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TAMU-H-06-001 C3

Drill Guide Manual

F/V _____



This guide has been developed to assist commercial fishermen in conducting the monthly emergency drills required by 46 CFR 28.270 (c).

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**Developed to assist commercial fishermen in conducting monthly
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TAMU-SG-06-501
February 2006



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Distribution restricted to attendees at safety training course. For further information, contact:

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FOREWORD

Welcome!

This manual is directed toward the individual who may travel on or over water as part of his or her work assignment or for pleasure. It is difficult to believe that the information and skills you receive today may one day prove to be the deciding factor in a life-threatening emergency.

The lack of current survival training may have contributed to many needless fatalities. It is with this thought in mind that this training manual and program have been prepared. The survival techniques learned today are internationally recognized procedures. However, they are not the only methods to accomplish a certain survival task. Hopefully, you will never need this training, but, if the occasion ever arises, you can be assured that you have prepared yourself and prepared well.

Many of the skills learned in the program can be taught to your family. By doing this, you can continue to practice these skills learned today. Most drowning occurs within 10 feet of a place of safety (dock, boat, etc.), indicating a need to develop self-help skills.

A little preparation, sound judgment and some knowledge can improve your chances of surviving an emergency. It is the trained person who will have the distinct advantage over the untrained individual.

REMEMBER: Knowledge is one of the most important elements in any emergency.

Take the time to prepare!!!

Introduction

Commercial fishing is a hazardous occupation, according to recent U.S. Coast Guard fishing vessel casualty statistics, and the industry trend shows no signs of improvement. Based on an analysis of the annual death rate per 100,000 fishermen, the U.S. commercial fishing industry has an annual death rate seven times greater than the national average for all types of U.S. industry groups. Statistically, it is the most dangerous industry based on this data.

Faced with economic and competitive pressures, fishermen are prone to take calculated risk. In view of the liabilities that confront the vessel operator today, however, careful risk management is crucial for business success, not to mention survival.

Analyses of casualty investigations indicate HUMAN ERROR as the major contributing factor in most fishing vessel accidents. The human element most commonly attributed to these casualties is a lack of technical knowledge in vessel operations not related to actually catching fish.

Poor watchkeeping practices, navigational errors, rules of the road violations and lack of understanding of vessel stability are common causes of vessel accidents. Another cause is material failure resulting in vessel fire or explosion. A greater awareness of the importance of maintaining a vessel and its equipment may have averted some of these casualties.

It is not possible to remove all dangers of fishing, and human error cannot be entirely eliminated, but we can reduce the chances of accidents by altering the behavior of the captain and crew toward greater safety awareness. While each member of the crew is responsible for his own safety, the captain is ultimately responsible for the safe operation of the vessel and its equipment and for the safety of everyone on board. The vessel is only as safe as the people who own and operate it.

In the wake of a casualty, the words "if only" are often heard. While it isn't possible to change things after the fact, it is possible to prevent most accidents if safety principles are constantly observed. Safety is everyone's responsibility.

Good seamanship is simply thinking ahead. No one is ever 100 percent ready, but it is the captain's responsibility to ensure that the vessel and crew are as prepared as possible for the ever-present possibility of an accident or emergency. Selection of the crew is very important. Once you have chosen the crew, each member must be given the necessary training and supervision to enable him to do his job safely.

Why Conduct Emergency Drills

Goals of Drills

- Teach crew emergency tasks
- Test and review crews abilities
- Develop crew confidence
- Improve crew quality
- Equipment familiarization
- Recognize personal limitations
- Emphasize accident prevention

§ 28.265 Emergency Instruction

- a. Except as provided in paragraphs (b) and (c) of this section, each vessel must have emergency instructions posted in conspicuous locations accessible to the crew.
- b. The instructions identified in paragraphs (d)(6), (d)(7), (d)(8), and (d)(9) of this section, may be kept readily available as an alternative to posting.
- c. On a vessel that operates with less than 4 individuals on board, the emergency instructions may be kept readily available as an alternative to posting.
- d. The emergency instructions required by this section must identify at least the following information, as appropriate for the vessel:
 1. The survival craft embarkation stations aboard the vessel and the survival craft to which each individual is assigned;
 2. The fire and emergency signal and abandon ship signal;
 3. If immersion suits are provided, the location of the suits and illustrated instructions on the method of donning the suits;
 4. Procedures for making a distress call, such as:
 - i. Make sure your communication equipment is on.
 - ii. Select 156.8 MHz (VHF channel 16), 2182 kHz, or other distress frequency used in your area of operation. Note: VHF channel 16 and 2182 kHz on SSB is for emergency and calling purposes only.
 - iii. Press microphone button and speaking slowly - clearly - calmly say: "Mayday - Mayday - Mayday."
 - iv. Say—"This is the M/V (insert name of your vessel), (insert name of your vessel), (insert name of your vessel), Over."
 - v. Release the microphone button briefly and listen for acknowledgment. If no one answers, repeat steps in paragraphs (d)(4) (iii) and (iv) of this section.
 - vi. If there is still no answer, or if the Coast Guard or another vessel responds, say: "Mayday - This is the M/V (insert name of your vessel)."
 - vii. Describe your position using latitude and longitude coordinates, LORAN coordinate, or range and bearing from a known point.
 - viii. State the nature of the distress.
 - ix. Give number of individuals aboard and the nature of any injuries.

- x. Estimate the present seaworthiness of your vessel.
 - xi. Describe your vessel: (insert length, color, hull type, trim, masts, power and any additional distinguishing features).
 - xii. Say: "I will be listening on Channel 16/2182 (or other channel monitored)."
 - xiii. End message by saying: "This is (insert vessel's name and call sign)."
 - xiv. If your situation permits, stand by the radio to await further communication with the Coast Guard or another vessel. If no answer, repeat, then try another channel.
5. Essential action that must be taken in an emergency, such as:
- i. Making a distress call.
 - ii. Closing of hatches, airlocks, watertight doors, vents, scuppers and valves for intake and discharge lines that penetrate the hull, stopping of fans and ventilation systems and operation of all safety equipment.
 - iii. Preparing and launching of survival craft and rescue boats.
 - iv. Fighting a fire.
 - v. Mustering of personnel including —
 - a. Seeing that they are properly dressed and have put on their lifejackets or immersion suits; and
 - b. Assembling personnel and directing them to their appointed stations.
 - vi. Manning of fire parties assigned to deal with fires.
 - vii. Special duties required for the operation of fire fighting equipment.
6. The procedures for rough weather at sea, crossing hazardous bars, flooding and anchoring of the vessel, such as:
- i. Close all watertight and weather-tight doors, hatches and airlocks to prevent taking water aboard or further flooding in the vessel.
 - ii. Keep bilges dry to prevent loss of stability due to water in bilges. Use power driven bilge pump, hand pump and buckets to dewater.
 - iii. Align fire pumps to use as bilge pumps, if possible.
 - iv. Check all intake and discharge lines, which penetrate the hull for leakage.
 - v. Personnel should remain stationary and evenly distributed.
 - vi. Personnel should don lifejackets and immersion suits if the going becomes very rough, the vessel is about to cross a hazardous bar, or when otherwise instructed by the master or individual in charge of the vessel.
7. The procedures for anchoring the vessel.
8. The procedures to be used in the event an individual falls overboard, such as:
- i. Throw a ring life buoy as close to the individual as possible.
 - ii. Post a lookout to keep the individual in the water in sight.
 - iii. Launch the rescue boat and maneuver it to pick up the individual in the water.
 - iv. Have a crewmember put on a lifejacket or immersion suit, attach a safety line to the crewmember, and have the crewmember standby to jump into the water if necessary.
 - v. If the individual overboard is not immediately located, notify the Coast Guard and other vessels in the vicinity.
 - vi. Continue searching until released by the Coast Guard.
9. Procedures for fighting a fire such as:
- i. Shut off air supply to the fire — close hatches, ports, doors, ventilators and similar openings.
 - ii. Deenergize the electrical systems supplying the affected space, if possible.
 - iii. Immediately use a portable fire

extinguisher or use water for fires in ordinary combustible materials. Do not use water on electrical fires.

- iv. If the fire is in a machinery space, shut off the fuel supply and ventilation system and activate the fixed extinguishing system, if installed.
- v. Maneuver the vessel to minimize the effect of wind on the fire.
- vi. If unable to control the fire immediately, notify the Coast Guard and other vessels in the vicinity.
- vii. Move personnel away from the fire, have them put on lifejackets, and if necessary, prepare to abandon the vessel.

§28.270 Instruction, drills and safety orientation.

- a. *Drills and instruction.* The master or individual in charge of each vessel must ensure that drills are conducted and instruction is given to each individual on board at least once each month. Instruction may be provided in conjunction with drills or at other times and places provided it ensures that each individual is familiar with their duties and their responses to at least the following contingencies:
 - 1. Abandoning the vessel,
 - 2. Fighting a fire in different locations on board a vessel,
 - 3. Recovering an individual from the water,
 - 4. Minimizing the affects of unintentional flooding,
 - 5. Launching survival craft and recovering lifeboats and rescue boats,
 - 6. Donning immersion suits and other wearable personal flotation devices,
 - 7. Donning a fireman's outfit and a self-contained breathing apparatus, if the vessel is equipped,
 - 8. Making a voice radio distress call and using visual distress signals,

- 9. Activating the general alarm, and
- 10. Reporting inoperative alarm systems and fire detection systems.

- b. *Participation in drills.* Drills must be conducted on board the vessel as if there were an actual emergency and must include participation by all individuals on board. Break out emergency equipment, test all alarm and detection systems, don protective clothing and don immersion suits, if the vessel is so equipped.
- c. *Training.* No individual may conduct the drills or provide the instructions required by this section unless that individual has been trained in the proper procedures for conducting the activity.
- d. The viewing of videotapes concerning at least the contingencies listed in paragraph (a) of this section, whether on board the vessel or not, followed by a discussion led by an individual familiar with these contingencies, will satisfy the requirement for instruction but not the requirement for drills in paragraph (b) of this section or for the safety orientation in paragraph (c) of this section.
- e. *Safety orientation.* The master or individual in charge of the vessel must ensure that a safety orientation is given to each individual on board that has not received the instruction and has not participated in the drills required by paragraph (a) of this section before the vessel may be operated.
- f. The safety orientation must explain the emergency instructions required by §28.265 and cover the specific evolutions listed in paragraph (a) of this section.

NOTE: The individual conducting the drills and instruction need not be the master, individual in charge of the vessel, or a member of the crew.

SEVEN STEPS TO SURVIVAL

In a survival situation, the decisions you make will be more important than the equipment you carry!!
Make the decision to live.

RECOGNITION: Admit that your life is in danger. Act!

INVENTORY: Decide what can help and hurt. Do first aid.

SHELTER: Preserve body heat with insulating materials.

SIGNALS: Help rescuers find you.

WATER: Find a safe source of water and drink six pints a day.

FOOD: After you are safe and warm, food will help long waits.

PLAY: Stay busy and keep a positive mental attitude.

Caution and creativity are your best friends. USE THEM!

Vessel Orientation

New crewmen are usually hired and assigned to a vessel knowing very little about the captain, the crew's duties, safety procedures or benefits. The crewman is just told to board the boat at a specific time and place. Unfortunately there are no industry-wide standards for orientation of new personnel.

Fishing operations often have difficulty offering safety orientation and training. Crew turnover and lack of training, fishing experience and vessel familiarity are major factors contributing to accidents.

Your safety orientation should begin before you go to sea. You should have a tour of the boat and an explanation of the use of safety equipment aboard. The captain should demonstrate the equipment whenever possible. He should also tell you about the common safety hazards aboard the vessel.

New crewmen should be given a thorough orientation, particularly in the areas of safety and specific duties and responsibilities.

Topics to be covered in an orientation should include:

- Where and how to join the vessel.
- How long the fishing trip will last and the kind of working conditions you can expect.
- Sleeping and eating arrangements.
- What to bring, including clothing and equipment.
- The chain of command and tips on how to get along with other crew members.
- Safety precautions to follow.
- Specific duties and responsibilities.
- Payment procedures.
- How to contact family/friends in the event of emergency.
- Emergency procedures and communications.
- Location of safety equipment.
- Safety hazards aboard that specific vessel.
- Any other information that the captain wants the crew to know.

The orientation is to be given to new crew members when they join the vessel and when a new piece of equipment is added to the vessel. It is to be given only once.

Emergency Equipment and Abandon Ship Station

F/V _____

ABSTA	Abandon Ship Station
EPIRB	Emergency position-indicating radio beacon
FEX	Fire Extinguisher
FL	Flares
ISUIT	Immersion Suits
O	Life Rings
PFD	Personal Flotation Device
RADIO	Radio
RAFT	Life raft

Welcome Onboard F/V Ms. Katherine

Welcome onboard the F/V Ms. Katherine. We hope that you have a pleasant and productive trip. The following information is provided to assure that you have a safe and profitable trip.

Safety

Providing for your safety is our primary concern. Please read carefully the attached "Safety Instructions." We also ask that you follow these guidelines when working about the deck or in various locations on the boat.

- Always wear a PFD when existing sea conditions are unfavorable.
- Personal protective equipment (hard hats, gloves, safety harness) is provided for your safety. Please use them.
- Follow the directions of the winch operator. He is responsible for your safety.
- Promptly report injuries, accidents or defects to the captain.
- Alcohol and illegal drugs are not allowed. If you are on prescribed medications, inform the captain. Keep medications in proper containers.
- Help maintain vessel cleanliness. Do not throw garbage or cigarette butts on the floor.
- Smoking is allowed only in designated areas.

Your cooperation is appreciated.

Vessel Facilities

The F/V Ms. Katherine offers a range of facilities for your use. These include a laundry room, television area and galley. We only ask that you remember that everyone shares these areas and your help in maintaining them in clean and comfortable order is appreciated.

Safety Instructions

PLEASE READ CAREFULLY. THESE INSTRUCTIONS ARE IMPORTANT FOR YOUR SAFETY WHILE ONBOARD THE MS. KATHERINE.

In the living quarters is a notice marked "Emergency Alarms" that gives you information concerning fire, man overboard and abandon vessel procedures. It is of great importance that you familiarize yourself with this as soon as possible.

Muster Station

In the event of an alarm the muster station for crew members is at _____. Please come appropriately dressed. Bring your lifejacket from your cabin.

Escape Routes

In the living quarters and galley there is a diagram of the F/V Ms. Katherine pointing the way to exits. Follow these to find your way to the nearest way onto the deck. Please locate and become familiar with the exits nearest your quarters.

Fire Detection

If you detect a fire, report it immediately to the captain or the nearest crewmember. There are alarms throughout the vessel as well as fire extinguishers and axes.

Man Overboard

If you see someone fall overboard notify the captain immediately. Throw the nearest flotation device and keep the person in sight.

Emergency Duties

In the living quarters and galley you will find a "Station Bill." This document provides specific duties for specific people to perform for specific emergencies. It also provides information on the location of emergency equipment and necessary alarms.

The "Station Bill" will include the following emergency duties:

- Location of lifesaving and emergency equipment.
- How to operate assigned equipment.
- How to make a distress call.
- What to do in the event of a person overboard.
- What to do in the event of a fire.
- What to do in the event of flooding.
- What to do in the event of abandon ship order.

We will conduct regular drills. Please review your duties.

Fishing Vessel Drill

Pretend that you are in charge of the safe evacuation of the crew from a vessel that is on fire. The fire has gotten out of control and there is no other alternative but to abandon ship.

Briefly describe some important considerations that should be addressed prior to vessel departure.

F/V Safety Orientation

F/V _____

The following information is provided for your safety and the safety of the crew while on board this vessel. Please take a moment to review these safety guidelines that are provided. If you have questions or comments, bring it to the attention of the captain.

