

# **SAFETY MANUAL**

**for**

**Fishermen, Captains, and Owners  
of New England Fishing Vessels**



UNITED STATES DEPARTMENT OF THE INTERIOR,  
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Created in 1849, the Department of the Interior—America's Department of Natural Resources—is concerned with the management, conservation, and development of the and recreational resources. It also has major responsibilities for Indian and Territorial affairs.

As the Nation's principal conservation agency, the Department works to assure that nonrenewable resources are developed and used wisely, that park and recreational resources are conserved for the future, and that renewable resources make their full contribution to the progress, prosperity, and security of the United States—now and in the future.

**SAFETY MANUAL**  
**for**  
**Fishermen, Captains, and Owners**  
**of New England Fishing Vessels**

Adapted for the fishing industry

by

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# SAFETY MANUAL FOR FISHERMEN, CAPTAINS, AND OWNERS OF NEW ENGLAND FISHING VESSELS

by John J. Murray

The organized safety movement in American industry started in 1912. Work accident data were first compiled in 1928. Since then the death rate from industrial work accidents has dropped by about 50 percent despite the tremendous increase in the industrial force. Preventing loss of life and limb and eliminating human suffering are the foremost considerations in safety. The rate of human loss has been reduced greatly in shoreside industry by following reliable safety practices. Similar progress can be made by establishing and maintaining a realistic safety program in the New England fishing fleet.

This manual has been prepared in accordance with the safety philosophies and safety practices of American industry. It is written as a guide, as information, and as an educational medium. It deals with fundamentals and presents, in condensed form, safety suggestions and practices which, it is hoped, will soon become common knowledge. It cannot cover every conceivable situation, and it cannot substitute for good judgment and quick thinking. Remember, with all the policies, manuals, and rules, the best safety device is still "a careful man!"

It is hoped that you will keep this manual with you, study it at every opportunity, and become familiar with its contents.

## ACCIDENT COSTS

**Accidents cost money.** High accident costs seriously affect the economy of the fisheries—the profits of the industry, the earnings for the fishermen, the cost of insurance, and the

price of fish. Accident prevention, in addition to making life safer for the fisherman, contributes directly to the "good health" of the industry by helping to assure profitable operations and good jobs. Also, because the safe way to work is the efficient way to work, operations in general are improved.

**Accidents cost the United States over \$3 billion annually** according to reliable estimates. This constitutes a hidden tax on every man, woman, and child. Without organized safety movements in many segments of industry, the costs would be two or three times as great. The economy of safety in industry has been proved conclusively during the past 40 years.

**The high and steadily rising insurance costs** reflect directly the need for greater safety within the fishing fleet. Owners and captains of the fleet have little or no control over the cost of many of the commodities essential to the fishing operation, but they can help control insurance costs. The insurance company acts in a capacity similar to that of a claim bank. It uses the funds paid in by the insured to pay the cost of claims assessed for injuries to crew members and damages to vessels.

**Insurance premiums are calculated largely on settlement of claims**, including a reasonable amount for profit and operating charges. When there are few losses over a sustained period, the benefits are reflected in reduced premium rates or increased dividends. Conversely, when claim payments increase, the insurance company increases the premium rates.

**Indirect costs due to industrial accidents are four times as great as direct costs.** Direct costs—payments for injuries and damages—are the major expenses in most accidents, but the following indirect costs must also be figured:

1. *Fishing time lost by other crew members who are attending the injured man.*
2. *Fishing time lost when the injured man is taken ashore.*
3. *Operational inefficiency caused by being shorthanded*

even though the injured man is not taken directly ashore.

4. *Lost income from the investment represented by damaged equipment.*

**Who is responsible for safety? YOU ARE!** Achievement of safety goals requires the active participation and cooperation of persons at all levels. Whether you are the owner of the vessel, the captain, or a crew member, you are responsible for safety.

**The vessel owner has many responsibilities.** Basically the owner is responsible for providing a seaworthy vessel, captained by a qualified skipper and equipped with adequate and safe machinery and gear. The owner has the prime responsibility for all activities and results. He can make long-range and short-range plans. He can keep abreast of new ideas and developments and incorporate technological advances in his equipment or procedures. He issues orders and instructions to his employees who, in turn, institute and carry out the policies and practices in a manner that will reflect the best interest of the owner, the employees, and the public.

**The vessel captain also has responsibilities.** The captain is responsible for the selection of a capable, safe, and trustworthy crew; for seeing that proper seamanship is practiced; for carrying out the safety policies of the owner; and for seeing that proper and safe tools are used.

**Each crew member is responsible for using the safety equipment provided** and for conducting his work in a manner that will provide maximum safety to himself and other crew members and to the vessel and equipment. A good safety program benefits the fisherman the most. He is the one who undergoes the pain and suffering when an accident occurs; he is often the one who suffers the greatest proportionate financial loss; and he and his family will bear most of the consequences of his injury.

## SAFETY POLICY

**Safety is an integral part of efficient operations.** In addi-

tion to providing safe equipment and facilities, the vessel owner should also insist that safe methods and procedures be used at all times. *He can formulate a strong safety policy*—a written statement of the company's attitude toward safety—and have this posted conspicuously on the fishing vessel.

**Safety cannot be legislated: To make safety work, each individual must have a desire to make it work and to protect himself.**

A fishing vessel is a highly specialized cargo carrier, but is exposed to many dangers not faced by a conventional cargo vessel. These dangers arise from the following factors:

1. **The fishing vessel must obtain cargo from the sea.**
2. **The fishing vessel must load cargo at sea with overhead gear and winches that must take the strains imposed by both the cargo (fish) and the roll of the ship. During this operation at sea, the hatches are open and there is considerable activity on the open deck—factors not faced routinely aboard most general cargo vessels.**
3. **Most fishing vessels are not under the mandatory system of inspections of equipment and personnel that help maintain the conventional cargo carriers in safe condition.**
4. **Maintenance time aboard fishing vessels is usually far below the minimum allowable aboard most other commercial vessels where passage time can be spent in routine maintenance and repair.**
5. **The fishing vessel usually does not operate on well-travelled sea lanes where rescue or aid would be on hand in case of an accident.**

Safety in the performance of routine seamanship is covered in many publications, but safety aboard fishing vessels has been largely overlooked. The following sections on personal safety; safety on deck; safety in the engine room; safety in the galley, forecastle, and wheelhouse; and safety and weather will deal primarily with dangers to fishing vessels and fishery equipment and only secondarily with dangers faced in general seamanship. It must be realized that the good fisherman is also the good seaman.

# PERSONAL FACTORS IN SAFETY

**New men enter the fishing industry each year.** There may be some truth in the saying, "Once a fisherman always a fisherman," but fishermen do die, retire, or leave the fleet for other reasons—and these men must be replaced. Some fishermen also move from one vessel to another and thus encounter somewhat different equipment and procedures. These differences must be taken into account.

**Men of varying ages, capabilities, and habits enter the fishery.** Some have particular physical characteristics that affect their own safety and the safety of others. A man may not know that he has poor hearing, poor eyesight, or poor coordination; but when these are present, accidents are likely to occur, especially if these weaknesses are not readily apparent.

