable compartment damage control checkoff list plates.

7-11.2. CHECKOFF LISTS. Damage control checkoff list plates are mounted in or adjacent to compartments or numbered spaces on the craft. Each plate lists the compartment or space number and name at the top of the plate. The body of the plate contains information on item numbers, fittings, fitting number, location and purpose, and classification, if applicable. In order to use the compartmentation to its maximum advantage, and to provide for maximum preparedness, all tight doors, hatches, scuttles, accesses, valves, and fittings having damage control value are classified and marked. The markings correspond to the material condition of readiness of the ship. All ships have three conditions of readiness. These conditions are the number of progressive steps required to achieve maximum protection for the ship and its personnel against the spread of fire, flooding, smoke, dangerous fumes, gases, and the effects of nuclear, biological and chemical agents.

7-11.3. MATERIAL READINESS DESIGNATIONS. The three conditions of material readiness are described below. The setting of material conditions is accomplished

by referring to the compartment checkoff lists. Three additional designations found on the checkoff lists are also listed below.

X (XRAY) —

This condition provides least protection and is set when the vessel is in port. A black X is placed on all fittings which must be closed when not in actual operation.

Y (YOKE) —

This condition is set and maintained at sea. A black Y is placed on all fittings which must be closed at sea.

Z (ZEBRA) —

This condition provides the maximum protection for ship and personnel for battle and emergency situations, such as fire, collision, or General Quarters. A red Z is placed on all fittings which must be closed for emergency conditions.

The classification W (WILLIAM) in itself is not a material condition of readiness. Fittings marked with the letter W are certain fittings which serve vital systems such as cooling water, ventilation and fire main systems which must be open and operating at all times. They are closed only to prevent the spread of damage.

7-11.4. SPECIAL CLASSIFICATIONS.

- Ⓚ This classification is indicated by a black letter within a black circle. The classification indicates fittings which may be opened without special permission, as required in routine inspection checks. The fittings must be secured immediately after use.
- Ⓛ This classification is indicated by a red letter within a red circle. This classification indicates that the fittings may be opened by permission of the Commanding Officer for health and comfort of the crew during prolonged periods. However, they must be guarded for immediate closure if necessary.
- Ⓜ This classification is indicated by a black letter within a black circle and shows fittings that are normally open and operating. The fittings are closed only to prevent the spread of damage.