Safety Checklist

- ✓ Location of survival craft embarkation station and the survival craft to which each individual is assigned.
- ✓ The fire and emergency signal and abandon ship signal.
- ✓ Location of immersion suits and illustrated instructions on the method of donning the suits.
- ✓ Procedures for making a distress call.
- ✓ Essential actions that must be taken in an emergency by each individual, such as:
 - Making a distress call.
 - Closing of hatches, airports, watertight doors, vents and valves for intake and discharge lines that penetrate the hull and operating all lifesaving equipment.
 - Preparing and launching of survival craft.
 - Fighting a fire.
 - Mustering of personnel ensuring they are properly dressed and have put on their lifejackets or immersion suits.
 - Assembling personnel and directing them to their appointed stations.
- ✓ Flooding procedures and reviewing the damage control kit.
- ✓ Man-overboard procedures and survival techniques if in the water.
- ✓ Proper treatment for hypothermia and basic first aid procedures.
- ✓ Inspection/testing of the EPIRB.
- ✓ Drug, alcohol and smoking policy while on board.

Types of Emergencies

Drowning

Injuries

Man Overboard

Explosions

Capsizing & Sinking

Collisions

Groundings

Attitude

Donning Immersion Suits and Personal Flotation Devices

Personal Flotation Devices (PFDs)

No other piece of lifesaving equipment has saved more lives at sea than the personal flotation device, your lifejacket. They are designed to keep you floating face up and should do two things for the survivor: KEEP YOUR MOUTH AND NOSE ABOVE THE SURFACE AND MAKE YOU CLEARLY VISIBLE TO RESCUERS. Without flotation in extremely cold water, your ability to tread water or swim is measured in minutes. If you are unconscious or injured, survival time is even less.

There are five types of PFDs that are approved by the U.S. Coast Guard. Selecting a PFD for certain waters has been made easier by classifying them into five different types.

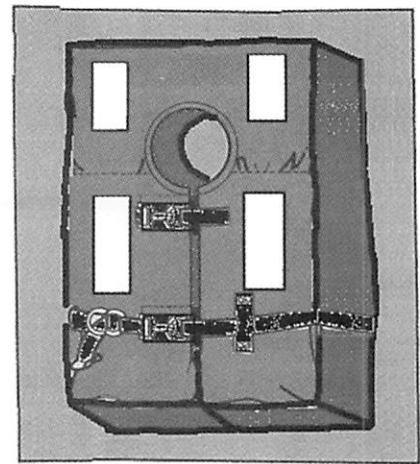
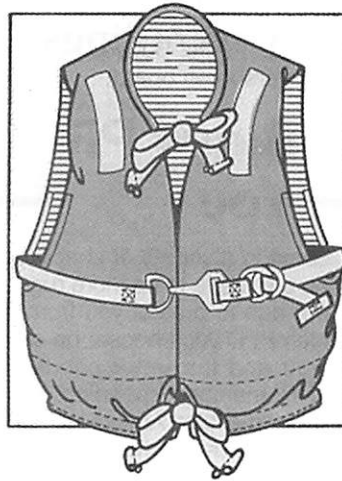
Type I (Offshore Life Jackets)

A Type I has the greatest required buoyancy, 22 lbs, and is designed to turn most unconscious persons in the water from a face down position to a vertical and slightly backwards position. This is known as a POSITIVE RIGHTING MOMENT.

This type of PFD is suitable for all waters, especially in waters where rescue may be delayed. Reflective tape is distributed on the front and back for added visibility. A whistle is required. It is reversible for ease of donning and

available in two sizes - Adult (90 lbs or more) and Child (less than 90 lbs).

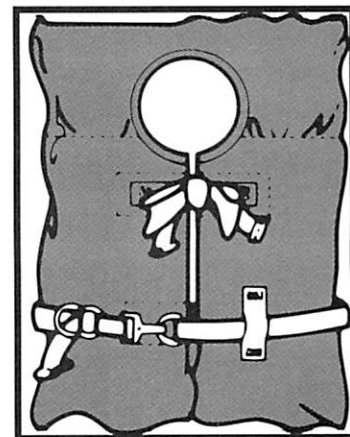
Anything less than Type I in open water is inadequate.



Type II

This PFD is designed for the recreational boater when rescue can be expected in a short period of time and water conditions are relatively calm. It has no less than 15.5 lbs of buoyancy.

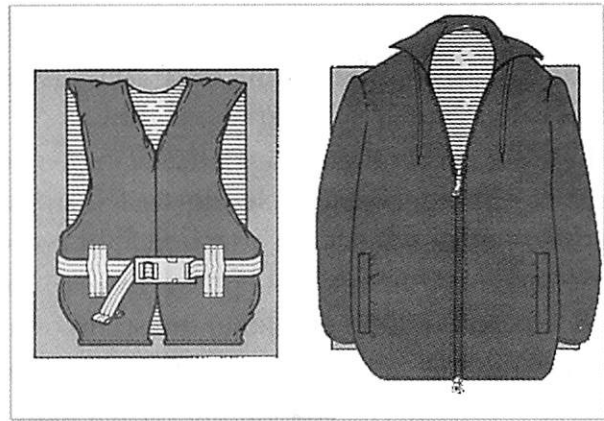
It is also designed to turn the wearer from a face down to a vertical or slightly backward position but not as pronounced as the TYPE I.



Type III

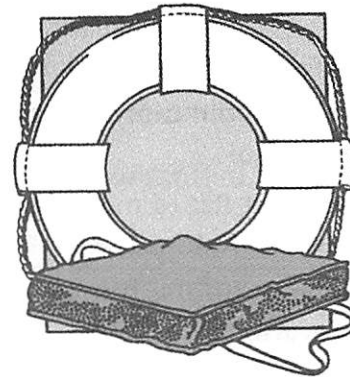
This PFD is designed for the active outdoorsman, with comfort in mind. The TYPE III will maintain the wearer in the position that they assume in the water. Common users are hunters, recreational fisherman, water skiers and canoeist. They are NOT DESIGNED to turn the wearer from a face down position.

Type III includes float coats and vests, which provide flotation and small amounts of hypothermia protection. They have no less than 15.5 lbs of buoyancy.



Type IV

This type of PFD is designed to be THROWN to and grasped by a person in the water. It is designed NOT TO BE WORN! Ring buoys and boat cushions are the most common in the marine industry. They have a minimum of 16.5 lbs of buoyancy.



Type V

This type of PFD is designed to meet a specific need or activity on or over the water. These can be work vests, float suits and immersion suits. They are not designed to turn the wearer from a face down position. They have no less than 15.5 lbs of buoyancy.

Helpful PFD Suggestions

- Try on your PFD and adjust it until it fits comfortably in and out of the water.
- Mark your PFD with your name if you are the only wearer or need a specific size. Always mark it with the name of your boat.
- Do not alter it. If it doesn't fit properly, get one that does. An altered PFD is no longer Coast Guard approved.
- Dry a wet PFD thoroughly before stowage. Store it in a well-ventilated area.
- Do not dry your PFD in front of a radiator or other source of direct heat.
- Make sure there are at least 31 square inches of retro-reflective tape on the PFD to increase your visibility.
- Accessories such as strobes and whistles can be attached to your PFD in a location that will not interfere with your work on deck.

Immersion Suits

Coast Guard approved immersion suits are required for each crew on vessels operating on all U.S. coastal waters above 32 degrees N latitude.

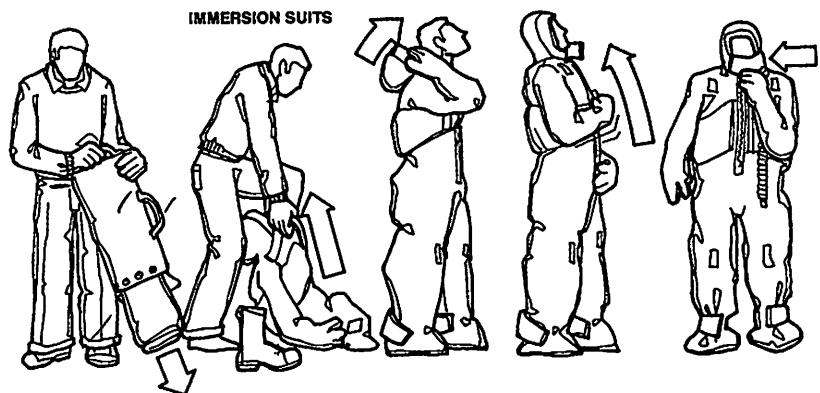
There are many different varieties of immersion suits on the market. Some suits are just big overalls; others have boots, detachable gloves, leg zippers and other features. An immersion suit should be equipped with a whistle; an attached light is required on oceangoing vessels of any size.

It should have an inflatable pillow to keep your head and neck out of the water for better thermal protection and to help eliminate the strain of holding your head up.

Make sure the suit fits you properly; there have been cases of people drowning in suits that were too large for them. The suit should form a tight seal around your face. Mark the suit with your name and the vessel's name with a waterproof marker.

Quick and Safe Donning Procedures

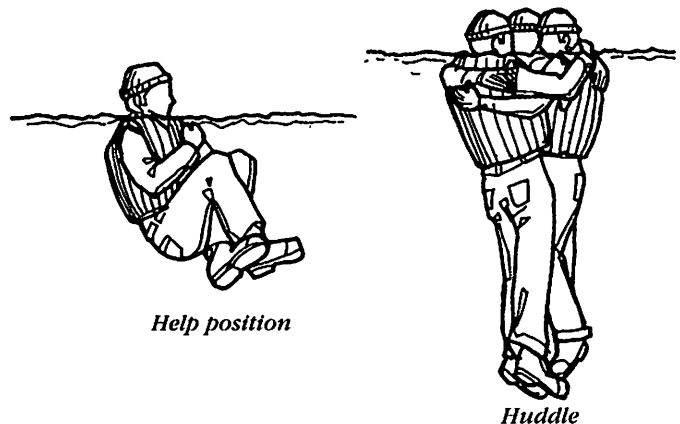
- A sharp jerk on the carrying case will eject the suit.
- Lay the suit out flat to make sure no parts are folded.
- Remove your boots, but leave plenty of warm clothes on.
- Step into legs of suit while in a stable position; if need be, do this in a sitting position or leaning against a support. Put one foot in at a time. With both feet in, pull the suit up to the waist and adjust feet securely.
- Put one arm in at a time and pull the suit up over the shoulders. Squat down a bit to assist yourself in getting the head gear on.
- To avoid problems in zipping the suit, arch your back to remove wrinkles in the fabric. If you have a beard, turn your head to one side, so that facial hair is not caught.
- Secure face flap to reduce incoming water.



Once the suit is completely on, squat down and release some of the air trapped in the suit by lifting a piece of the suit off the face with one hand. Secure the Velcro straps around the feet to make the suit a bit more tailored. Once this is complete, the suit is ready for water entry.

Entering the Water

- Enter the water, protecting your head with one arm and step out to the side.
- Avoid facing the water and jumping forward. A slip is more likely to cause a head injury.
- If possible, avoid submerging your head by gently entering the water to prevent seawater from entering the suit through the face opening.



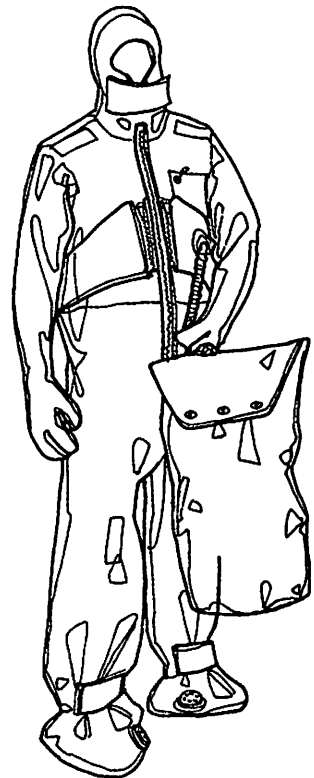
- Be sure the suit is fully zipped and that all closures are snug. Leave the external bladder deflated until you are in the water.
- Protect your head with one arm, check the area below and jump with feet together.

Stowage and Maintenance

Immersion suits should be stowed in a very accessible, dry place. Aboard fishing vessels, there is a debate whether that means in each crewman's bunk or in the wheelhouse. If you put it in your bunk, you know where it is, but you may not be able to reach it in an emergency. Wheelhouse storage would normally be best, but there may not be adequate space. It is a decision you must make based on the configuration of your boat.

Whatever you decide as a location for all survival gear, especially the immersion suits, know the location and make sure you can reach your suit in a hurry, allowing free access from the working platform.

Immersion suit bags should have sizes marked allowing crew to select the proper suit for them. Zippers and the general condition of materials should be inspected during scheduled monthly emergency drills. PFD's, which are not encased, should be stowed out of direct sunlight to prevent against fabric deterioration and should also be checked during emergency drills.



Hypothermia and Cold Water Survival

Hypothermia occurs when the body's CORE temperature drops. Submersion in cold water is a major cause of hypothermia because water conducts heat away from the body 25 times faster than air of the same temperature. Hypothermia can also result from a combination of wind and cool or cold temperatures, wet clothing or clothing that is not suitable for the weather.

Although hypothermia can easily occur when air temperatures are above freezing, it can be prevented by using good judgment, wearing layered clothing to stay warm but not sweaty, putting on rain gear before getting wet, and avoiding being immersed in cold water. It helps to remember that 50 percent of your body's heat is lost through your HEAD and NECK. Other high heat loss areas are your ARMPITS, CHEST and GROIN.

Signs and Symptoms

- Uncontrolled shivering
- Confusion
- Poor coordination
- Weak or irregular pulse
- Dilated (big) pupils
- Slurred / slow speech
- Poor judgment
- Drowsiness
- Slow / shallow breathing
- Unconsciousness

It is sometimes difficult to detect hypothermia because the affected person may not know or may deny that he is having a problem. In addition, signs and symptoms may be confused with or complicated by alcohol.

If you suspect that someone has hypothermia, check the person's pulse for 1 to 2 minutes when doing your primary survey. Treat the person GENTLY. If he is breathing and has a pulse, carefully remove his wet clothing and cover him with dry coverings.

To treat for hypothermia, remove the person from the cold environment and remove any wet clothing. Encase the individual in a sleeping bag and provide skin-to-skin contact with a warm person.

Give warm fluids only after uncontrolled shivering stops, when the person is alert enough to get a cup of hot drink to his mouth by himself without spilling it and can swallow without choking.

Check for and treat other injuries.

Preventing Drowning on Initial Immersion

- **Protective Clothing**
- **Flotation**
- **Slow Entry for Slow Response**
- **Climatize**
- **Body Type (Fat vs. Muscle)**
- **Survival Techniques (Wave Spray Protection and Survival Swimming)**
- **Stay Out of Water**

Abandoning the Vessel

Decision to Abandon

Only the captain should give the command to abandon the ship, and only when the ship is in such distress that the lives of the people on board are endangered. Abandoning ship signifies the end of attempts to save the vessel. It means that the raft has become the best shelter, if you have one.



Establish radio contact as soon as you recognize that an emergency exists. Update the log frequently to ensure that the man on watch can quickly report the vessel's position.

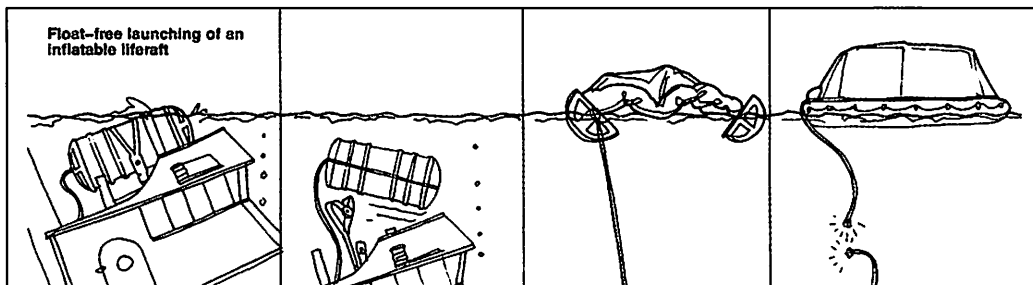
You must sound the alarm and alert the crew in plenty of time to enable them to get to their emergency stations and prepare the survival gear. It is much better to have to re-stow the survival gear after a close call than to wish you had assembled it sooner.