**To avoid accidents, each man must want to do his job safely.**

**Orienting a new man regarding vessel operations, the makeup of the crew, and the need for cooperation and respect sets up safeguards against many accidents.** It must not be assumed that a man knows all about his job or that he will always do it with complete safety to himself and his fellow workers.

**Each man must recognize limitations, both his own and those of the other crew members.** Many limitations and physical impairments can be compensated for in planning and executing the work assignments. It is important that all personal limitations and impairments be known to all the men and not just discovered after they cause an accident.

**Use of safety appliances or equipment may not prevent an accident, but may often prevent or reduce the seriousness of the injury after the accident occurs.** Various types of protective equipment are recommended for almost every job. In many instances, safety equipment that was first thought to be excessive or too elaborate is now approved and accepted as standard for the job.

1. One or two pairs of safety goggles should be on board in a place convenient to the work area. These, or other eye protectors, should be used when work is being performed near flying particles, such as those from drilling, chipping, scaling, scraping, grinding, buffing, and brushing. Using compressed air to clean machinery is particularly dangerous in this respect.

2. An approved rescue mask should be provided on all fishing vessels for use in areas contaminated with smoke or toxic vapors. In addition, persons entering contaminated areas should be equipped with lifelines attended by persons stationed in safe positions.



Personal safety equipment should not only be available, it should be used. Use of goggles, gloves, and clothing that covers the entire body protects this man while he is chipping paint.

3. Safety hats should be used in areas where there is a danger from swinging or falling objects. Painful and serious

head injuries may be caused by objects that fall only a few feet. Men working in the fish hold during unloading operations are particularly encouraged to wear safety hats.

4. **Safety shoes and rubber boots with metal toe boxes should be used.** There are several manufacturers of these. The use of such protective footgear on vessels could cut down on injuries. The purchase and use of this equipment needs to be encouraged.

**Knowing the right way to perform a task is also essential for safe operation.**

1. **Back injury from improper lifting is a common source of lost time and money.** Legs and arms are muscular and strong; the back, however, is less muscular and has parts that are more likely to be painfully and seriously injured. Let your arms and legs do the work of lifting, pulling, and pushing. The winch head, gilson, and other overhead tackle often can be used to avoid excessive lifting. Teamwork is also important in cases where use of mechanical equipment is impractical and the load is too heavy for one person.

2. **The body position is also important in lifting, carrying, pushing, or pulling.** Taking the proper stance and using body weight and leverage, as well as the muscles most capable of doing the job, are matters of considerable importance. Muscles can be trained to perform work that is heavier than usual, and some men are just naturally stronger than others.

*REMEMBER:*

1. Always keep the load close to the body.
2. Keep the back as straight as possible.
3. Put the load on the stronger leg and arm muscles.
4. Never hesitate to ask for help if you think the load is too heavy.
5. Use mechanical lifting devices whenever practical.

The mental attitude of the individual is even more important than the physical characteristics, know-how, and use of personal safety devices. A man may be possessed of a high degree of skill, good vision, hearing and dexterity;

have an excellent reaction time; and use the prescribed safety devices—but these attributes alone will not keep him from getting hurt. Being safe comes from a realization of each and every danger and a conscious effort to perform the work safely.

SAFETY IS AN ATTITUDE—A FRAME OF MIND—  
A WAY OF LIFE.

## DECK SAFETY

Even though equipped with the most extensive personal safety devices, physically able, and possessed of a “holier-than-thou” safety attitude, the fisherman is still not safe unless the vessel and the vessel equipment and operations are safe. Hazards, although constantly present aboard a vessel, increase markedly when the fishing operation begins—when the winch drums begin to roll.

### *SETTING AND HAULING*

The periods of setting and hauling the gear are among the most hazardous times in the fishing operation. Extreme care must then be exercised because the gear is subjected to maximum strains.

**Stepping over trawl wire during setting or hauling is extremely DANGEROUS.** This practice is unusually hazardous because a serious or fatal injury would result if a man should slip or fall against the trawl wire as it speeds through a bollard, or be snagged by a wire spur. Even properly guarded bollards are not foolproof and should not be regarded as complete protection against a man's being caught between the moving wire and the bollard sheave.

**No fish should be dressed in the checkers during setting and hauling, and persons whose presence is not vital to the operation should keep clear of the operating area.**

## *WINCH SAFEGUARDS AND DANGER POINTS*

Hazards of the trawl winch, the heart of trawler operations, can only be controlled by a combination of a safe working area and safe working practice. The fleet has experienced many serious, and some fatal, accidents involving the trawl winch. Once a person becomes entangled with the towing wire, the equipment must be stopped instantly if a serious or fatal accident is to be prevented.

Size and power of the trawl winch should be ample for the work involved and provide a safe margin of reserve power for emergency use.

Trawl cables should be properly secured to the winding drum. No less than two, preferably three, complete wraps should remain around the drum at all times. The end of the warp, whipping off the drum, could cause serious accidents.

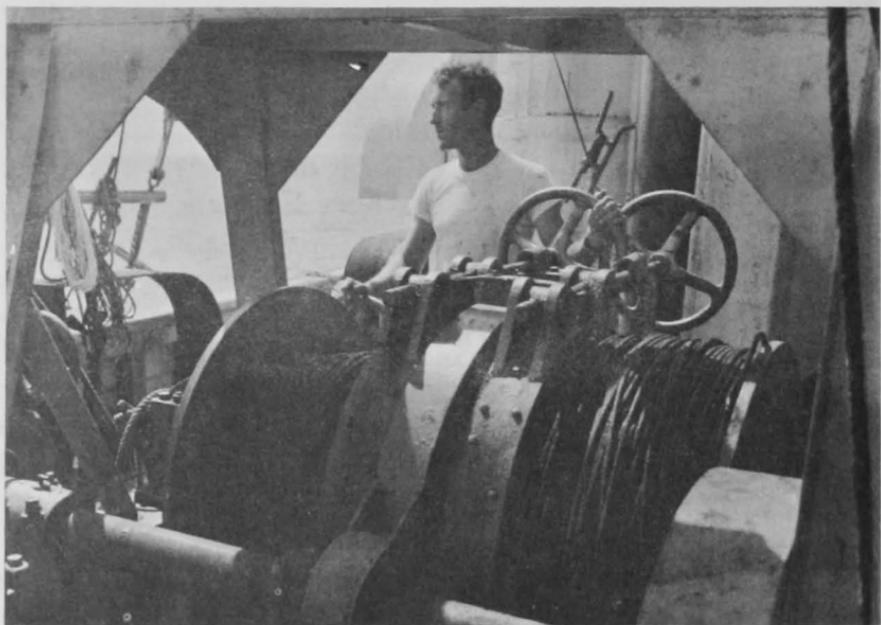
Winch controls should **NEVER** be unattended while the winch is in operation. Operators have been known to leave the winch unattended while the trawl wire is being retrieved. Although the operator is only a short distance away, he may be unable to return, in the event of an emergency, to stop the winch in time to avoid a serious accident. A trawl winch in operation should always be under the immediate control of a responsible person. Also the ship's captain, who has a good view of the total operation, should have a control switch in the pilot house that would enable him to stop the winch in an emergency.

Trawl-wire spooling guides should be installed on the winch. It is extremely dangerous for men to stand in front of the winch and attempt to spool the incoming cable onto the winch with steel bars or other tools. Installation of automatic or hand-controlled equipment that will safely guide the wire onto the spool evenly is strongly recommended.

Care must be exercised when greasing the winch. Oiling or greasing the winch while it is in motion is an unsafe practice. Grease cups, oil cups, wick-feed reservoirs, oil lines, or similar devices should be installed so that lubrication

can be completed without placing persons within the danger zone. **Avoid overgreasing!** Excess grease may find its way to the brake or clutch bands and cause faulty operation or loss of control. It may also spill on the deck with resultant disastrous consequences. Keep the deck around the winch free and clear. Skid-resistant covering is recommended.

Inspect the trawl winch frequently and repair or replace dangerous or defective parts. Enclose all exposed gears, shafting, couplings, and brakes against accidental contact and weather.



The winch is the heart of trawler operations. Large or small it is a dangerous piece of machinery and should be respected. Whether it contributes to profits or to accidents is largely up to YOU.

## *BOLLARDS*

Bollards and fairleads are subjected to exceptionally heavy strains during setting, dragging, and hauling. Even heavier strains are imposed if the gear gets caught on obstructions.

Bollards should be fastened securely to the ship's frame so that they can be conveniently inspected at the attachment point.

1. A thorough inspection of bollards and fairleads should be made routinely—every 6 months—in addition to brief visual inspections before and after each use and immediate inspections after every undue strain.

2. Worn shells or sheaves should be replaced immediately.

3. All points of lubrication should be properly greased at the start of each trip and thereafter as needed. Care must be taken to keep grease off the adjacent deck area.

**When towing operations are in progress, the area around the bollards, fairleads, and towing cables is extremely DANGEROUS.** Because of limited space and conventional vessel design, men are required to work within the angle of the towing cables and to cross over the cables frequently during a dragging operation. Whenever possible, however, crew members should stay clear of the danger areas.

**Whenever a bollard is found to be loose or there appears to be buckling of the deck around the bollard, an unsafe condition exists and the bollard should not be used again until repairs are made.** Under no circumstances should men enter the danger area if the condition of a bollard is questionable.

**Bollard guards, completely encircling the bollard, and skid-resistant material on areas immediately adjacent to bollards and fairlead should be installed to lower the accident potential.** In addition to protecting crew members from being caught between the cable and bollard, the bollard guard provides support for crew members passing over or near the cable.

## *TOWING BLOCK*

On side-rigged trawlers, placing the warps in the towing block is a frequent source of crushed fingers and mashed toes. The vessel should be maneuvered so that the trawl warps are close alongside before the towing block is hooked on.

Dangers of hooking and unhooking trawl doors increases as the roll of the vessel increases. A heavy sea and a sudden roll of the vessel can easily combine to slam the trawl door into the gallows and injure the unwary fisherman.

Close coordination is necessary between the person handling the door and the winch operator. Many accidents have occurred during hauling back when the trawl door rammed into the gallows.

Trawl doors should be secured inside the rail when the vessel is steaming.

## *ROPE AND CABLE*

Excellent manuals on the selection, use, and care of ropes and cables have been issued by, and are available from, most rope and wire manufacturers. These may be obtained from the manufacturers or their dealers.

When fiber ropes are purchased, the purpose for which they are intended should be kept in mind. Consultation with a qualified specialist is recommended. Ropes should be inspected frequently for proper lay, excess fraying, and signs of rot or other deterioration. Proper use of ropes—knotting, splicing, grommeting, and other arts—may be learned through experience or by consulting manuals available on the subject.

Wire ropes should also be chosen with care and knowledge, and inspected frequently. To decide just when a wire rope has reached the limit of usefulness is difficult. It is poor economy to discard an expensive warp before maximum safe use has been obtained, but it is dangerous (and may be even poorer economy) to continue the use of a warp beyond the safe limit.

Careful inspections should be made, not only of the ropes themselves, but also of the sheaves, fairleads, bollards, and other parts which affect the use of the lines and warps.

Breaks in wire ropes may indicate metal or fiber fatigue. These breaks should be examined carefully. If the breaks are

unequally distributed through the strands, the warps should be discarded. Unequal distribution of breaks results in a greater loss of strength than when the same number of breaks are evenly distributed.

The number of hours a day that rope or wire is in use is an important factor in determining the end point of safe usage. Under some circumstances, a rope that is used only a few hours a week, for instance, may be considered safe until the next inspection; whereas a rope in almost constant use may reach a dangerous condition before the next inspection.

Gloves should be worn for protection against spurs on wire warps.



Icing at sea imposes excessive strains on the rigging, and often shifts in stability of the vessel. Recognize the dangers and increase your vigilance.

## *RUNNING RIGGING, OVERHEAD GEAR*

**Block and tackle equipment must be safe.** This equipment is a major part of the running gear aboard fishing vessels. It must withstand sudden and heavy loads imposed upon it by the roll of the vessel and accumulations of ice and snow. It is largely overhead gear, and, owing to vessel design, some of the men aboard must work beneath it. Because the safety of those men and the success of the fishing venture both depend on the adequacy and condition of this gear and how it is used, it must be maintained in good condition, inspected frequently, and replaced as it shows signs of wear. The gear must be properly rigged.

**The block and tackle gear used should be adequate for the operation for which it is intended, and it should NEVER be overloaded.** When the vessel is rigged, the gear should be selected by a competent, experienced person who will bear in mind the weights to be lifted. Thereafter, the load limits of the tackle selected should be adhered to.

**A detailed inspection of the block and tackle gear should be conducted every 6 months, at least, with particular attention paid to the overhead assemblage of shackles and chains.** In addition, the gear should be observed for wear before every use, insofar as practicable.

**Keep ropes free from oil, heat, and acid.** Observe the condition of the rope before using. Be especially careful that spurs are not present on wire ropes.

**Replace hanging chains with wire rope.** Chains, used widely for fish tackles and sometimes for securing the booms, rarely show signs of weaknesses or of defects before they fail—wire rope invariably show signs of deterioration that indicate when replacement is necessary.

**Inspect closely and often the socket-type connections on wire ropes.** If socketing is not done properly, the wire may pull out without warning under the strain of even a relatively light load. Spliced wires are preferable for all overhead installations.

## *HOOKS, SHACKLES, PINS, AND ACCESSORIES*

**A lifting device is only as safe as its weakest part.** The major components of an overhead hoisting system (block and tackle) may be in perfect condition and used as designed, but, if the hooks, pins, shackles, and other accessories are not adequate or proper, accidents are likely.

**Hooks should be of forged steel, and, when the permanent set of a hook is changed, that hook should be discarded—not reshaped.** Hooks get rough usage and may develop defects with use. Any sign of a defect—such as a change in the shape—is a signal for replacement.

**The load should always be placed in the bowl of the hook.** Loading on or toward the point of the hook overloads the hook and leads to spreading and possible failure.

**Fingers should NEVER be placed in the bowl of the hook when the load is being hooked on.** A handhold on the back of the hook will enable a man to control the hook and still keep his fingers out of the crushing area.