When the alarm sounds, each crewmember must report to his station immediately and begin his assigned survival duties.

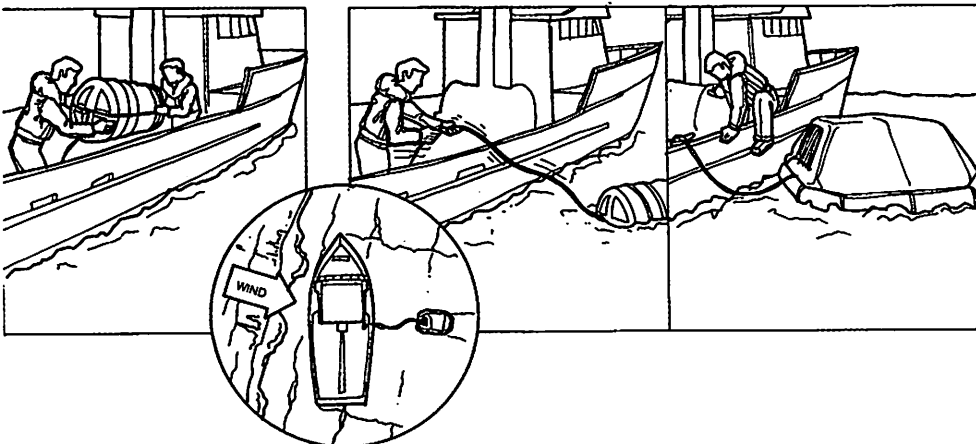
Where events do not allow for a well-organized abandonment, use whatever time is available to:

- Send a distress message.
- Muster all persons on board.
- Prepare the life raft for launching.
- Put a flotation device on.

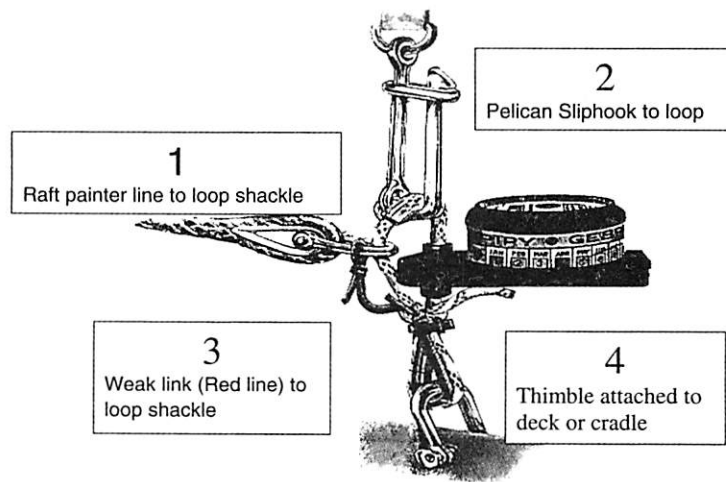
While it is a fatal mistake to wait too long to give the order for abandonment, it is just as dangerous to abandon the ship too soon.



At a depth of approximately 3 meters, the hydrostatic release is activated and the liferaft starts to float to the surface. As the vessel sinks, the painter pays out to full length and activates the CO₂ cylinder to inflate the liferaft. The painter must be pulled out manually to its full length to activate the inflation mechanism if the water depth is less than the length of the painter. Swim to the raft, place your feet on the cannister and pull until the raft inflates. If the vessel continues to sink, the painter or a weak link parts and the liferaft floats free.



The raft should be launched from the lee side (left). There may be as much as 100 feet of painter in the cannister and pulling the painter out to its full length (center) will inflate the raft. Be sure the painter is firmly secured to the vessel (right) before launching and inflating the raft.



Disposable hydrostatic release installation

Boarding the Liferaft

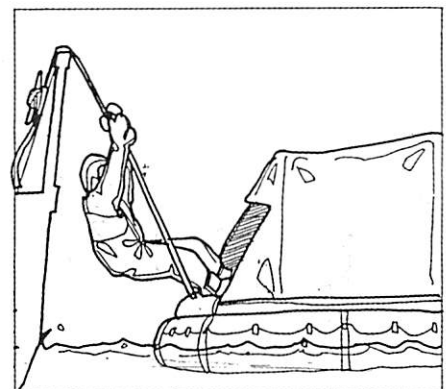
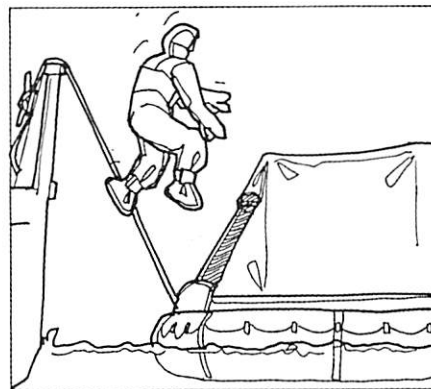
Wait for the raft to inflate before boarding. If you board too soon you may interfere with the raft's inflation. Your raft will probably over-inflate and you will hear the sound of air escaping through pressure relief valves. This does not mean that the raft is defective. The sound should stop in a few moments.

The best way to board your life raft is to jump directly into the canopy opening from your vessel, remaining DRY. You will not go through the floor.

Jump feet first into the canopy opening with your hands landing on the top of the canopy. Once in, move away from the opening so other crewmen can board.

If you must enter the water, choose a safe place to leave the vessel. Enter where you can use the painter line to guide you to the raft. If you are not in contact with the painter line, you may be swept beyond the raft.

Beware of hazards below you. Do not jump into people, objects or surface debris. Jump from the lowest suitable point to minimize impact with the water. Consider using a ladder, net or line to lower yourself to a safe point of entry.



If possible, board the raft without getting wet. You can jump directly into the canopy opening (left) or lower yourself with a ladder, net or line (right).

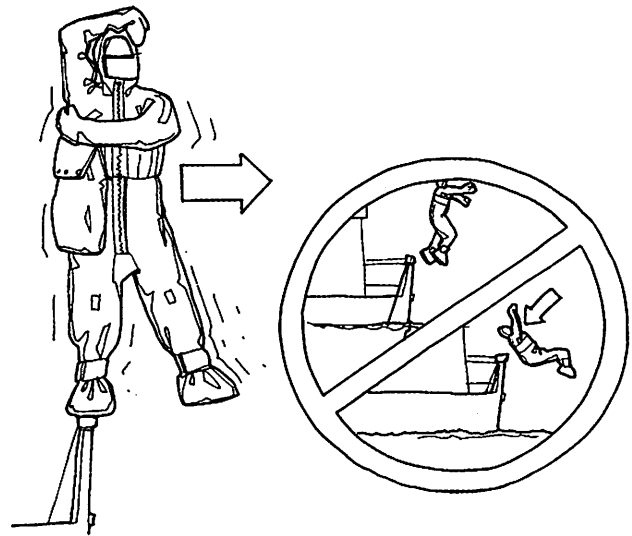


If you must enter the water wearing a PFD, cross your arms securely over your chest and block off your nose and mouth. Always enter the water feet first, with your feet together.

Entry from a Height

Once the decision is made to abandon the vessel, the following procedures should be utilized.

- Get down as close to the water as possible and secure your PFD / Immersion Suit.
- Look down to see if your landing area is clear.
- Look straight ahead and stand tall.
- Latch on with one hand on face to protect mouth and nose from inrushing water. The free hand is placed across the chest and grabs onto the elbow or shoulder and squeeze down on the PFD.
- Step off as you were walking down a set of stairs. Cross your ankles or keep feet close together.
- Assist others and move to a safe area. Swim on your back.



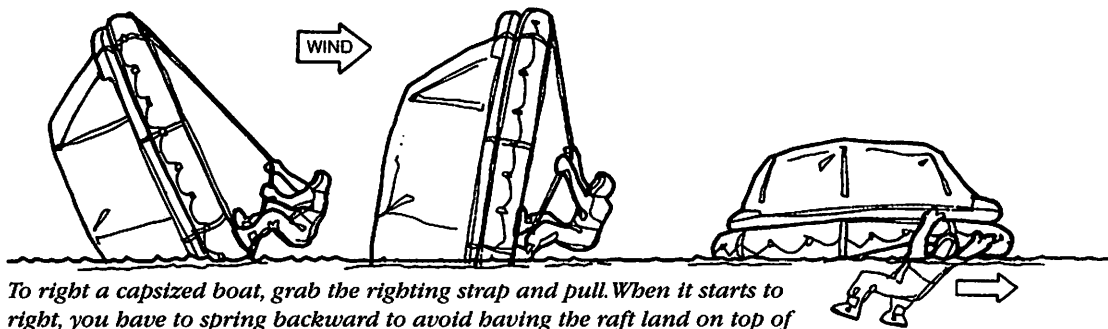
If entering the water in an immersion suit, protect your head with one arm and jump to the side. If you jump facing forward (right), a slip is more likely to cause a head injury.

Righting a Capsized Liferaft

If your liferaft inflates upside down or is blown over during inflation, **DON'T PANIC**. One person can easily right a capsized craft. Swim to the side marked "RIGHT HERE." If there is no marking, go to the side with the CO₂ cylinder. Maneuver the cylinder side of the raft so that it is downwind, then reach up and grab the righting strap. Start pulling yourself up onto the raft. It will help to kick your feet out as if you were swimming on top.

This will be difficult as you will have on a flotation device. **GET AGGRESSIVE!**

Once on top facing into the wind, stand on the very edge where the CO₂ cylinder is located. Holding onto the righting strap, lean back with all your weight and pull on the strap. Once the canopy is clear of the water, the raft will begin to follow. If the raft lands on top of you, relax. The bottom (floor) of the raft is soft and flexible and your head will form an air pocket.



To right a capsized boat, grab the righting strap and pull. When it starts to right, you have to spring backward to avoid having the raft land on top of you (right).

Stay face up under the raft. Catch a breath of air and pull yourself out from underneath. If you try to swim out face down, your PFD or immersion suit could get hung up and make it difficult for you to get free.

Survival Once On Board

- Deploy the sea anchor (drogue). Some may automatically deploy. Make sure it is out and functioning properly. When the raft is on the wave crest, the sea anchor should be in the trough.
- Bail out the raft using bailing bucket and sponge provided. Hands, shoes and caps are also useful.
- Close down the entrance to protect the crew from exposure.
- Maintain your raft. Inflate the floor and repair any leaks. It may be necessary to re-distribute your weight to better stabilize your new home.
- Tend to the injured with the first aid kit contained in the emergency pack. If you have not attended a first aid class before or lack confidence in your medical skills, it would be advisable to sign up for a course. Remember, ma-in-law may choke on your T-bone and the skills learned may be useful.
- Locate your survival manual and read instructions aloud for all to hear.
- Assess the scene and make a calm estimate of your situation and plan your course of action. Assign duties to all uninjured.
- Inventory your emergency pack contents and don't leave items lying around on the floor. Distribute seasick tablets to all even if they have never been seasick. They have never been in a life raft in the open sea.
- Post a look-out team. Activate your EPIRB and review the proper use of visual distress signals.
- Check the condition of everyone. Use the buddy system to assist each other. Maintain morale and consistent leadership. Use your sense of humor; it is a powerful tool.
- Distribute food and water but be careful not to waste it. Drink NO seawater even if diluted. Eat NO fish, turtles or birds that may come near the raft. The fishing kit is for morale, not to eat the fish even if you can cook them with your flare.
- **PLAN TO STAY ALIVE AND RETURN HOME TO THE FAMILY!!**

Actions Prior to Abandonment

- Alarm Recognition
- Muster Location
- Personal Shelter Management (Dress for Survival)
- Recognize Specific Emergency Duties
- Equipment Familiarization
- Specialized Team Development
- Communications

Hazards Complicating Evacuation

- Night-Time Evacuation
- Injuries
- Missing Person
- Faulty or No Equipment
- Poor Weather Conditions
- Panic and Fear
- Lack of Leadership
- Inexperienced Crew

Initial Hazards Once in the Water

- Injuries During the Fall
- Cold Water
- Oil & Fire
- Surface Debris
- Dangerous Marine Life
- Missing and Injured Crew
- Crew Separation
- Lack of Preparation

Making a Voice Radio Distress Call and Using Visual Distress Signals

Location Aids for the Mariner

The key to being rescued quickly is to let people know where you can be found. By using the four detection factors: light, color, sound and movement, you will gain attention.

Your most powerful distress tool is your radio. In the event of an emergency, it is extremely important to establish radio communication immediately with the Coast Guard or another vessel.

DO NOT WAIT UNTIL THE SITUATION IS OUT OF CONTROL. At that point, there may be no power to the radio or it may be too late for rescue units to respond.

Having and using marine radios is an integral part of fishing and a valuable aid in an emergency. It is also a privilege granted by the agency that issues the licenses — the Federal Communications Commission (FCC). Emergency marine radio calls are made on VHF channel 16 (156.8 MHz) or SSB 2182 kHz.

Emergency Calls

There are three internationally recognized radio signals used for marine emergencies. MAYDAY, PAN-PAN, and SECURITY. All three have priority over other radio traffic.

MAYDAY calls also have priority over all other emergency signals. They are to be used only when a vessel or life is threatened by grave and imminent danger and a request is made for immediate assistance.

If you hear a MAYDAY call and it is not answered, you must answer it and log the details of the call. When you can be reasonably sure you will not interfere with other distress-related communications, advise the vessel in distress what assistance you can offer.

MAYDAY RELAY: All vessels that are required to have radios are required to relay Maydays that are heard but go unanswered.

To relay an unanswered Mayday, make sure your radio is on and you transmit on channel 16 VHF. Then state:

1. Mayday relay, Mayday relay, Mayday relay.
2. YOUR vessel's name and call sign.
3. Name and call sign of vessel in distress.
4. Location of vessel in distress.
5. Nature of problem with vessel in distress.
6. Degree of assistance needed.
7. Listen for acknowledgement.
8. Transmit additional requested information.

PAN-PAN (pronounced pahn-pahn) calls are for very urgent messages concerning the safety of a boat or persons. Examples include urgent storm warnings by an authorized station and/or loss of steering or power in a shipping lane. To transmit a PAN-PAN message, make sure your radio is on and you transmit on channel 16 VHF. Then state:

1. PAN-PAN, PAN-PAN, PAN-PAN all stations.
2. Your vessel name and call sign three times.

3. Nature of urgent message.
4. Position (latitude and longitude and LORAN are preferred).
5. Total number of people on board.
6. Vessel description (length, color, type, etc.).

SECURITY (pronounced say-cure-i-tay) calls are the lowest priority emergency calls and are used to alert vessel operators to turn to another station to receive a safety message. SECURITY warns nearby vessels of a possible hazard.

Emergency Position-indicating Radio Beacons (EPIRBs)

Vessels that are operating beyond the “three-mile line” and are greater than 36’ in length are required to have an FCC type Coast Guard accepted Category 1 406 MHz EPIRB (float free). Vessels less than 36’ in length beyond the “three mile line” are required to have a Category 2 406 MHz EPIRB.

Drills are to include demonstration of proper use including arming. If you have an EPIRB, turn it on as soon as possible and leave it on. A continuous transmission provides the best hope for rescue. The lanyard attached to the unit should be fastened to the raft or to an individual in the water. Most EPIRB’s operate best when floating with the ANTENNA VERTICAL.

Visual Distress Signals

A visual distress signal is anything that makes you BIGGER, BRIGHTER OR DIFFERENT. By yourself, you are a small target; anything you do to make yourself more visible will help rescuers find you.

Visual distress signals are included in the emergency equipment pack aboard your life raft. They include both pyrotechnics and devices such as flashlights, portable strobe lights, mirrors and distress flags. All have advantages and disadvantages and all are of value only if they are used effectively.

READ THE INSTRUCTIONS — Whatever the signals, always carefully read and follow the affixed instructions. The signals are very powerful and can cause injury and even worse if not treated with respect.

Types of and Use of Visual Distress Signals

Parachute Flare

Contained in a plastic canister, the parachute flare produces a bright red flare suspended by a parachute. This flare is activated when you have reason to believe that a rescue craft is in your area. To activate:

- Hold flare vertically, rocket end up.
- Remove the top and bottom caps, holding flare firmly.
- Remove the safety pin from bottom. This allows the firing trigger to be lowered into the ready-to launch position.
- Aim slightly downwind and squeeze the trigger up into the canister. **BE READY FOR A KICK, AS THE ROCKET WILL GO TO 1000’.**
- The flare will burn for 30-60 seconds. Under ideal conditions the flare is visible up to 30 miles.

Pistol Launch Flares

To use this type of flare, load the cartridge into the barrel of the pistol. Aim downwind and pull the trigger. This will activate the signal. It will reach an altitude of 30-50 feet and burn for 8-12 seconds.

Hand-Held Flares

The hand-held flare is designed to produce a bright red distress signal when activated. There are two types.

One type has an arrow on the handle and an arrow on the metal flare. To activate:

- Pull the handle down and rotate until the two arrows line up.
- Apply upward force to the handle to activate.
- DO NOT hold onto the flare itself as it becomes very hot.
- If it does not activate after the initial striking, attempt another strike. If it still does not activate, throw it in the water.
- Activate downwind.

The other style of hand held flare requires:

- Lift up on the tape that goes the length of the flare. By doing this, the top side (striker) is exposed.
- To remove the cap, twist it. Hold it out and away from the raft.
- Strike the topside of the cap on the flare end.
- Be careful of the "slag" that will drip, it is extremely hot and dangerous to human skin contact.

Strobe Light

The strobe light is a compact, high-intensity light that is capable of operating continuously for 12 hours. It is activated by a "push-on / push-off" button located at the base of the unit.

Signaling Mirror

The signal mirror is one of the best daytime signals available. Aim the mirror into the sun locating the beam on your hand or a nearby surface. Look through the aiming hole in the center of the mirror at the beam. A bright dot should appear. Place the dot toward the rescue craft. Survivors should practice with mirrors constantly since the reflected light signal could possibly be seen by rescue craft out of the victim's sight or hearing range.

Sea Dye

Sea dye marker consists of a chemical which, when immersed in water, produces a bright greenish-yellow color that is highly visible. To use the dye marker, open the container and swirl it around in the water. Drift about 20 yards and lower the dye back into the water and create another slick. Continue to do this and you will create a trail for rescue craft to follow. The duration of the sea dye will vary from 20 minutes in rough seas to 2 hours in calm sea. Keep the container outside of your survival craft, as the dye will spill inside the raft creating a mess.

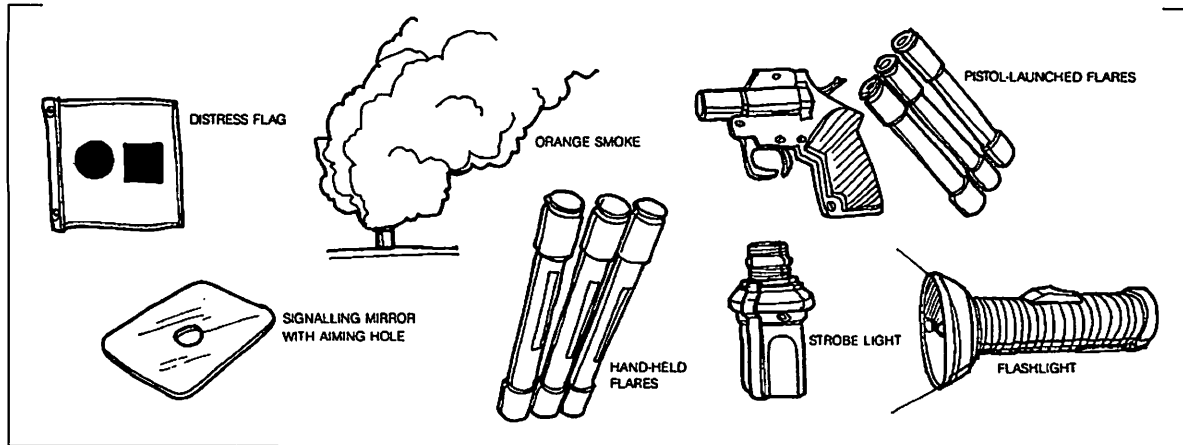
Floating Smoke Signal

Best seen during the day, the floating orange smoke signal is contained in a waterproof canister.

To operate:

- Remove plastic cover.
- Locate activating cord and pull firmly.

- Throw it into the water immediately.
- Within 3-4 seconds, a popping sound will occur and the smoke will be visible. The activation time is 3 minutes.
- Activate downwind, as the smoke will be very pungent.



Stowage and Maintenance

Store pyrotechnics in a cool, dry, readily accessible place. Each crewmember on board should know where visual distress signals are stowed. One crewmember should be assigned to bring the signals in an emergency. It is advisable to store a pair of gloves along with pyrotechnics.

Pyrotechnics have an expiration date and need replacement once expired to ensure proper functioning.

Never aim pyrotechnics directly at rescue craft. This does not encourage good relations with the rescue team members.

Points to Remember

- Hold flare downwind.
- Read instructions PRIOR to rescue arriving on scene.
- Use them wisely — They are limited in quantity.
- Many flares are packed in plastic bags for waterproofing.

Distress Communications Form

Instructions: Complete this form now (except for items 7-10) and post near your radio or radiotelephone.

Speak SLOWLY - CLEARLY - CALMLY

1. Make sure your radio or radiotelephone is on.
2. Select 156.8 MHz (channel 16 VHF) or 2182 KHz.
3. Press microphone button and say "MAYDAY, MAYDAY, MAYDAY!!"
4. Say: "THIS IS ___(your boat name)___, ___(your boat name)___, ___(your call sign)___, OVER"
5. Release this microphone button briefly and listen for acknowledgement. If no one answers, repeat steps 3 & 4. If there is acknowledgement, or if the Coast Guard or another vessel responds:
6. Say: "MAYDAY" _____(your boat name)_____.
7. DESCRIBE YOUR POSITION in lat/long coordinates, LORAN-C coordinates or range and bearing from a known point.
8. STATE THE NATURE OF YOUR DISTRESS.
9. GIVE NUMBER OF PERSONS ABOARD AND THE NATURE OF ANY INJURIES.
10. ESTIMATE THE PRESENT SEAWORTHINESS OF YOUR BOAT.
11. BRIEFLY DESCRIBE YOUR BOAT, length _____, color _____, hull type _____, trim _____, masts _____, power _____, any additional distinguishing features _____
12. Say: "I WILL BE LISTENING ON CHANNEL 16 / 2182" (cross out channel that does not apply).
13. End message by saying "THIS IS _____(your boat name and call sign)_____, OVER."
14. If your situation permits, stand by the radio to await further communication with the Coast Guard or another vessel.

Fire Prevention and Fire Fighting

Fire is even more dreaded at sea than it is ashore. Fishermen faced with a fire at sea can neither call for professional help nor run away from the danger. Short of abandoning ship in favor of a tiny life raft, they must stay onboard and fight the fire themselves whether or not they have any training.

I hope this training program encourages further fire-fighting training, as the time spent today is minimal. I would encourage all participants to contact your local fire department and ask to attend/participate in their portable fire extinguisher training.

Coast Guard statistics reveal that most fires aboard fishing vessels occur in UNATTENDED MACHINERY SPACES. Typical causes include broken fuel or lube oil lines that spray fuel on hot engine parts, faulty electrical systems, uninsulated exhaust in contact with flammable materials, rags or other combustibles in the vicinity of hot engines, and spontaneous combustion of oil soaked rags. Other potentially high fire danger areas are accommodation spaces and galleys.

Prevention

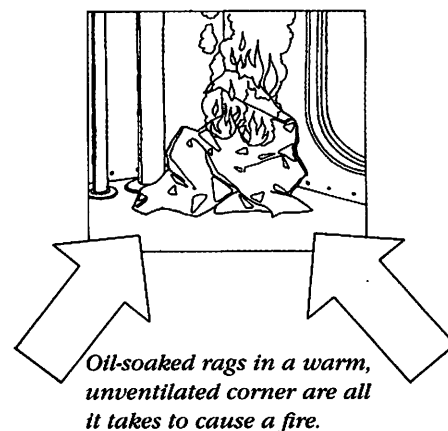
- Constant awareness of the danger of fire is the responsibility of each and every crewman. Carelessness is a chief cause of fire aboard vessels.
- Each crewman should be:
 - Alerted to common fire hazards and taught how to eliminate them.
 - Advised of his duties in the event of fire.
 - Aware of all means of escape from interior spaces.
- Restrict the use of combustible materials when building, repairing and/or maintaining the vessel.
- Ensure the proper installation of fuel, lube and hydraulic oil lines.
- Exhaust systems are to be properly wrapped and engine rooms, cargo spaces and fuel tanks adequately vented.
- Unattended spaces should be equipped with fire and smoke detectors and alarm systems.
- Vessels must have adequate fixed fire extinguishing systems and/or portable fire extinguishers.

Causes

Spontaneous Ignition

Placing an oil-soaked rag in a storage area or engine room is an excellent candidate for spontaneous ignition. The oil rag begins to “oxidize” — to react chemically with the oxygen in the warm air around it — which in turn produces still more heat. The heat causes the oil to oxidize faster and produce still more heat. Since the heat is not drawn away by ventilation, it builds up around the rag.

Finally, the rag gets hot enough to burst into flames. All this can and does occur without any source of heat.

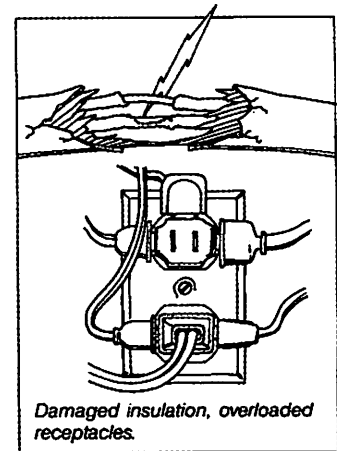


Faulty Electrical Equipment

When electrical equipment wears out, is misused or is poorly wired, electrical energy can turn to heat and a fire may be the result. Standard home or industrial electrical equipment has no place on the ocean. The salt air causes corrosion and a steel hull can cause erratic operation or short-circuiting. The result may be overheating or arcing in equipment or wiring and the ignition of flammable materials nearby.

Approved marine electrical equipment is specially made for shipboard use.

You can avoid this type of fire by making frequent inspections, replacing wires that are obviously defective and by using only fuses and circuit breakers of the proper size for the circuit.



Exposed Light Bulbs

An exposed light bulb can ignite combustible material by direct contact. Numerous vessel fires have started when a crewmember left a lamp lit in unoccupied quarters. As the ship rolled, curtains or other combustible material came in direct contact with the hot bulb and ignited.

Engine Rooms

Engine rooms are full of fire hazards. Water dripping from ruptured sea water lines can cause severe short-circuiting and arcing in electric motors, switchboards, and other exposed electrical equipment. Hot engine exhausts can also cause vessel fires.

Drip trays should be emptied frequently and oil accumulation in the bilges should be kept to a minimum. A safety fuel shut-off should be installed outside the engine compartment to allow the operator to stop the flow of fuel without entering a fire area.

Foam Insulation

Many vessels use rigid polyurethane or other organic foam insulation because of their excellent insulation properties. Such foams should be covered with a suitable flame barrier.

Should a fire occur in areas filled with foam, after the fire is extinguished, the foam must be completely removed to ensure that the fire is not smoldering in concealed spaces.

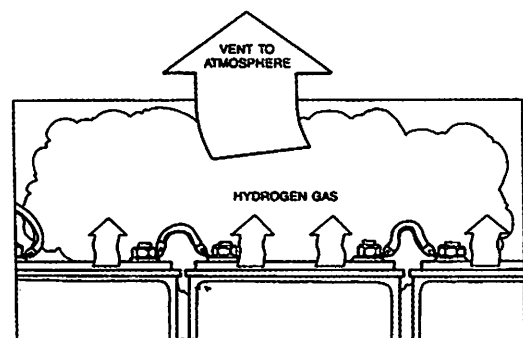
All foams can burn, and they give off toxic gases and black smoke.

Electric Motors

Faulty electric motors are prime causes of fire. Problems may result when a motor is overloaded, isn't properly maintained or is used beyond its safe working life. Motors require regular inspection, testing, lubrication, cleaning and ultimately replacement.

Charging Storage Batteries

When storage batteries are being charged, they emit hydrogen, a highly flammable gas. A mixture of air and hydrogen can be explosive. Hydrogen is lighter than air and will rise as it is produced. If ventilation is not provided at the highest point in the battery charging space, the hydrogen will collect. Then, any source of ignition can cause an explosion and fire.



Galley Operation

A ship's galley is a busy, potentially dangerous place. The intense activity, the many people, the long hours of operation and the basic hazards — open flames, fuel lines, rubbish, and grease or soot build up and general poor housekeeping — all add to the danger of a fire.

When liquid fuels are used for cooking, extreme care should be taken to avoid damage to fuel lines. You should be constantly alert to leaks in fuel lines and fittings. Everyone who uses the galley should know where the fuel line shut-off valves are and the valves must be easy to get at.

Good housekeeping and cleanliness is a must and it doesn't mean just cleaning the stovetop.

Smoking

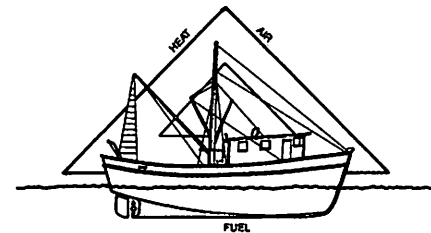
Careless smoking is a key fire hazard. Cigarettes and matches must be properly disposed of in noncombustible receptacles. Ashtrays should be emptied into metal containers with lids, not cardboard boxes used as trash containers. In hazardous areas, no smoking warnings should be posted and observed. Smoking in bed should be prohibited.



The Fire Triangle

A fire must have HEAT, FUEL and OXYGEN in order to burn. Remove any leg of this "triangle" and fire cannot occur.

The fuel for a fire can be in the form of flammable solids, liquids or gases. Liquid fuels burn more intensely than solids because they are more easily vaporized. The vapor from a liquid fuel is also heavier than air. It is extremely dangerous because it will seek low places, dissipate slowly and travel to distant sources of ignition.



A boat is full of fuel sources for fire.

Air contains the oxygen necessary for burning and ignition heat is present in many forms aboard vessels, including flames, spark, friction and spontaneous or internal combustion.

Removing the Fuel

Theoretically, you could put out a fire by physically dragging the fuel away from the source of heat, like someone pulling a log out of a campfire. While this may be rarely practical, it is often possible to move nearby sources of fuel so the fire cannot expand beyond what is already being consumed.

In fire fueled by liquids or gases, it may be possible to extinguish the fire by cutting off the fuel supply. When a fire is being fed by a leaky hydraulic or diesel line, for example, it can be put out by closing the proper valve. If a pump is supplying liquid fuel to a fire in the engine room, the pump can be shut down. Either way, the source of the fuel is removed and the fire is extinguished.

Removing the Oxygen

A fire can be put out by removing its oxygen, or by lowering the oxygen level in the air to less than 16 percent. In open areas, smothering a fire is difficult but not impossible. In smaller open areas, *i.e.*, fire in a galley trashcan, it may be snuffed out simply by placing a cover tightly over the can blocking the flow of air to the fire.