**Properly designed safety latches or safety spring clips at the hook points will prevent the load from coming unhooked and also prevent gloves from being caught within the hook latch.** The safety latch should cover the point of the hook. Safety latches are especially important on hooks used to unload fish cargoes.

**All hooks, cotter pins, shackles, and similar gear should be routinely inspected between trips and should be taken down and thoroughly inspected at least every 6 months.**

**Shackle pins in fixed installations should be given particular attention during inspection to prevent accidents caused by loose or worn pins.**

**Only safety shackles with screw pins extended for locknuts and cotter pins should be used on fixed gear installations.**

**All blocks, including snatch blocks, should be “moused in” to prevent unhooking.** Since accidents have occurred because snatch blocks unhooked, it is suggested that only self-locking snatch blocks be used.

A crew member should **NEVER** stand under block and tackle that is being used to hoist the fish catch or similar load.

Properly used, overhead lifting gear can prevent strain and sprains; improperly used, it can **KILL**.

### *WINCH HEADS AND SIMILAR HOISTING AND LOWERING GEAR*

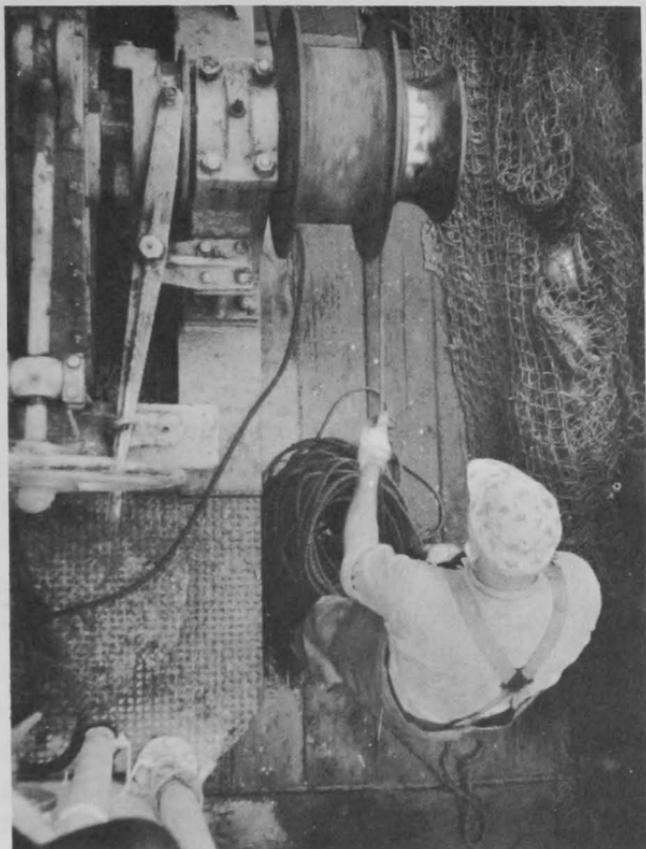
Winch heads with deep grooves on the surface are dangerous because the cable may become fouled and the operation cannot then be controlled. Deeply grooved surfaces should be replaced or resmoothed.



Method of hooking-up trawl wires without handling messenger. Eye splice on end of messenger is hooked over stud on winch barrel and winch man controls operation. Recommended for electric powered reversible winches.

Skid-resistant material should be used on the deck area adjacent to the winch head, and this area should be kept free from grease and other slippery material as well as from

**obstructions and clutter.** Gypsy-head or winch-head operators should not wear loose clothing that might get caught and drag them into the winch head. They should pay close attention to their task and not be diverted by nearby activities.



Proper gypsy-head use. The operator is stationed on the side opposite the load, is paying strict attention to his job, and is doing his job safely.

**The winch-head operator should stand on the side opposite the load line at all times.** Many operations can be made safer by providing a means of attaching the end of the line to the center of the winch head (Murray hook). If the end of the line is properly secured, it will take up or pay out according to the rotation of the head, thus eliminating the

hazard that exists when the line is taken in or paid out by hand—but the winch head must be in constant attendance and be under the immediate control of a well-trained crew member.

**The winch-head operator should NOT place his hands on the load line while the winch head is in operation.** He should take care to have sufficient turns of the line around the head to prevent slippage, and he should not spin the rope off and on the head while the head is in motion.

The lead angle, or fleet angle, is the angle of the line as it approaches the center line of the winch head from the fairlead. A maximum angle of  $1\frac{1}{2}$  to 2 degrees is suggested for winch heads.

**The trawling winch should NOT be used for unloading the catch.** A separate hoisting mechanism should be provided for this purpose. Many serious accidents have occurred, especially aboard scallopers, while the main winch was being used for unloading. The main winch is generally situated so that communication is difficult between the winch man and workers in the hold, and main winch controls are not designed for the frequent sudden stops and starts demanded by an unloading operation.

## STANDING RIGGING

Standing rigging on the average fishing vessel is subjected to severe strains caused by icing, hoisting, and the motion of the vessel. *For this reason, a qualified shiprigger should direct installation, annual inspection, and necessary renewal of masts, rigging, and overhead gear.* In addition, frequent inspections of the rigging where the strain is the greatest should be carried out by the vessel crew.

**All stays, braces, turnbuckles, shackles, collars, bands, and mast attachments must be inspected periodically and renewed when necessary.** Moisture collecting under metal bands can dry rot wooden masts without external evidences. Moisture collecting on welding beads and around the base of metal mast sections can cause excessive rusting and

weakening of the structure. Masts should be inspected for signs of structural weakness during the annual overhaul and should be treated with preservative coatings when necessary—at least once a year.

Forestays and shrouds need particular attention at the turnbuckles, shackles, thimbles, splices, and braces. Grease, tar, and adjust forestays and shrouds when necessary.

When ratlines and shrouds are combined to provide passage aloft, special attention should be given to their condition and maintenance.

1. Ratlines and seizings should be inspected frequently.
2. Shrouds should be kept free from broken strands that could cause puncture injuries or cuts.
3. Exposed ends of wires should be enclosed or protected.
4. Shrouds should be well parceled, served, and tarred.

When climbing or descending, always grasp the shrouds, not the ratlines.

The number of persons that the topmast can carry safely should be marked on it, and this number should never be exceeded.

## *BOOMS*

Unless proper care is exercised, accidents may occur when booms are being moved.

Side guys should be attended to prevent booms from swinging and to prevent heavy strains on the gooseneck owing to side motion when booms are being lowered or raised.

Booms should be lowered to the deck for gear changes and repairs when possible, rather than sending men aloft for this work.

Scallop booms, fitted with ladders, have been installed on most New England scallopers. These provide greater safety for men who must work at the boom tip and are strongly recommended.

All gear and lines should be inspected before booms are used. Boom goosenecks should be carefully inspected at least

twice each year in addition to before-use checks. They should be kept well oiled and greased to prevent freezing from rust or corrosion.

## *HATCHES, BUNKER SCUTTLES, AND OTHER DECK OPENINGS*

**Deck openings should be made only when absolutely necessary and should then be barricaded, guarded, and well lighted, especially when not in use.** Falls through unattended deck openings have caused serious injuries.