To put out a fire in an enclosed compartment, engine room or cargo hold, the space can be starved of oxygen by completely closing all air-tight hatches, doors, etc. The fire will consume all the available oxygen as long as no air can continue to enter.

Removing the Heat

The most common method of putting out fire is to remove the heat by attacking the fire base with water. An excellent heat absorber, water destroys the ability of a fire to sustain itself by cooling the fuel, by absorbing the fuel and by absorbing radiant heat from flames.

Stability Hazard

The use of large quantities of water to fight fires may jeopardize the stability of the vessel. Dewatering techniques must be commenced immediately when large quantities of water are used.

WARNING: The use of water on electrical fires is not recommended. On electrical fires, water creates a shock hazard. On oil fires, a solid stream will splash the oil, possibly spreading the fire. Water fog may be used on oil fires.

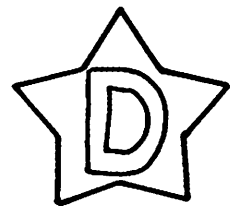
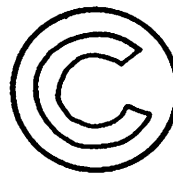
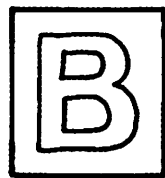
Spread of Fire

If a fire is attacked quickly and effectively, it can usually be contained and extinguished. If it is allowed to burn freely, however, it will generate great amounts of heat that can spread throughout the vessel and ignite new fires wherever fuel and oxygen are present.

Additionally, the heat flame, smoke and gases associated with fire pose many health hazards. Crewmen fighting a fire should use all available protective clothing and respiratory equipment and should stay low and retreat to fresh air before they are overcome.

Classification of Fire

To put out a fire successfully, you need to use the most suitable type of extinguishing agent — one that will do the job in the least amount of time, cause the least amount of damage and result in the least danger to crew members. The job of picking the proper agent has been made easier by the classification of fires into four types, or classes, lettered A through D. Within each class are all fires involving materials with similar burning properties and requiring similar extinguishing agents. However, most fuels are found in combinations and electrical fires always involve some solid fuel.

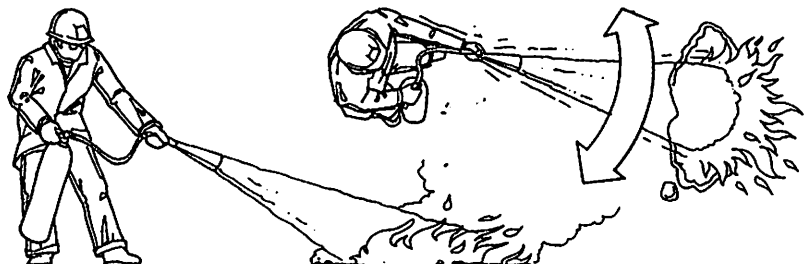


Class A Fires

Fires of common combustible solids such as wood, paper and plastics are best put out by WATER, a cooling agent. Foam and certain dry chemicals, which act mainly as smothering or chain-breaking agents, may also be used.

Class B Fires

For fires involving oil, grease, gas and other substances that give off large amounts of flammable vapors, a smothering agent is best for the job. Dry chemical, foam and carbon dioxide (CO₂) may be used. Water, although appropriate, in most cases



Aim at the base of the fire and sweep the flames away.

with inexperienced personnel will only make the fire worse. If the fire is being supplied with fuel by an open valve or a broken pipe, a valve on the supply side must be shut down to stop the fuel supply. This may put the fire out itself or at least make it easier to put out and allow the use of much less extinguishing agent.

Class C Fires

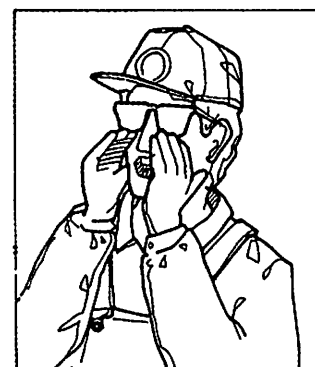
For fires involving energized electrical equipment, conductors or appliances, non-conducting extinguishing agents (CO₂, Halon, dry chemical) must be used, although dry chemical will ruin electronic equipment. An external generator and main engine shutdown switch should be available to shut off electrical sources. Always try to de-energize the circuit to remove the chances of shock and the source of ignition.

Class D Fires

These fires may involve combustible metals such as potassium, sodium and their alloys, and magnesium, zinc, titanium and powdered aluminum. Water should not be used on Class D fires. It may add to the intensity or cause the molten metal to splatter.

Hand-held Portable Fire Extinguishers

Portable extinguishers can be carried to the fire area for a fast attack, but they contain a limited supply of extinguishing agent. The agent is quickly used up and continuous application can exhaust the extinguisher in as little as 8 seconds. For this reason, it is important to back up the lead extinguisher with additional extinguishers or a hose line. If the first extinguisher fails or does not have enough agent to put out the fire completely, the additional extinguishers can be used to finish the job.



Sound the alarm.

Firefighting Procedures

The first step in fighting a fire is to sound the alarm and alert the captain and crew so the fire can be fought as a team. Vessels have been lost because someone tried to fight a fire by himself without sounding the alarm. By the time the rest of the crew knew what was happening the fire was out of control.

The crewmember that discovers a fire or the indications of fire must sound the alarm immediately. When you sound the alarm, be sure to give the exact location of the fire, including the compartment and deck level. This is important as it confirms the location for the vessel's fire party and gives them information regarding the type of fire to expect. The exact location may indicate the need to shut down certain fuel, electrical and ventilation systems and it indicates what doors and hatches must be closed to isolate the fire.

SIZE UP

Size-up is the evaluation of the fire situation. The fire team leader should determine:

- The class of fire (What combustible materials are burning?).
- The appropriate extinguishing agent.
- The appropriate method of attack.
- How to keep the fire from spreading.
- The required manpower and fire fighting assignments.

The first crew to arrive might extinguish a small fire. Larger fires require a coordinated attack and efficient use of manpower and equipment. During size-up, communication and a staging area should be set up.

Communications

Communications with the captain should be established by intercom or a messenger. Communications with fire fighting teams must be established and maintained.

Staging Area

The staging area should be established in a smoke-free area, as near as possible to the fire. An open-deck location, windward of the fire is ideal. If the fire is below deck deep within the vessel, the staging area should be a location below deck. A location near an intercom, if feasible, would be helpful in maintaining communications. However, the staging area should not be located where it will be endangered by fire. All supplies needed to support the firefighting effort should be brought to the staging area.

Attack the Fire

The attack should be started as soon as possible to gain immediate control of the fire and to prevent or minimize its spread. The attack will either be DIRECT or INDIRECT, depending on the fire situation, the equipment available and training level of the crewmen. Direct and indirect attacks differ widely in how they achieve extinguishments; both are effective when properly employed.

Direct Attack

In a direct attack, fire fighters advance to the immediate fire area and apply the extinguishing agent directly into the seat of the fire. An indirect attack should be considered if the heat and smoke make it impossible to locate or reach the seat of the fire.

Indirect Attack

An indirect attack is employed when it is impossible for fire fighters to reach the seat of the fire or they are not properly prepared as trained firefighters. Generally this is the case when the fire is in the lower portions of the vessel. The success of an indirect attack depends on the complete containment of the fire.

One technique involves making a small opening low into the fire space, inserting a fire hose nozzle and injecting a water spray. Heat converts the water to steam, which acts as a smothering agent.

Preventing Fire Spread

If a fire can be prevented from spreading beyond the space in which it originated, it can usually be controlled and extinguished without extensive damage. To do this, the fire must be virtually surrounded on all sides: fire fighters with the hose lines or portable extinguishers must be positioned to cover the flanks and the spaces above and below the fire. The possibility of the fire traveling through the venting system must also be considered. Many times in a fire at sea, the life rafts, life rings and PFD's are burned up before it occurs to anyone that the burning vessel might have to be abandoned.

Provisions should be made to safeguard and prepare life saving equipment during fire drills and actual fires.

Overhaul

Overhaul is begun after the main body of the fire is out. It is actually a combination of two procedures: EXAMINATION and CLEANUP. The purpose of the examination is to find and extinguish hidden fire and hot embers and to determine if the fire has spread to other parts of the vessel. At the same time, debris should be cleaned up and free water removed. Any unsafe conditions should be corrected.

When the Fire Is Out

Before a fire can be considered out, the crew must ensure that certain essential steps have been taken. These include:

- A thorough examination of the fire area to ensure that potential paths of fire spread have been examined.
- All smoke and combustion gases have been removed by ventilation.
- A reflash watch has been established. Crewmembers must be assigned to do nothing but check for re-ignition and to sound the alarm if it occurs.
- An examination has been made to see if the fire has damaged the vessel. High temperature can cause decks, bulkheads and other structural members to warp or become structurally unsound.
- Any necessary dewatering procedures have been started.
- A muster has been conducted to account for all personnel.

Tactical Considerations

- Alarm
- Organize and Stage
- Restrict and Confine
- Attack and Extinguish
- Protect Survival Gear
- Overhaul and Restore

Portable Extinguisher Operation

Pull The Pin
Aim Low at Base of Fire
Squeeze the Handle
Sweep from Side to Side

Fire Size-Up

- Where is the Fire?
- Are There People in the Space?
- What is Burning? What Class?
- What is the Best Agent?
- What is the Required Manpower?
- Can We Stop It from Spreading?

When the Fire Is Out

- Examine the Area Completely
- Ventilate Smoke and Gases
- Have Reflash Watch
- Damage Check to Vessel
- Dewatering Procedures
- Nose-Count of Personnel

Recovering an Individual from the Water

Man in the Water

Rule #1 – Don't be the man in the water!!

No one ever plans on falling overboard. A person who unexpectedly finds himself in the water is a person with fear . . . even if they are good swimmers. The fall itself is bound to invite a certain amount of shock and panic.

Upon initial entry into the water, the respiratory system (breathing) will experience a gasping response (short, shallow and irregular breath rate). Another life-threatening reaction that may occur within seconds of entering the water is heart attack. This is of particular importance for out-of-shape people who fear the water. More often than not, these victims are not wearing a PFD.

Injuries during the fall could render even good swimmers helpless. A successful man-overboard rescue is highly dependent on how well the potential rescuers respond and upon how well the victim can assist. The following are guidelines in the event you are a VICTIM or RESCUER.

Man Overboard

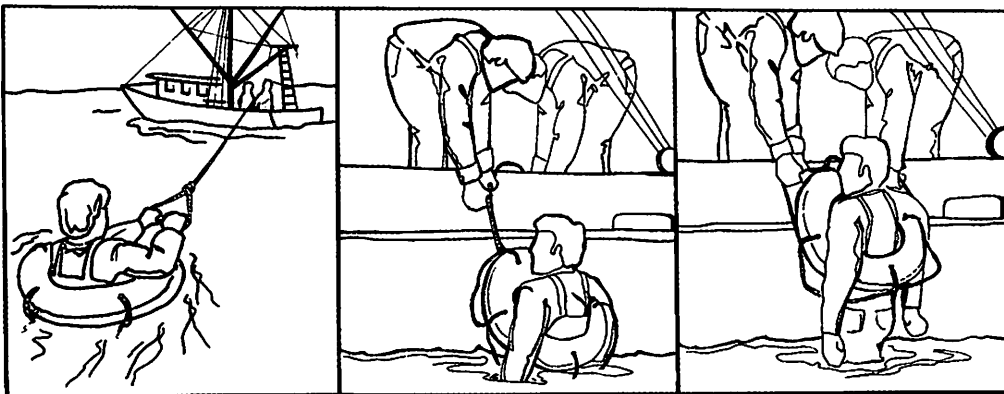
The success of recovering a person overboard depends on a few factors:

- Ability of victim to alert someone of the fall.
- Ability of rescuer to return to victim.
- Available rescue equipment.
- Drills and procedures practiced prior to incident.
- Temperature of water and time of incident (day vs. night).

If You Are the Victim

Things to Consider:

- Am I wearing a PFD?
- Can I swim back to where I fell?
- Did someone see me fall?
- How can I attract attention?
- Will I be able to assist during rescue?



Ring buoys provide flotation and permit the victim to be hauled aboard by hand or with a hoisting tackle. A bowline or lifesting can be used if the person is too large to use a ring buoy effectively. Any debris or floatable trash thrown near the victim will help mark his position for pick up. Strobe lights, "day-glow" markers or smoke pots attached to a ring buoy will mark the victim's position.

Actions to Take:

- While the fall is taking place, scream to alert others. (Choice of words left to your discretion.) “Help!”, “Man overboard!” or a crew member’s name is useful.
- Once in the water, surface and assess your situation (Where am I? Who saw or heard me fall? Am I wearing a PFD?)
- Get control of your breathing.
- Remain as calm as possible; realize the chances of survival are in your favor and remember your crew likes you....hopefully.
- Begin to draw attention to your location using sound or movement:
 - Waving your arms.
 - Blowing a whistle.
 - Kicking your feet, creating a splash.
 - Splashing water with your hands.
- Do not swim if nothing is in sight.
- Utilize your survival skills learned in training (warm water vs. cold water).
- Once spotted, notify rescuer of any injuries or other people in the water.

If You Are the Rescuer

- Sound alarm “MAN OVERBOARD” and give location, i.e. port side, 10 o’clock, NW.
- Mark the location where the person fell in by throwing some type of flotation and mark/fix position on plotter.
- Maintain 100 percent visibility on the victim.
- Communicate with other crew members and captain.
- Once alongside, throw the victim a ring buoy, rope or line.
- Use available equipment to bring victim back on board.
- If water entry/rescue swimmer is required:
 - Wear a PFD/Immersion suit and take one for the victim.
 - Attach a safety line to the crewmember.
 - Toss the PFD to the victim while swimmer stays out of arm’s reach.
 - Once victim has settled down, tow to safety. Talk to the victim to reassure them.

Recovery

In recent years a lot has been written about the problems of recovering fishermen who have either fallen or been washed overboard. There is a variety of man overboard systems that are adoptable for most vessels and circumstances.

For fishing vessels without a dedicated rescue system the following options should be considered:

- A technique of circling a person in the water while towing a lifebuoy on a line is an effective way of making contact, particularly in heavy weather.

- A conscious person in the water can be recovered using a rigid ladder, scrambling net or any device that can be climbed.
- A lifting strap passed around the back and under the arms of a person in the water, attached to a suitable recovery rope, can prove valuable. Using a mechanical lifting device can assist recovery on board.
- An inflatable dingy or life raft provides another option for recovery. Your life raft can be inflated to get people out of oil/gas saturated water and heavy seas.
- A PARBUCKLE can be improvised using ropes or a net in order to recover a person from the water.
- REMEMBER — a rescuer should only enter the water as a last resort. Don't compromise your own safety.

Safety Tip

This safety tip concerns swimming fully clothed in cold water. Most people who accidentally find themselves in the water are fully clothed or without a lifejacket and suddenly recognize certain discomforts. Many good swimmers have not survived short distance swims due to improper techniques used when swimming fully clothed.

The key to swimming fully clothed is to use UNDERWATER MOVEMENTS with your hands and feet. Personal judgment is required concerning the removal of shoes or boots. Some boots will fill with water or become water soaked and restrict movement. Others may assist in your situation by providing environmental protection and floatation. Just remember swimming fully clothed requires strokes without lifting your arms out of the water.

The swimmer should use a BREAST STROKE, MODIFIED SIDESTROKE or an ELEMENTARY BACKSTROKE. You are not trying out for the Olympic team, just trying to get back to where you fell.

Man-overboard Recovery Methods

There are a number of man-overboard recovery methods. The most commonly used are:

1. *One-turn or Anderson*: fastest but requires the most skillful shiphandling.
2. *Williamson turn* for night or low visibility: turns you around and sends you down your previous track.
3. *Racetrack*: for the fastest recovery when you are proceeding at high speed in clear weather.
4. *Y-backing*: for ships with large turning circles and lots of backing power, proceeding at slow speeds.

Large ships often use a small boat to recover a man from the water. Smaller vessels will use the boat-recovery method as well when the sea is very rough or there is little chance of getting the man close alongside. Swimmers with PFDs or immersion suits and tending lines should be ready to go into the water.

No matter which recovery method is used, the same basic principles and methods apply. Swing the stern away from the person with full rudder. If possible, stop the shaft before the person reaches the screw. Always assign someone to do nothing but keep the man in the water in sight.

The following are step-by-step explanations of the four most common recovery methods.

WILLIAMSON TURN

Explanation:

1) Put the rudder over full in the same direction as the man (this swings the stern away from him). For example, if a person fell over the starboard side, put the rudder over full to starboard. Stop the engine.

2) When clear of the man, go ahead with the engine. Continue using full rudder.

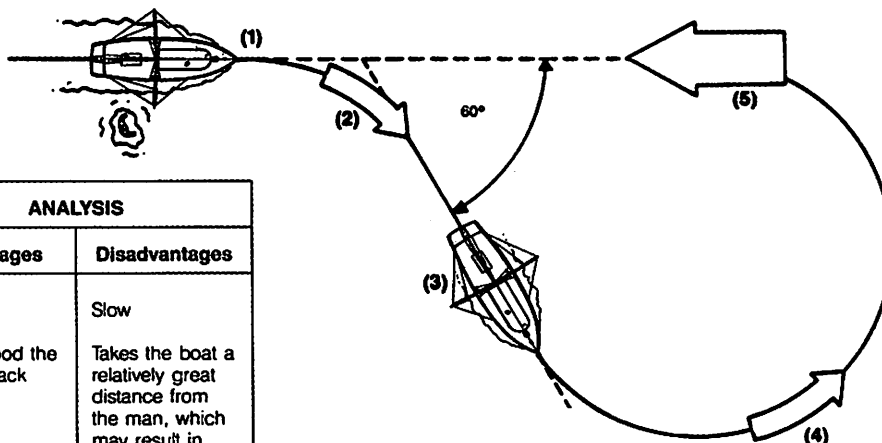
3) When the heading is 60 degrees beyond the original course, shift the rudder to full over in the opposite direction without having steadied on a course. 60 degrees is proper

for many vessels, but the exact amount must be determined through trial and error.

4) Come to the reciprocal of the original course, using full rudder. For example, if your original course was 090 degrees, you should be steady on 270 degrees after

turning.

5) Use the engines and rudder to get into proper final position: vessel upwind of the man and dead in the water with the man alongside, well forward of the propellers.



PRIMARY USE	ANALYSIS	
	Advantages	Disadvantages
Used in reduced visibility because it makes good the original track.	Simplicity	Slow
Used when it is believed that a man fell overboard some time previously but he is not in sight.	Makes good the original track	Takes the boat a relatively great distance from the man, which may result in losing sight of him

ANDERSON OR ONE TURN

Explanation:

1) Put the rudder over full in the same direction as the man (this swings the stern away from him). For example, if a person fell over the starboard side, put the rudder over full to starboard. Stop the engine.

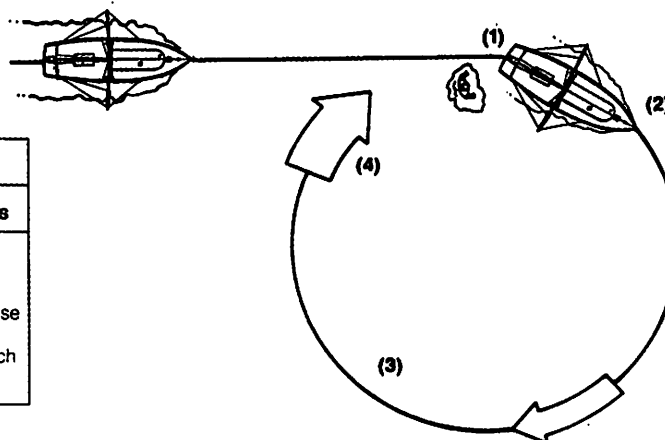
2) When clear of the man, go ahead full. Continue using full rudder.

3) When about two-thirds of the way around, back the engine two-thirds or full. Stop the engines when the man is within about 15 degrees of the bow, then ease the rudder

and back the engines as required to attain the proper final position (same as that for the Williamson method).

4) Many variations of this method are used. They differ primarily in the use of one or both engines on twin

screw vessels, and the moment at which they are stopped and backed to return to the man and tighten the turn. The variation used should reflect individual vessel characteristics, sea conditions, personal preferences, etc.



PRIMARY USE	ANALYSIS	
	Advantages	Disadvantages
Used by vessels which have considerable power available and a tight turning circle.	Fastest recovery method.	Requires very skillful ship-handling because of the lack of a straight approach to the man.

RACETRACK TURN

Explanation:

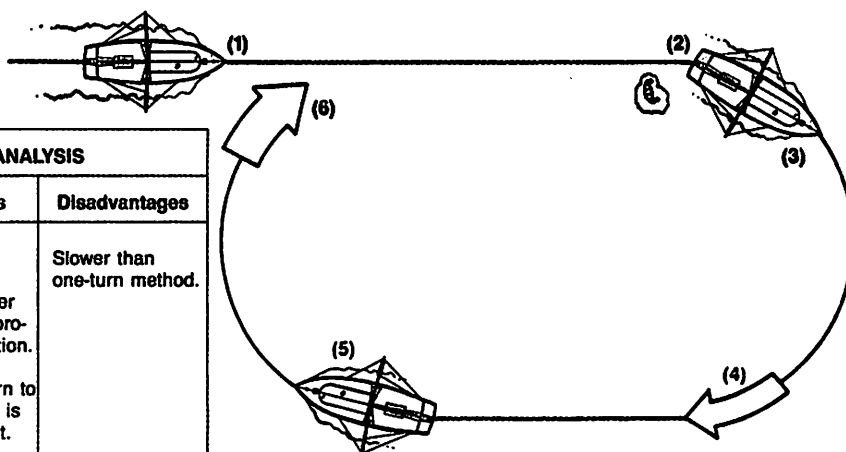
- 1) A variation of the one-turn method which provides a desirable straight final approach to the man.
- 2) Put the rudder over full in the same direction as the man (this swings the stern away from him). For exam-

- ple, if a person fell over the starboard side, put the rudder over full to starboard. Stop the engine.
- 3) When clear of the man, go ahead full and continue using full rudder until you come to the reciprocal of the original

- course. For example, if your original course was 090 degrees, steady up on 270 degrees after turning.
- 4) Hold the reciprocal course long enough so you can make a straight final approach to the man on the

- 5) Use full rudder to turn to the man.
- 6) Use the engine and rudder to get in the proper final position (the same as for other recovery methods).

PRIMARY USE	ANALYSIS	
	Advantages	Disadvantages
Used in good visibility when a straight final approach leg is desired.	<p>Straight final approach leg makes it easier to attain the proper final position.</p> <p>Ship will return to the man if he is lost from sight.</p> <p>Reasonably fast.</p> <p>Effective when wind was from beam on original course.</p>	Slower than one-turn method.



Y-BACKING

Explanation:

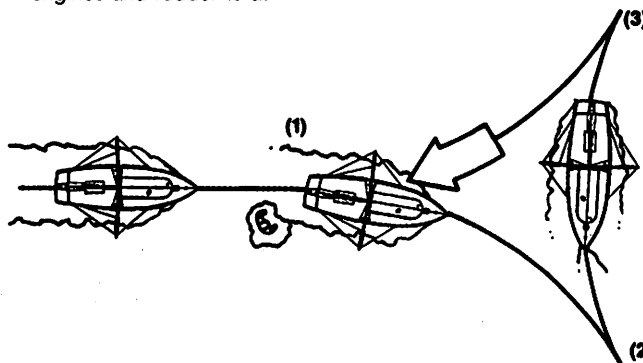
1. Put the rudder over full in the same direction as the man (this swings the stern away from him). For exam-

- ple, if a person fell over the starboard side, put the rudder over full to starboard. Stop the engine.
2. When clear of the

- man, back the engine with full power, using opposite rudder.
3. Go ahead, using the engines and rudder to at-

- tain the proper final position (same as for the other recovery methods).

PRIMARY USE	ANALYSIS	
	Advantages	Disadvantages
Used by vessels with low height of eye. The vessel remains comparatively close to the man, making it easier to keep him in sight.	The vessel remains comparatively close to the man.	Backing into the wind and sea may result in poor control of the vessel.



Rescuer Responsibilities

- Sound Alarm “MAN OVERBOARD”
- Throw a Flotation Device in Water
- Post a Lookout
- Turn Vessel Around
- Position Vessel for Retrieval
- Use Available Rescue Equipment
- Provide Medical Attention
- Rescue Swimmer

Victim Responsibilities

- Yell for Help / Whistle
- Assess Your Situation
- Control Your Breathing / Remain Calm
- Draw Attention to Yourself
- Stay Still — Do Not Swim
- Utilize Survival Skills
- Notify Rescuers of Any Injuries or Other People in the Water

Cold Water Near-Drowning Survival Factors

- Water Temperature
- Cleanliness of Water
- Time Submerged
- Age of Victim
- Quality of Treatment
- Other Injuries

Minimizing the Effects of Unintentional Flooding

Approximately 70 percent of deaths involving commercial fishing industry vessels are related to stability. Maintaining proper stability on fishing vessels is one of the most difficult tasks for the fisherman. The more you learn about stability, especially the stability limit of your own boat, the safer you can be.

The most important concept for you to concern yourself with while fishing and stowing catch is to keep to a minimum the number of stability hazards present at the same time. For instance, while you are lifting the cod end aboard, be aware of the hazards posed by an open hatch. Be aware of the effects of shifting catch on deck, or of partially filled fish hold or ballast tank.

Stability changes with every gallon of fuel, ice and water that is used. It changes with every shift in ballast and with every load of fish; it makes a difference whether you put the cargo down below or on the deck. Finally, the stability of your boat changes with every wave that passes under the boat since the stability varies with the position of your vessel on the wave.

Common Small Vessel Flooding Sources

Small hull breach:
Located here possibly from impact with floating debris such as logs. Also possible from impact on hull by fishing gear, or in structural failure of wood hulls (broken framing).

Damaged rudder port fittings:
Packing problems with rudder posts results in many flooding cases. Structural failure (cracking) of the fitting housing has also been observed.

Large hull breach:
Known to result from impact from fishing gear (otter doors, etc.). Can also result from grounding and collision-type accidents.

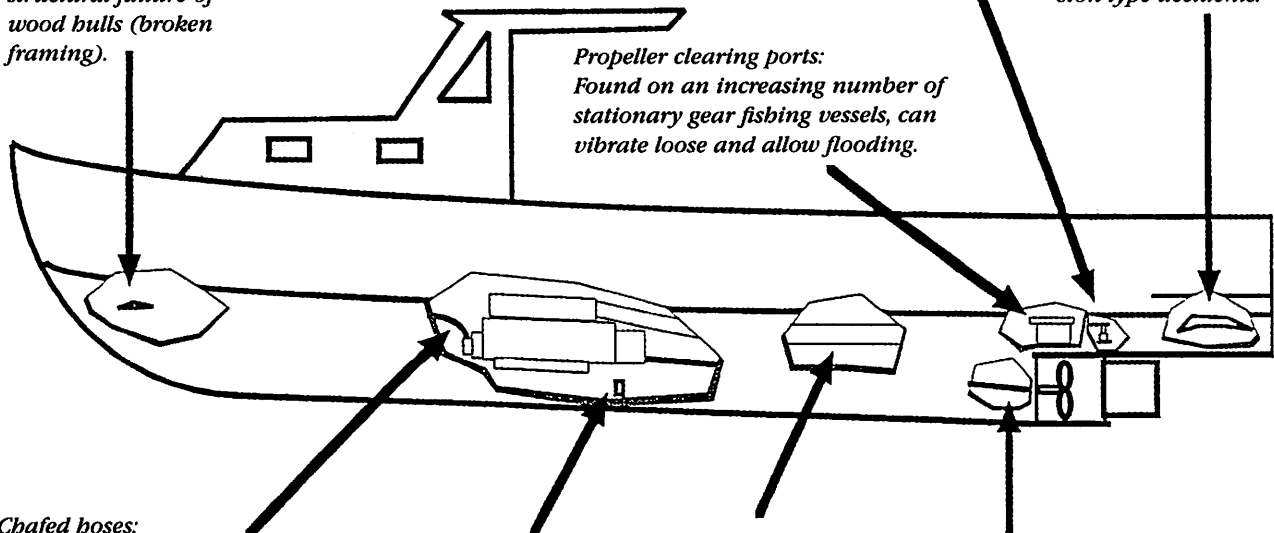
Propeller clearing ports:
Found on an increasing number of stationary gear fishing vessels, can vibrate loose and allow flooding.

Chafed hoses:
Resulting from vibration damage to hoses in washing and engine cooling systems.

Open seacocks:
Resulting from corrosion damage or improper hose connections.

Split piping:
Freeze damage to wet exhaust lines, or failures in pump system piping.

Main shaft packing gland:
A perpetual maintenance problem on boats, can also result from emergency maneuvers with fouled propellers.



Some Suggestions for Preserving Adequate Stability

The United States Coast Guard, in conjunction with the Commercial Fishing Industry Vessel Advisory Committee, recommends the following measures. You should consider this as preliminary guidance on matters influencing the safety of fishing vessels as specifically related to preserving vessel stability.

- All doorways and other openings through which water can enter the hull or deckhouses should be closed in adverse weather and when not in use.
- All closure devices should be maintained on board in good working condition.
- Hatch covers and flush deck scuttles should be kept securely closed when not in use during fishing.
- All deadlights should be maintained in good condition and securely closed in bad weather.
- All fishing gear and other large weights should be stowed, prevented from shifting and placed as low as possible.
- Care should be taken to maintain pull from fishing gear in line with the vessel's longitudinal centerline and to avoid maneuvering with trawls off the quarters or beams. (Trawls off the quarters or beam generate tremendous overturning forces that can easily capsizes a vessel).
- The point of action of the weight is at the hoist block of the frame or point of suspension. (Haul back pull points should be shifted to lower points during trawl operations.) This lessens the magnitude of potential overturning forces generated when the trawl moves off the longitudinal centerline of the vessel.
- The gear to release the deck load on fishing vessels that carry catch such as herring on deck should be kept in good working order for immediate use when necessary.
- Freeing ports in bulwarks should always be open while underway
- When the weather deck is prepared for the carriage of deck loads by division with pound boards, there should be slots between them for adequate size to allow an easy flow of water to the freeing ports, *i.e.*, good drainage.
- Never carry fish in bulk without first being sure that the portable divisions in the fish hold are properly installed. **THE CARGO MUST NOT SHIFT!!**
- Minimize the number of partially filled tanks. Free surface can severely impair your vessel's stability.
- Observe any instructions given regarding the filling of water ballast tanks. Remember that partially filled tanks can be dangerous. They generate free surface.
- Closing devices provided for vents to fuel tanks should be secured in bad weather.
- Be alert to the danger of following or quartering seas. These may cause heavy rolling and/or difficult steering. If excessive heeling or yawing occurs reduce speed, alter course or both.
- Do not overload. Overloading increases draft and decreases reserve buoyancy, which decreases stability.
- Avoid icing conditions. Standing wire rigging will ice up to a greater extent than struts or yards. If icing cannot be controlled, leave the area.
- Maintain at least 1 foot of freeboard at all times.