**At deck level, the bunker opening is a particular hazard.** The scuttle should not be left open when not in use even when loading operations are to be resumed within minutes. Care should be taken that lines, checker boards, or other gear do not obscure the scuttle opening and thereby conceal the hazard.

**Bunker scuttles may be dangerous even when closed.** Bunker plates may become smooth from continued traffic. They should then be covered with skid-resistant material. When new decking is installed, care should be taken to raise the bunker plate and make it flush with the new deck so that accidents due to tripping and falling can be avoided. A lifting ring or similar device should always be included in the design of the bunker plate for raising and lowering the lid. To prevent mashed fingers and toes, sprains, strains, and similar injuries, be alert, always use proper lifting techniques, and assume proper lifting positions.

**Low hatches are a serious hazard** because of the increased possibility of tripping over closed hatches or tripping and falling into open ones. In spite of the fact that low hatches may be more convenient to use, they are hazardous. Loose objects on deck can more easily fall into the hold and strike someone below.

**Hatch coamings should be sufficiently strong to prevent water from seeping below and to serve as a framework for hatch beams or strongback and hatch cover.** Hatch stiffeners

on the outside of the coaming should be placed at an angle so that they protrude a minimum distance beyond the hatch cover. The greater the distance the stiffener protrudes, the greater the danger of someone stumbling or tripping.

**There should be cross braces inside the coaming** to reduce the size of the opening and offer protection against a person falling through. These should be so constructed that they do not constitute a hazard to entering and leaving the hold.

**Coverings for hatches should be made of nonskid material and should be kept clear of clutter.** Crewmen often walk across covered hatches. A sudden roll of the vessel could result in a fall, and consequent injury, if the hatch covers were slippery or if they were cluttered. In addition, the motion of the vessel could cause material stored on hatch covers to slide off and clutter the deck or strike workers. Wet bullhides are particularly slippery and should never be spread on the hatch or deck to dry.

## *STANCHIONS, HANDRAILS, AND COMPANIONWAYS*

**Permanent stanchions obstruct the deck area and are a tripping hazard,** particularly when the checkerboards are not in place. The deck can be made much safer and additional working space can be provided by the elimination of unused stanchions. Stanchions serving no purpose other than to contain the ends of checkerboards should be of the removable type. Such stanchions can be inserted in sockets installed on the deck. The sockets should be provided with lids or caps to cover the openings when the stanchions are not in place. The lids or caps should be flush with the deck.

**Handrails should be sufficiently strong to support anyone thrown against them.** They should be properly secured to the deck or house, and they should be placed around all positions where there is danger of falling, bumping, or slipping into equipment.

If a handrail must be removed, temporarily, a rope or barricade should be provided. Permanent handrails of cable or rope should be provided with turnbuckles so that slack can be eliminated. Chain handrails should also be provided with a device for taking up the slack. In most instances, pipe rails are preferable.

Handrails should be in place and should be used on companionways and at the entrance to hatchways. Many slipping, tripping, and falling accidents occur on companionways, ladders, and at the entrances to them. Extreme caution is therefore necessary.

Worn treads, insecure fastenings, and broken, bent, or missing treads or rungs **MUST NOT** be tolerated.



Lack of handrails on this foredeck presents an invitation to accidents. In exposed areas such as this, every possible protection against the sea is vital to safety.



Accidents at the dockside have injured countless fishermen and involved untold hundreds of vessels, captains, and owners in litigation. Extreme care should be used when unloading. Unloading is being done properly in this scene.

## *FISH HOLD*

Accidents in the fish hold are frequent and often of a serious nature. The following suggestions are recommended for safety:

1. **The hold should be designed so that it can be sectioned** to prevent shifting of ice and cargo, and for ease and safety in stowing and unloading.

2. **Section boards (pen boards) should fit properly and should always be in place.** They should be free from splinters. Damaged boards should be discarded.

3. **Adequate illumination should be provided.** A minimum of 10 foot-candles on working surfaces is recommended.

4. **Ladders leading into the fish hold should be properly secured and maintained in good repair.** The top of the ladder should be provided with hooks that fit into eye plates or cross bars on the inside of the hatch coaming. Nonskid surfaces on ladder rungs are also advisable.

5. **Safety hats should be worn by workers in the fish hold, and deck workers should take care that nothing is dropped into the hold accidentally.** Men in the hold should be alerted before any potentially dangerous action is carried out.

6. **Boards in the central alley or "slaughter house" must be sufficiently strong to bear the weight of loads dropped from above and to insure the safety of men working on them.**

## *DECK HOUSEKEEPING*

A cluttered deck is **NEVER** safe. There must be "a place for everything and everything must be in its place" when not being used. Particular attention should be paid to eliminating clutter around the winch, along the towing wires, near the gallow frames, and wherever fast action might be necessary. Companionways and escape hatches must be free from clutter at all times.

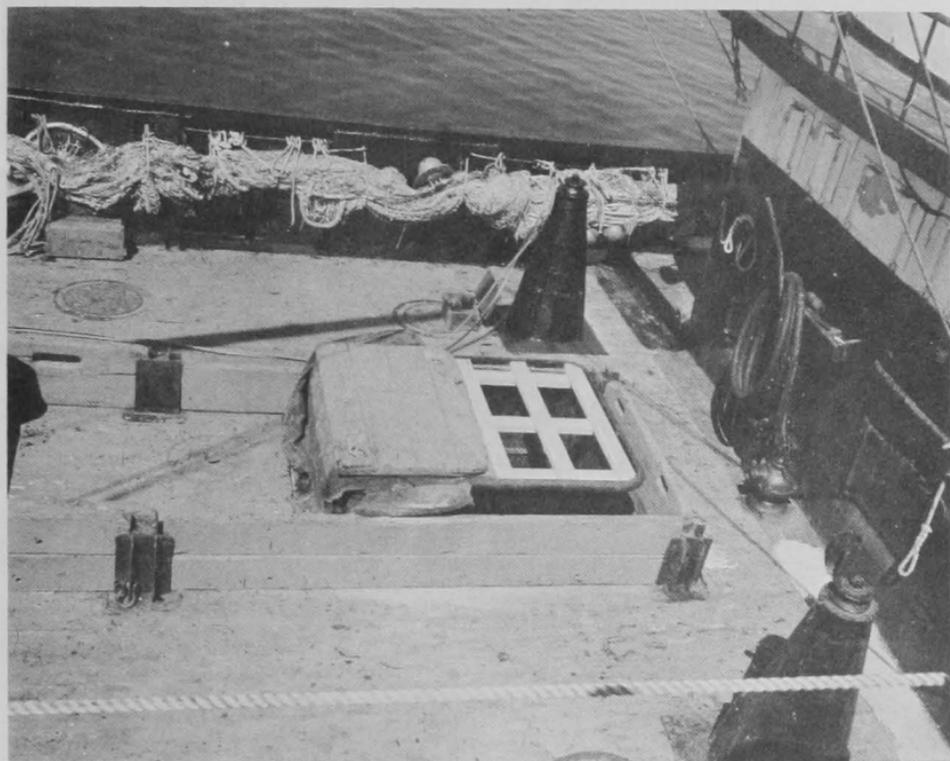
**The deck and fish checkers should be hosed off** after "dressing fish" to avoid slippery conditions and possible falling accidents.

When steaming, the vessel should be properly trimmed and all movable gear should be lashed down. Then, if heavy weather is encountered a recheck of the lashings and trim is all that is necessary. Trying to secure gear on a rolling vessel is likely to lead to injury and loss. Loose, free-swinging gear has caused many injuries—some of them fatal. Good management and good judgment will go far toward preventing accidents of this sort.

**Color coding of deck machinery, gear, and safety devices pays off.** Color coding makes persons more safety conscious

and points out danger spots and safety appliances. A discussion of color coding and a suggested color scheme are presented in the section on engineroom safety.

**“Work-type” lifevests should be worn whenever work must be done in exposed positions.** Several inflatable jackets are now commercially available. These are sufficiently compact to be worn either over oilskins or under oilskin jackets, and they will not hamper movement.



Good housekeeping pays off aboard ship. In this photo note that the deck is free of clutter, gear is neatly stowed, the open hatch is provided with a safety grid, and the deck hose is coiled in a position where it is readily available for use. The bunker plates are flush with the deck. All of these features contribute to a safe place to work.

## ENGINEER ROOM SAFETY

The engineroom of a fishing vessel is much like that of any other commercial vessel of similar size, but the task of the engineers is complicated somewhat by the need for frequent unscheduled maneuvering at sea. The engineer must be in constant attendance during the fishing operation and, while the vessel is steaming. He must have a thorough knowledge of the abilities and limitations of engineroom equipment. Maintenance of engineroom equipment in excellent working order is also required—for safety and for efficiency.



Unguarded belts and dark backgrounds spell danger. Removable guards for moving parts of machinery are not expensive and may save an arm or a finger. Color coding engineroom equipment also helps point out danger zones.

## MAIN AND AUXILIARY ENGINES

Current, accurate, and detailed logs covering operation and maintenance of main and auxiliary engines are vital to safety and efficiency. There should be recorded up-to-date information on the condition and servicing of all operating machinery on board as well as inspection data for fire extinguishers, results of air tank tests, time of battery charging, time spent in cleaning and repairing fuel and water tanks, and other details.

**Moving parts of all engines and other machinery should be guarded.** Accidents due to unguarded machinery, including belts and pulleys, cause a large number of serious injuries. *These accidents are entirely preventable.*

Fishing vessels with direct power from the main engine to the trawl winch usually employ a chain drive and power takeoff from the forward part of the engine. The winch is generally engaged through a clutch operated by the winch man. **The engineroom must be notified before the clutch is engaged.** A signal system from the deck to the engineroom is imperative.

All main propulsion plants should be provided with a manual shutdown mechanism operable from outside the engineroom—preferably from the wheelhouse. Instant action from the bridge may be necessary in emergencies—when lifeboats must be launched and fire or gases make the engineroom inaccessible, when fishing gear becomes caught on obstructions, or when there is danger of collision or grounding. Merely cutting off the main engine fuel supply is not sufficient. Diesel engines may run for relatively long periods on the fuel contained within fuel lines or day tanks.

## FUEL SYSTEMS

Liquid fuels that may be ignited readily by spark or flame are HAZARDS aboard the fishing vessel. Practically all of the large vessels of the New England fleet are diesel powered,

but even diesel fuel oil is flammable. Because fuel oil is dangerous, there should be no leaks in the fuel system; and all portions of the fuel system should be of the highest quality construction, design, and material. Before a fuel system is installed or revamped, competent experts should be consulted. In cases where U.S. Coast Guard approvals apply, they should be followed.

**Fuel tanks should be constructed of heavy gauge (non-galvanized) iron, steel, or nickel-copper.** They should be suitably braced and shored and separated from living quarters and potable water tanks by tight bulkheads. Tanks should not be a part of, or attached directly to, the engine, but should be located next to the engine compartment.

**Use of gauge glasses should be restricted to day tanks.** Day tanks should be located in a convenient spot in the engine room.

**All tanks should be provided with isolation valves operable from outside the engine room and should be electrically bonded to the common ground.**

**Fuel delivery pipes to the engine should be of seamless steel tubing capable of withstanding not less than 1½ times the maximum working pressure required.** As few connections should be used as possible, and the lines should be protected from vibration, excess heat, and mechanical damage.

**A short length of flexible tubing with appropriate fittings should be installed between the line from the tank and the feed line attached to the engine.** This should be reinforced with metal, and metallic contact should be maintained between the two sections of line connected. If metallic contact is not maintained, the fuel tank should be separately grounded.

**Vent pipe outlets should be as remote as possible from any hull opening, and the discharge end of the vent pipe should be able to keep out water without restricting the continuous discharge of vapor.** Vent pipe outlets should have removable

flame arrestors as protection against flashbacks from outside sources of ignition, and arrestor screens should be kept clear by cleaning or replacement as necessary. The vent area should not be restricted.

## *EXHAUST SYSTEMS*

The exhaust system must be adequate to eliminate danger of:

1. **Fire.**
2. **Exposure to fumes.**

Diesel-engine exhaust systems should be of insulated cast or wrought iron construction and should discharge well away from working areas.

**Check insulation periodically** for such signs of heat leakage as charred wood or discolored surfaces. The points where the manifold pushes through the engineroom bulkhead and overhead are particularly subject to heat leaks. These points constitute potential fire hazards.

**Water-cooled manifolds reduce fire hazards** by reducing the temperatures for exhaust gases and the exterior surfaces of the exhaust system.

**Joints and unions in exhaust systems should be checked for escaping fumes.**

## *IDENTIFICATION OF VALVES AND LINES— SAFETY COLOR CODING*

All valves and lines should be identified with suitable **marking** to prevent mistakes in operation. Brass tags or writing on the pipes are suitable if no mixups occur when the tags are removed and if the writing is not allowed to become illegible with subsequent painting. Color coding establishes the identity of a pipeline or valve without question, but the operator must memorize the code.

The American Standards Association scheme for the identification of piping system calls for five basic colors as follows:

|              |                 |
|--------------|-----------------|
| RED .....    | FIRE PROTECTION |
| YELLOW ..... | DANGEROUS       |
| GREEN .....  | SAFE            |
| BLUE .....   | PROTECTIVE      |
| PURPLE ..... | EXTRA VALUABLE  |

Color schemes have also been devised to identify and aid in the location of firefighting equipment, first-aid kits, danger areas, and controls. Safety color coding of this sort has been found to be of value by shoreside industry and is being adopted aboard ships to an increasing extent. A suggested color coding system follows (including all sections of the vessel) :

RED—Danger, fire protection equipment, safety cans, flammable materials.

INTERNATIONAL ORANGE—Liferafts and other buoyant equipment, dangerous parts of machines, machine guards, energized equipment, and the parts of machines that are exposed when guarding is removed.

YELLOW—Fixtures extending into normal operating areas, handguards, risers of stair treads, guardrails, fish baskets, blocks, all physical hazards where accidents might occur from stumbling, striking, tripping, or becoming entangled [hazards on machinery (orange) are excepted].

GREEN—Considered the basic safety color. Location of first-aid kits, rescue masks, safety bulletin boards.