Preserving Water Integrity

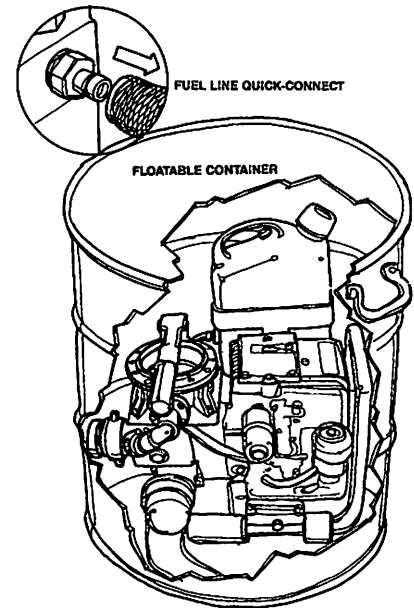
1. All watertight compartments should have a means of being pumped. In one-compartment type vessels, there should be at least two bilge suctions with one at the deepest part of the bilge and one at the stern.
2. All valves and pumping systems should be marked as to function.
3. Bilge water level alarms should be installed in all watertight compartments. Alarms are to be audible and visible.

Damage Control / Emergency Repair

1. Prior to vessel departure, inspect condition and proper working order of all engines, auxiliary motors, impellers, hoses and valves, which make up the pumping system.
2. All bilge suction lines shall be provided with screens.
3. Bilge is to be kept free of debris to ensure proper discharge of bilge water.
4. Spare parts and engine repair kits should be stowed aboard in the event that a pump system needs repair.
5. Materials such as steel plate patches, repair clamps, wooden plugs or any material that can be used to stop water from entering the vessel and the tools needed to fasten or hold the material in place, shall be stowed aboard.

Dewatering Equipment and Techniques

1. A minimum of two pumping systems, capable of pumping all compartments, should be installed with each pump powered from independent sources such as a main engine, generator or auxiliary engine.
2. The salt water systems should be insulated from the bilge pumping system and all bilge suctions should have check valves installed.
3. If the same pump is used for bilge and deck wash down purposes, a three-way valve must be installed and discharge line provided with a vent. No shutoff can be installed in the vent line.
4. When conditions do not allow for self-priming pumps, a raw line may be installed, provided it meets the following:
 - Shutoff valve is installed well above waterline.
 - Prime line is routed well above waterline.
 - Discharge pipe is vented on deck.
5. Delivery of Coast Guard Dewatering Pumps
 - Transmit proper MAYDAY following the written procedures.
 - Be sure to notify USCG about your situation, since pre-flight preparations include loading the proper gear for the type of emergency, *i.e.*, sinking needs pumps.
 - The Coast Guard will deliver a pump one of two ways, depending on distance from shore and sea condition — the direct method by air or the indirect method by jet.
 - Pump will be delivered inside a floatable container.



General Safety Instructions for Coast Guard Dewatering Pumps

Safety Instructions

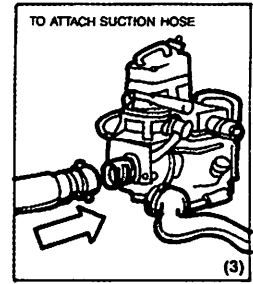
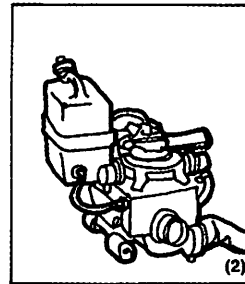
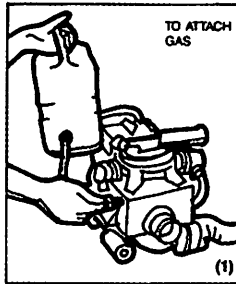
- Refuel only in well-ventilated areas.
- If gasoline is spilled, move pump away from spill.
- Do not refuel gasoline tank while engine is running.
- Do not run engine in an enclosed area. Exhaust gases contain carbon monoxide, an odorless, colorless poison.
- To prevent accidental starting, always remove the spark plug before working on the engine or equipment.
- Do not tamper with the exhaust system.
- Do not operate the engine if the air cleaner is removed (except for adjustment).
- Always keep hands and feet clear of rotating parts.
- Do not disconnect either suction or discharge hose during pump operation.
- Do not check oil or fuel level while the engine is running.
- Use caution handling pump during and after running until engine has cooled.

Sample Instructions for the Dewatering Pump

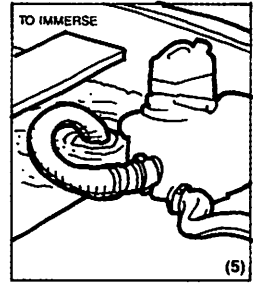
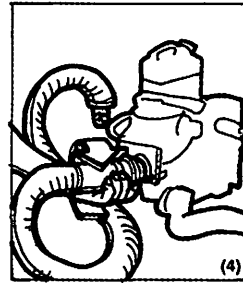
A. Before starting pump

- Mount fuel tank to engine and connect fuel line to quick connect/disconnect fitting (1,2).

- Put strainer end of suction inlet hose into water being pumped and connect coupling to pump. Be sure strainer and end of hose are submerged. If air gets into inlet hose or strainer, the pump will not pump. If strainer is not used, large solids may plug or damage the pump (3,4,5).



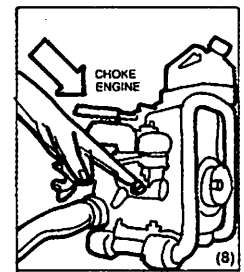
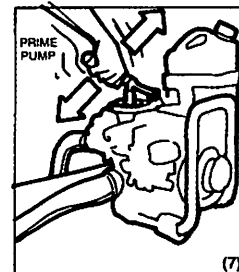
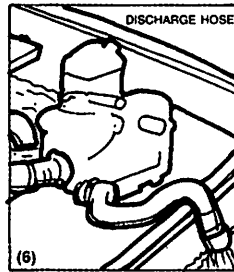
- Outlet (discharge) hose should be laid out with minimum kinks or sags and placed overboard (6).
- Prime the pump with water by actuating hand pump until water discharges from plastic outlet of the hand pump (7).



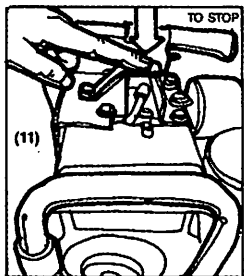
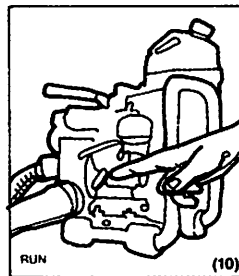
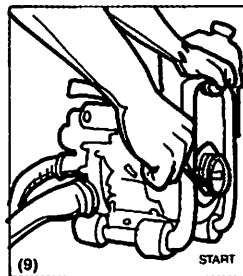
- Place choke lever on engine to "choke" (8).

B. Operating pump:

- Wrap starter rope on pulley and pull (9).
- After second pull (if engine hasn't started), set choke half way and crank again. Then set choke at 1/4 to prevent flooding the engine.



- After starting, adjust choke for best operation (10).
- After pump and engine are started, actuate hand priming pump until pump is pumping water.
- Be sure inlet hose and strainer are kept under water.



- Stop engine before adding gasoline (11).

- Keep pump and engine as nearly level as possible.

C. To stop engine and pump:

- Disconnect fuel line. Engine will continue pumping for approximately one minute and then stop.
- When finished pumping, drain and flush the pump and hoses with fresh water.

Guidelines for Hoisting to CG Helos

Initial Communications

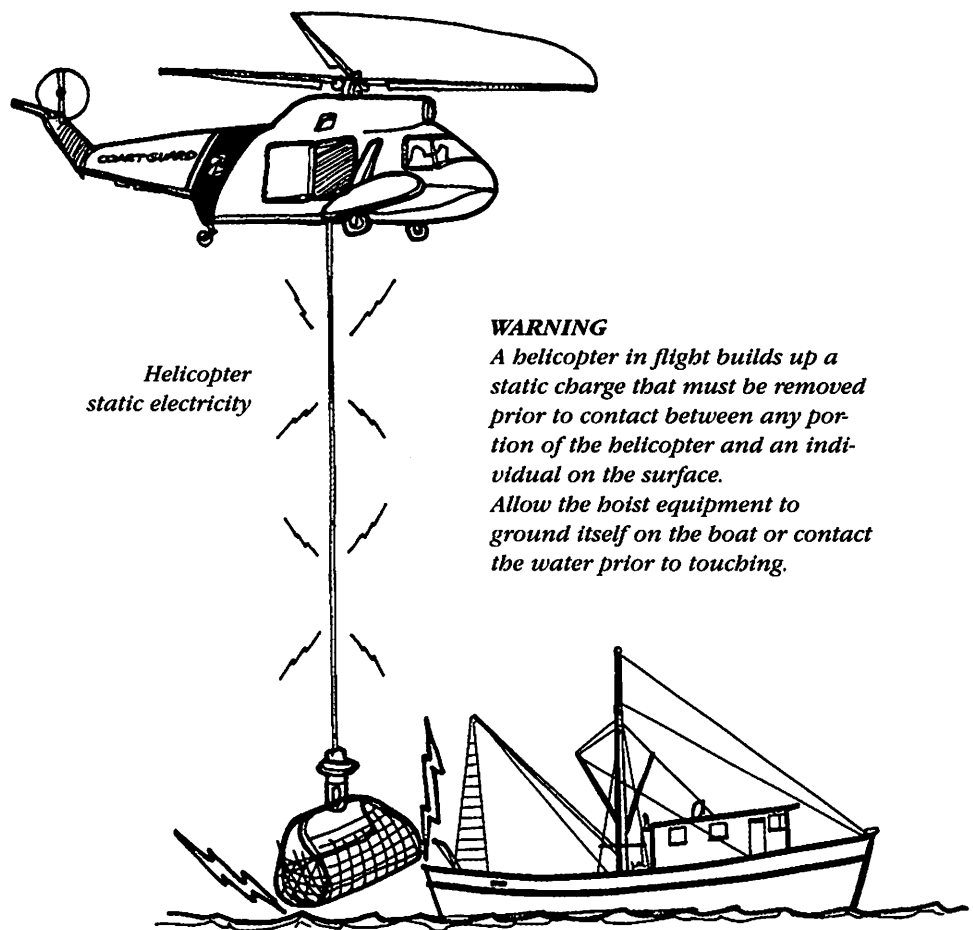
- Position (latitude / longitude)
- Any Injuries
- State of Vessel
- Signaling Devices Onboard
- Open Areas to Hoist to (usually port quarter)

Preparation for Hoisting

- If Underway: Bow Facing 30-45 right of wind line
- If DIW: Bow Facing 0-90 right of wind line
- Clear Hoisting Area: snag hazards, antennae, booms
- Life Jackets
- Somebody on Radio if Possible

During Hoisting

- Ground the Device
- Tending Trail Line
- Disconnecting Device (Don't hook cable to boat)
- Any Problems: Advise immediately over radio



Sample Briefing to Pass to Vessels Prior to Hoisting

“A Coast Guard helicopter is proceeding to your position and should arrive at approximately _____. Maintain a radio watch on _____ MHz / kHz Channel _____ VHF / FM; the helicopter will attempt to contact you. Provide a clear area for hoisting, preferably on the port stern. Lower all masts and booms that can be lowered. Secure all loose gear. Keep all unnecessary personnel clear of the hoist area. When the helicopter arrives, change course to place the wind 30 degrees on the port bow and maintain a steady course and steerageway. As the helicopter approaches, gale force winds may be produced by the rotors, making it difficult to steer. The helicopter will provide all of the equipment for the hoist. A line will probably be trailed from the helicopter for your crew to guide the rescue device as it is lowered to the deck. Before handling the rescue device, allow it to touch your vessel. This will discharge static electricity. If you have to move the rescue device from the hoist area to load the patient, unhook the cable from the rescue device and lay the loose hook on the deck so the helicopter can retrieve it. Do not attach the loose hook or the cable to your vessel. The helicopter may move to the side while the patient is being loaded. Have the patient wear a lifejacket and attach any important records, along with a record of medications that have been administered. If possible, brief the patient on the instructions pictured on the rescue device. When the patient is securely loaded, signal the helicopter to move into position and lower the hook. After allowing the hook to ground on the vessel, re-attach it to the rescue device. Signal the hoist operator with a “thumbs up” when you are ready for the hoist to begin. As the rescue device is being retrieved, tend the trail line to prevent the device from swinging. When you reach the end of the trail line, gently toss it over the side.”

Actions Prior to Rescue

- Follow Instruction from Crew
- Tend to Injured / They Go First
- Transfer Organization
- Prepare Safety Line for Transfer
- Wear Flotation During Transfer
- Stay in Raft if Transfer is Unsafe
- Take your Time. You're Almost There.

Emergency Instructions

F/V _____

General Instructions

1. All crew members and passengers are responsible for knowing their assigned emergency duties and stations.
2. All crew members are responsible for knowing the location of the ship's lifesaving and emergency equipment.
3. All crew members and passengers shall participate in all emergency drills and training sessions.
4. Newly reported personnel should report to _____ for safety emergency or orientation.
5. If you are in doubt as to any of your responsibilities as specified in this bill, ASK THE CAPTAIN for clarification.

Emergency Signals

Fire and Emergency Signal (_____)

The Fire and Emergency Signal shall be a continuous blast on the ship's whistle with the same signal sounded simultaneously on the General Alarm for a period of not less than 10 seconds.

Man Overboard Signal (___ ___ ___)

The Man Overboard Signal shall be 3 Long Blasts of the ship's whistle with the same signal sounded simultaneously on the General Alarm, with the signal to be sounded a minimum of four times.

Abandon Ship Signal (***** _____)

The Abandon Ship Signal shall be at least seven (7) short blasts followed by one (1) long blast on the ship's whistle, with the same signal sounded simultaneously on the General Alarm.

Planning Emergency Drills

The objective of an emergency drill is to train the crew and maintain and measure their capability to respond properly and in a timely way when faced with an emergency condition. Drills should involve the entire crew and be conducted as if a real emergency exists.

Every drill should be planned in advance to be effective and efficient.

(1) Emphasize a Specific Aspect:

Emphasize a single aspect of responding to an emergency, although every drill should contain all the steps necessary in a real emergency. Do not attempt to teach the crew everything at once. Focusing on a single aspect simplifies the drill, increases the chances of that aspect being remembered during an emergency, and keeps the time required for a drill within an acceptable limit.

(2) Select a Suitable Location:

The location for the drill should be appropriate for the aspect being emphasized. For example, a drill that focuses on life raft deployment should be held at the life raft station.

(3) Write a Scenario:

All drills should be realistic; therefore the emergency should be describable. Preparing a written scenario is recommended to allow the person in charge to follow through the drill without inadvertently changing the condition of the drill.

(4) Vary the Schedule:

The day and time of drills should be varied to ensure that all crew members get instruction and practice in the jobs they will be required to do in an emergency. Varying the schedule with little or no notice will allow the supervisors to assess the crew's readiness to respond to emergencies. Drills should not be held on the same day of the week at the same hour.

(5) Avoid Undue Risk:

Drills should avoid exposing the crew or vessel to situations that may place them in jeopardy. However, avoiding all risk should not be a basis for failure to test some of the equipment. For example, launching lifeboats in a mild sea can entail some risk; this risk can be reduced to a negligible level with proper maintenance and training. The benefits of operating this equipment to increase the chance of successful deployment in a real emergency are high and therefore worthwhile.

How to Conduct Effective Drills

Be Realistic

- Scenarios should be as realistic as possible.
- Crews should feel some pressure; pressure is normal. Each crew member should understand his or her personal responsibility to be safe.

Be Spontaneous

- Don't always announce drills ahead of time; but always announce a drill as a drill.
- Don't always conduct drills at the same time or places. Try them at night, in rain — be creative.