BLUE—Water pumps, water pipes, potable water sources and facilities.

Use of a color code helps decrease the accident rate, dresses the ship, and keeps safety before the crew.

Marking by color should **NOT** be used as a substitute for removal of a hazard.

## ELECTRICAL SYSTEMS

Makeshift electrical devices (*hot plates, temporary bunk lights, and others*) should **NOT** be permitted.

Only high-grade equipment, listed as standard for marine

use by Underwriters' Laboratories or other qualified sources, should be used aboard vessels. Inferior or unapproved equipment may become hazardous because of defective or inappropriate design or construction.

All wiring should be permanently installed. Continued use of temporary wiring is a danger to the vessel and its complement. Permanent wiring should be:

1. Protected against mechanical breakage or abrasion.
2. Well insulated.
3. Run at a height well above the bilges.
4. Composed of a ground wire running to each 3-way receptacle in addition to the current-carrying wires.
5. Designed for the maximum load to be imposed upon it. Overloads are dangerous.

Burned-out fuses should be replaced with fuses of the proper type and size—*never* with strips of metal, wire, or pennies. Fuses should be extracted with a fuse puller after the operating switch is pulled. Where the switch cannot be reached, pull the supply end of the fuse first—then put the supply end of the replacement in first.

Switches, relays, fuses, and similar equipment should be installed on the switchboard and properly labelled. Guards should be erected and maintained to prevent unauthorized persons from entering the area behind the boards. A rubber mat or wooden grating should be provided for the switchboard operator. The space behind the switchboard should be kept clear of gear and other obstructions. *Electrical panels with knife-blade switches, or other exposed "live" areas must be provided with guards* so that chance contact is minimized.

See that all appliances are properly grounded, wired, and secured.

## STORAGE BATTERIES

Storage batteries should be kept in a well-ventilated place to prevent accumulations of explosive hydrogen gas. Only

vaporproof electrical fittings and equipment should be used in the battery storage area. Storage batteries are important vessel equipment and should be properly installed and maintained. Hydrogen gas is lighter than air and will rise and accumulate beneath the overhead.

**Batteries should be properly secured on lead-lined shelves.** Their tops should be protected from damage from falling tools or other objects. The batteries should not be placed in an area where they may be damaged by salt-water leaks or splashes.

## *ALARMS*

**An automatic alarm, thermostatically operated, should be in the engineroom of the fishing vessel.** This equipment provides a quick method of alerting the crew in an emergency. The time it takes to spread the alarm and notify all the crew can mean the difference between success and failure during a critical period.

**An emergency alarm system, operated from the wheelhouse and including gongs in the forecastle, galley, and engineroom, is especially recommended for fishing vessels over 49 gross tons.** The alarm system should be tested monthly or on each trip, and maintained in good order. Establishing an alarm code will make the warning system more effective by providing an indication of what is wrong and, possibly, where the trouble is.

## *BILGE PUMPING FACILITIES*

**When a vessel is taking water, bilge pumping facilities are all that stand between safety aboard and the last line of defense—the lifeboats.**

In spite of their importance, bilge pumps are often neglected in design, installation, and maintenance.

1. **Vessels of 5 to 50 gross tons should have two pumps, each with a minimum capacity of 15 gallons per minute.** One of these should be a power pump, and the other either

a power pump operating from a separate power source, or a hand pump. Smaller vessels should have at least one pump.

2. Vessels of 51 to 149 gross tons should have at least two pumps, each with a minimum capacity of 30 gallons per minute, and powered as above.

3. Vessels of 150 gross tons and over should have not less than two power pumps driven by separate power sources and with an aggregate capacity of 170 gallons per minute. One of the pumps could be driven by the main engine, the other from a separate source, but there should be provision for operating all of the pumps simultaneously.

A portable pump operated by an internal combustion engine and carried aboard as emergency equipment is useful in cases of power failure. Many small and medium fishing vessels have foundered when the power-operated pump failed and the hand pump was not of adequate capacity to cope with the incoming water.

## *HANDTOOLS*

Failure to observe one or more of the following practices accounts for most handtool accidents:

1. Use the right tool for the right job.
2. Keep tools in good condition.
3. Use the tool in the proper way.
4. Keep all tools in a safe place when not in use, and carry tools in a tool pouch, belt, or carrier.
5. NEVER throw tools aloft or drop them below.
6. Ground all electrical tools.

## *HOUSEKEEPING*

Use metal containers for oily rags or waste. Spontaneous ignition may be caused by such materials.

Keep engineroom passageways dry, clean, free from gear, and well lighted.

Keep deck plates, landings, and ladders free of grease and oil.

Keep tools in good condition and properly stowed and secured.

## WHEELHOUSE, FORECASTLE, AND GALLEY SAFETY

### WHEELHOUSE

The wheelhouse of a fishing vessel, or of any vessel, is the "brain center" of all operations.

Navigation and communication instruments serve the double purpose of easing the operation and of providing safety aids in emergencies. Loran, radar, depth recorders, and radio telephone all have been instrumental in saving lives and vessels as well as increasing the vessel's take. *These instruments should be checked before sailing*, and they should be maintained in excellent condition.

Electronic equipment should be securely fastened and located in dry spots. Care should be taken to shelter this equipment from spray.

Most electronic equipment carries tremendous voltages, and repairs should be made by trained electronics experts. Shorts involving electronic equipment should be traced down and eliminated as soon as possible.

Antenna lead-in wires should be of sufficient strength and quality to hold power transmission during heavy weather. Current lead-in wires should be well protected against vibrations, breakage, and abrasion.

An alarm system should be part of the wheelhouse equipment.

The wheelhouse should be equipped with flares, flare shooting equipment, and other emergency signal devices.

During nighttime operation, the wheelhouse should be in complete darkness except for necessary instrument lights.

## FORECASTLE

*Fire is a constant hazard in crew quarters.*

1. A sand bucket, or buckets, should be provided for dousing cigarettes.
2. Old papers, clothing, and other combustibles should NOT be allowed to accumulate as they are a fire hazard.
3. A waste receptacle of solid metal construction and equipped with a metal lid should be provided for refuse.
4. Dry chemical (or CO<sub>2</sub>) and water fire extinguishers should be on hand.

*Cleanliness, morale, and safety go hand in hand.*

Flame-type heating units are NOT recommended. If they are used, adequate ventilation systems must be provided. Men have died of suffocation in crew quarters because of oxygen depletion caused by flame-type heating units.

All electric fans should be grounded, securely fastened, and provided with blade guards and switches.

Adequate general illumination should be provided for reading or writing. In addition, each bunk should be provided with a reading light.

## GALLEY

Only galley stoves and appliances manufactured and labeled for marine use should be installed aboard fishing vessels. The very nature of cooking and heating equipment makes it a fire hazard unless adequate precautions are taken.

Printed instructions for the installation, operation, and maintenance of galley equipment should be furnished by the manufacturer. These instructions should be posted in a conspicuous place and followed.

A first aid kit containing burn medications should be conveniently located in the galley, and special attention should be paid to firefighting equipment.

Carbon dioxide fire extinguishers are particularly well suited to galley use.

Their discharge is nontoxic and leaves no residue. They are effective in fighting grease fires.