Do Hands-on Drills

- Retention for hands-on learning is 90 percent.
- Crew members should touch equipment as much as practical.
- Familiarity with equipment during both night and day should be stressed.

Make Drills Progressive

- Start with a simple walk-through and build skills and speed, but never include running.
- Progress to more complicated scenarios.
- Throw in “curves” to make scenarios more interesting.

Build Teamwork

- Build on the team that you already have. Teamwork will increase efficiency and save lives.
- Crew members should cross-train to cover each other's responsibilities in the event of injury to others. All hands should participate in drills.

Be Positive

- Drills should not have a punitive cost and should never be used to harass, intimidate or frustrate. Drills can be fun . . . a chance to feel good about those you must count on in an emergency.

Debrief All Drills

- A drill is not complete until it is debriefed.
- Each member should talk about what was learned and how it could be done better.

Drill Topic: Fire on Board

SCENARIO: Fire is caused by a faulty stove, clothing placed too close to an electrical heater, frayed insulation on electrical wiring against a bulkhead, an oversized light bulb in a bunk light or other appropriate cause.

SETTING UP THE DRILL: This drill is best run while underway, at the beginning of a trip and with no gear in the water. Strobe lights or a red rag can simulate fire. Tape can be used to block off passages due to "smoke." This drill can easily evolve into an abandon ship drill.

INITIATING THE DRILL: Tell the crew member that there is smoke and/or flames coming out of the stove / state room / bulkhead. When the crew member is clear on how to correctly report the fire, the drill begins. Keep the drill moving by telling the crew how effectively they are controlling the fire as the drill proceeds. The fire can spread or be extinguished, depending on their efforts.

CRITICAL POINTS TO LOOK FOR DURING THE DRILL:

- ___ Does the person discovering the fire immediately sound the alarm?
- ___ Does the person on watch alert all crew members? How?
- ___ Are Coast Guard and other vessels made aware of the problems?
- ___ Does entire crew recognize the Fire Signal?
- ___ How soon is entire crew aware of the emergency?
- ___ Are any crew members unaware of the emergency due to an inoperative signal or lack of communication?
- ___ Does crew report information such as source and size of fire, and number of persons involved?
- ___ Is communication to the wheelhouse sufficient to allow operator to maneuver vessel to minimize the effect of wind on the fires?
- ___ Does crew communicate with each other?
- ___ Is simulated distress signal called off once fire is under control?
- ___ Does crew provide good backup for lead firefighter?

RESPONSE

- Do crew members react in accordance with their emergency assignments?
- Do crew members readily do unassigned but needed jobs (cross-trained)?
- Does crew work together as a team?
- Do crew members anticipate or react to events?
- Does operator maneuver the vessel to minimize the effect of wind on the fire?
- Is operator safely able to leave the wheel, if necessary, to inspect the affected area?
- If help is not available, does operator close doors and seal openings to isolate the fire?
- Are areas near the fire that are vented or have operating machinery or fans closed or secured?
- Are electricity and fuel sources to the affected space secured?
- Do crew members go around, rather than pass through, smoke filled spaces when evacuating the affected space?
- When evacuating affected areas, do crew members remove portable extinguishers, immersion suits, other survival gear and hazardous (flammable) items?
- Do firefighters don Self-Contained Breathing Apparatus (if equipped) or fight the fire by staying low?
- Are firefighters always backed up?
- Is an appropriate extinguishing agent used?
- Is fire or deck hose brought to the scene and pumps placed in line?
- Are fire boundaries checked periodically to prevent the fire from spreading?
- If the fire is not controlled, are initial preparations made to abandon the ship?
- If water is used to control the fire, are provisions made to dewater the vessel?
- Is a reflash watch team set and the affected areas overhauled?

Fire

- ___ Notify wheelhouse immediately to sound alarm and call MAYDAY.
- ___ Shut off air supply to the fire, close hatches, ports, doors, ventilators and similar openings.
- ___ Deenergize the electrical systems supplying the effected space, if possible.
- ___ Assemble portable fire extinguishers / water hoses to fight the fire. Do not use water on electrical fires.
- ___ If the fire is in the machinery space, shut off the fuel supply and ventilation systems and activate the fixed extinguisher system, if installed.
- ___ Maneuver the vessel to minimize the effect of wind on the fire.
- ___ Check adjoining spaces to prevent spread of fire. Move survival equipment that could be damaged by the fire.
- ___ Once extinguished, make sure to clean up debris so a reflash does not occur.
- ___ If unable to control the fire, immediately notify the Coast Guard and other vessels in the vicinity.
- ___ Move personnel away from the fire, have them put on lifejackets, and if necessary, prepare to abandon the vessel.

*** When reporting the fire, did the crewmember see an open flame or smoke? Smoke can travel and mislead the fire team about the exact location. Well-marked safety signs should be placed by every exit so a crewmember does not become disoriented in a smoke-filled compartment.**

Drill Topic: Flooding

SCENARIO: The vessel is running from the fishing grounds with a deck load of fish and gear. Wind and seas are running off your quarter.

BEFORE THE DRILL: Make sure the crew is familiar with the vessel's plumbing system, through-hull fittings, pumps and equipment available for damage control.

SETTING UP THE DRILL: This drill can be run any time and can evolve into an abandon ship drill. The drill leader will inform the crew of the location of the "flooding" and the level of the water.

INITIATING THE DRILL: The drill leader tells crew members that the vessel seems to be getting sluggish, and asks them to check lazarettes, holds and the engine room. The drill leader then informs the crew of the location and extent of the problem. Keep the drill moving by telling the crew the level of the flooding. Let them know how effectively they are controlling the problem as the drill proceeds.

CRITICAL POINTS TO LOOK FOR DURING THE DRILL:

- Does the person discovering the emergency initiate the alarm?
- Does the crew report information such as location, extent and cause of flooding?
- Does the person on watch alert all crew members? How?
- Are Coast Guard and other vessels made aware of the problem?
- Does entire crew recognize the General and High Water alarms?
- How soon is the entire crew aware of the emergency?
- Are any crew members unaware of the emergency due to an inoperative signal or lack of communication?
- Is communication to the wheelhouse sufficient to maneuver the vessel to lessen the risk of capsizing?
- Does the crew communicate with each other?
- Do crew members account for each other?
- Is simulated distress signal called off once the flooding is under control?

RESPONSE

- Do crew members react in accordance with their emergency assignments?
- Do crew members readily do unassigned but needed jobs (cross-trained)?
- Does crew work together as a team?
- Do crew members anticipate or react to events?
- Does the person on watch initiate appropriate maneuvers to lessen risk of capsizing? Reduce speed? Head into seas? Minimize roll?
- Is the person on watch safely able to leave the wheel, if necessary, to inspect the flooded area?
- What actions are taken to improve stability?
 - Fish / gear tossed
 - Freeing ports cleared
 - Blocks lowered
 - Cross flooding minimized
- Is watertight integrity maintained by closing all watertight doors, hatches, etc?
- Are through-hull fittings, shaft housings and other penetrations checked for leakage?
- Is everyone familiar with the operation of the vessel pumps?
- Are tarps, plugs, blankets, etc., used to slow leaks?
- Are extra pumps (hand/power) and buckets used to dewater?
- Are there problems with the vessel's pumps?
- Do crew members prepare survival equipment (life rafts, immersion suits, EPIRBs, extra clothing, water, food, flares, medical supplies, etc.) in case of sudden loss?

Flooding

- ___ Notify wheelhouse immediately to sound alarm and MAYDAY.
 - ___ Close all watertight and weather tight doors, hatches and airports to prevent taking water aboard or further flooding in the vessel.
 - ___ Keep bilges dry to prevent loss of stability due to water in bilges. Use power-driven bilge pump, hand pump and buckets to dewater.
 - ___ Check all intake and discharge lines that penetrate the hull for leakage.
 - ___ Personnel should remain stationary and evenly distributed.
 - ___ Personnel should don life jackets / immersion suits if the going becomes very rough, the vessel is about to cross a hazardous bar or when otherwise instructed by the master or individual in charge of the vessel.
- * Crew members should be aware of all potential escape routes and how to get out in the dark. Each vessel should carry a "Damage Control Kit" with a variety of wedges, patches, waterproof epoxy and waterproof flashlight. Soft wood plugs should be located near every through-hull fitting in case of leakage.

Drill Topic: Abandon Ship

SCENARIO: Despite the crew's best efforts to control the fire or the flooding, the situation gets out of control and the drill leader gives the order to abandon ship.

SETTING UP THE DRILL: This drill can be added to the end of a fire or flooding drill to save time and make the drills more challenging. To prevent the fire or flooding drill from being cut short, the drill leader should tell the crew not to abandon ship until the order is given. The crew will only simulate launching life rafts, activating EPIRBs and abandoning the vessel. However, immersion suits should be donned and appropriate survival equipment brought to the abandon ship station.

INITIATING THE DRILL: When the fire or flooding drill has been concluded, the abandon ship signal will be sounded over the ship's alarm system.

CRITICAL POINTS TO LOOK FOR DURING THE DRILL:

- ___ Does the person on watch alert all the crew members? How?
- ___ Are Coast Guard and other vessels made aware of the problem?
- ___ Does entire crew recognize the Abandon Ship Signal?
- ___ Are any crewmembers unaware of the emergency due to an inoperative signal or lack of communication?
- ___ Does the crew communicate with each other?
- ___ Are all crew members accounted for?
- ___ Are signals used before abandoning ship to attract nearby assistance?
- ___ Are all crewmember's able to make adequate MAYDAY call and find the vessel's position?

RESPONSE

- ___ Do crew members react in accordance with their emergency assignments?
- ___ Do crew members readily do unassigned but needed jobs (cross-trained)?
- ___ Does crew work together as a team?
- ___ Do crew members anticipate or react to events?
- ___ Do crew members know their abandon ship station?
- ___ Do obstructions block escape routes or access to survival equipment?
- ___ Is life raft painter always secured (simulated) once life raft is released?
- ___ Do all hands have an immersion suit of a size that fits appropriately even with deck clothing on?
- ___ Do all crew members completely don their immersion suits in 60 seconds?
- ___ Does the crew use a buddy system in donning suits and launching rafts?
- ___ Does the crew simulate tossing throwable devices overboard?
- ___ Does the crew gather an EPIRB, extra clothing, water, food, flares, log and any other survival equipment and are these items protected from washing overboard?
- ___ Are watertight doors and hatches closed, if there is time, before abandoning the vessel?
- ___ Do crew members simulate entering the water properly wearing immersion suits?
- ___ Can all crew members describe how and when to launch a life raft and entry procedures?
- ___ Is crew aware of initial procedures once on board the life raft?
- ___ Can all crew members describe how to operate and test EPIRBs?
- ___ Is the EPIRB tested and logged at the end of the drill?
- ___ If flares are lit, is the Coast Guard notified?

Abandon Ship

Prior to abandoning your vessel, the following actions should be completed, as time and circumstances allow:

- ___ Sound the alarm and send your MAYDAY.
- ___ All crew members don extra clothing and immersion suits / PFDs.
- ___ Prepare to launch liferaft or other survival craft. Release and take your EPIRB.
- ___ Gather extra supplies that may be useful for your survival (clothing, food, water, flares, cell phones, etc.). Throw buoyant objects over the side if possible to increase visibility.
- ___ Close all watertight and weather tight doors.
- ___ Report to the pre-established muster station and prepare to abandon ship as a group.
- ___ If possible, jump directly into your inflatable life raft to remain dry. If not possible, jump into the water close to the painter line and pull yourself to the raft.
- ___ Assist others to the raft, *i.e.*, non-swimmers / injured. Use your whistle on your PFD / Immersion suit to let others in the water know of your location.
- ___ Once all crew are accounted for, perform initial actions of cutting the painter, paddle out of the danger area, deploy the sea anchor, close entrances if necessary, bail out and repair leaks.

* Most abandonments occur at night. Drills should be conducted at this time to reduce the possibility of crew panic. Drills should also include how to deal with an injured crewmember. Once the decision is made to leave the vessel, take everything you may need, as you may not be able to ever return to the vessel.

Drill Topic: Person Overboard

SCENARIO: While hauling gear during sloppy weather, a deck hand is washed overboard by a large wave or falls overboard while dipping a 5 gallon bucket over the side. The crew member is wearing a floatation device equipped with a light and whistle. Other boats are visible in the area.

BEFORE THE DRILL: Be sure the crew is familiar with the vessel's person overboard recovery plan, including:

- How the skipper plans to pull a person back on board.
- What equipment is required.
- Skipper's requirements for wearing flotation while on deck.
- Rules for being on deck in rough weather or at night.

This drill is best run while underway with no gear in the water, and with the person overboard represented by a FLOTATION DEVICE with a personal marker light attached.

INITIATING THE DRILL: The drill leader chooses a "victim" and informs the crew members about the overboard incident. The drill leader then throws the flotation device overboard and advises another crew member of the person overboard. The "victim" does not participate in the drill directly, but observes the crew's reaction to the scenario and helps keep track of the following critical points.

CRITICAL POINTS TO LOOK FOR DURING THE DRILL:

- ___ Does the person discovering the emergency initiate the alarm?
- ___ Does the person discovering the emergency tell the wheelhouse which side of the vessel the victim fell off?
- ___ Does the person on watch alert all crew members? How?
- ___ Are Coast Guard and other vessels made aware of the problem?
- ___ Does the entire crew recognize the Man Overboard signal?
- ___ How soon is the entire crew aware of the emergency?
- ___ Is communication to the wheelhouse sufficient to bring the vessel to the victim?
- ___ Does the crew communicate with each other?
- ___ Is the simulated distress signal called off after the victim is rescued?

RESPONSE

- Do crew members react in accordance with their emergency assignments?
- Do crew members readily do unassigned but needed jobs (cross-trained)?
- Does the crew work together as a team?
- Does the person discovering the emergency throw a marker?
- Does the person discovering the emergency continually keep the victim in sight and point?
- Does the person on watch use electronic position fixing devices to mark the position of the person overboard?
- Does the person on watch initiate a proper maneuver?
- How long does it take to rig the recovery device?
- Is the crew in place, including a rescue swimmer in an immersion suit with a safety line, by the time the vessel is back alongside the victim?
- Is the recovery device and vessel's hauling equipment used effectively?
- Do any crew members endanger themselves by leaning perilously over the side to recover the victim?
- Does the crew recognize hypothermia and know appropriate treatment for the victim?
- Is medical help sought for treatment of hypothermia or other injuries, if needed?

Person Overboard

- ___ Throw a ring life buoy (or anything that will float) as close to the individual as possible.
- ___ Post a lookout to keep the individual in the water in sight and communicate with others the position of the victim.
- ___ Launch the rescue boat or other apparatus and maneuver it to pick up the individual in the water.
- ___ Have a crewmember put on a lifejacket or immersion suit, attach a safety line to the crew member and have the crewman standby to jump into the water to assist in recovering the individual in the water, if necessary. The crew member should take a flotation device with him to give the victim.
- ___ Prepare medical equipment to provide medical care, if necessary.
- ___ If the individual overboard is not immediately located, notify the Coast Guard and other vessels in the vicinity.
- ___ Continue searching until released by the Coast Guard.

* Remember the current affects a man in the water. The addition of a whistle on each ring buoy will assist in locating the person more quickly, reduce victim fatigue and develop victim confidence.

Seaman's Prayer

Heavenly Father, as I sail these seas I know You created them. You placed in them all the sea creatures, both large and small. Then showing Your mastery of it all, you walked on the water. Lord, You make the sea to be calm and You make it rage in fury. This sea, Lord, can bless and it can destroy. For me Father, it provides my living; it feeds and shelters my family. It takes me from them for long periods of time. In these times I depend upon You for Devine protection. I pray, Master, for Your guiding hand upon the helm, keep me from danger and harm. Guide my vessel until I am safe in harbor again. May my prayers and thoughts be blessed by You ... Amen.