*Galley equipment should be provided with proper safeguards: -*

1. Cooking surfaces should be sectioned to prevent utensils from sliding in heavy weather.
2. Lids of pots and pans should be designed so that they prevent liquids from spilling out of the pots and pans.
3. Latches should be placed on all drawers and doors and maintained.

## GOOD HOUSEKEEPING

Good housekeeping in the quarters does more than merely contribute to a safer vessel. It contributes to sanitation and provides better eating, sleeping, and living conditions. Most fishermen spend more days at sea than ashore, and the vessel must be considered their home as well as their place of work during these days.

Good housekeeping affects the safety of the vessel and the morale of the crew.

## LIFESAVING EQUIPMENT

Selection and installation of boats, dories, and rafts for vessel safety are responsibilities of the vessel owner. Few fishing vessels are subject to marine inspection laws regarding lifeboats, but common sense suggests that the inspection laws grew out of a need for lifesaving equipment and that adequate lifesaving equipment is a vital part of a fully fitted vessel.

Lifeboats, dories, and rafts may be considered a last line of defense. Whatever their design—metal, wood, inflatable rubber—these craft are rarely launched except when there is an emergency that demands their complete and instant efficiency. It is a joint captain-crewman-owner responsibility to maintain the lifesaving equipment in such manner that

it will insure safety under all foreseeable conditions. Maintenance involves inspection and repair of the lifesaving vessels; inspection and repair of the falls, davits, chocks, and related equipment; and constant attention to keeping the area around the boats free from clutter. Maintenance also involves checking and renewing survival equipment of lifeboats and rafts.



How not to maintain a lifeboat. Poorly equipped and maintained boats lessen your chance of survival when the time for lifeboat use arises.

## *VESSEL MAINTENANCE*

1. Lifesaving vessels should be painted international orange and marked with the fishing vessel's name and the number of persons that can be carried safely.

2. Boats should be covered with heavy canvas, and suitable protection should be provided for rafts (inflatable) and other types of equipment.

3. Launching equipment must be maintained in condition for instant use. Boat davits should be swung and cleared periodically—for convenience this can be done during boat drills. Rafts should be stored on or near the rail or provided with ramp-type slides for easy launching.

4. At rest, the lifeboats should be fitted to adequate chocks and well lashed. But the lashings should be so affixed that they can be quickly loosened. Instances have been recorded of boats being immovably fixed to the chocks with paint. Always raise the boats before painting either boats or chocks.

## *LIFEBOAT EQUIPMENT*

All boats should be provided with minimum articles for safety of life. These articles should be stowed and lashed in such manner that seating capacity is not reduced and the boat made less seaworthy. Provisions and other perishable or delicate articles should be wrapped and kept in watertight containers. The specific items, and the specific amounts of each, to be carried vary with the type of vessel, the distance from port at which it operates, and other conditions.

The following list contains the minimum lifeboat equipment recommended for vessels operating on the U.S. and Canadian fishing banks with crews not exceeding 17 men:

1. **Oars and oarlocks:** full complement plus 2 spares of each.
2. **Rations:** 1 pound per person (wrapped in watertight containers).
3. **Water:** 1 quart per person (sealed in airtight container).
4. **Matches:** 2 boxes.
5. **Signals:** 12 red parachute flares, with projector.
6. **Radar target:** folding type.

7. **Miscellaneous:** bailer, boathook, compass, lantern, first aid kit, flashlight, foghorn, hatchet, painter, signalling mirror, and heaving line.

In addition, the following items should be kept on the vessel ready for removal to the boats in an emergency:

1. **Portable radio telephone.**
2. **Life preservers:** 1 per person plus at least 1 spare.
3. **Warm clothing and blankets.**
4. **Charts.**

## *INFLATABLE LIFERAFTS*

Development of inflatable liferafts has progressed rapidly in the past decade, and they have now received limited Coast Guard approval—in supplementing conventional lifesaving equipment. Essentially, inflatable rafts are composed of two tubes (mounted one on the other), an inflatable floor, and a canopy for protection of the occupants against weather. **The canopy is a vital portion of the inflatable raft. It should be automatically inflatable.** Actual experience has shown the value of the canopies in prolonging life of persons adrift, but indications are that where canopies must be erected by the persons aboard the rafts, they are often neglected.

**Inflatable rafts should be packed and sealed by the manufacturer or authorized repair facility after each use or trial.** Minimum equipment is usually packed with the raft. The manufacturer's bill of materials should be carefully checked. Usually this includes paddles, repair kits, hand pumps, and line. Water, food, and signals should be packed separately aboard the vessel and kept handy for transferral to the raft.

**Complete inspection, test, and repair of rafts should be scheduled and carried out by authorized repair facilities.**

**Rafts must be stowed in position for instant launching and must be well protected from the elements.**

## *ABANDON SHIP DRILL*

When he signs aboard, the crewman should be given a

card containing the following information: *Signals used aboard the vessel for emergencies (fire, abandon ship, and man overboard), the location of his duty station, and his emergency duties and lifeboat assignment.* This information should be memorized.

**Minutes spent in drilling may mean lives saved in an emergency.** Persons educated in emergency procedures are seldom apt to panic when an actual emergency demands use of those procedures. Properly conducted drills should accomplish the following:

1. **Drills build confidence** by providing everyone aboard with practical experience in emergency procedures.

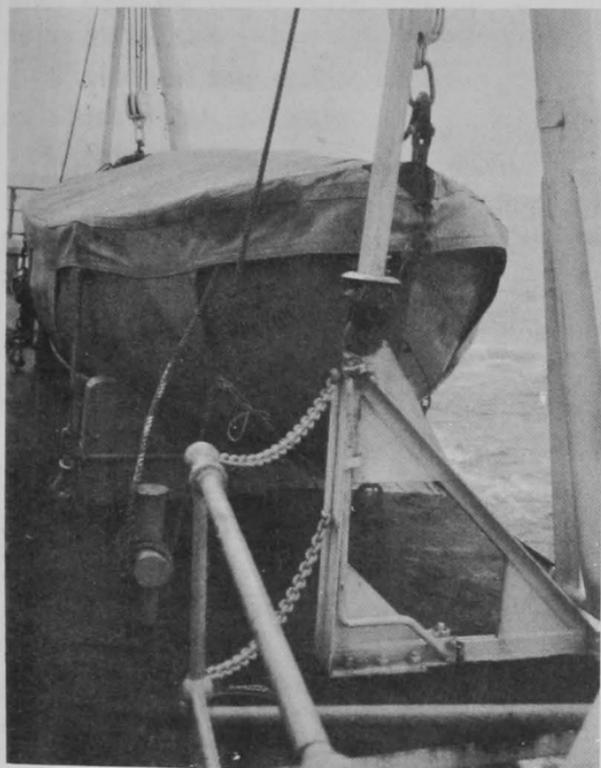
2. **Drills bring out shortcomings in emergency equipment and plans.** Such shortcomings are not serious if they are discovered before an emergency. Once an emergency hits, the shortcomings may be deadly.

3. **Drills help prevent the deterioration that often accompanies equipment disuse.** Lifeboat davits may freeze in their sockets and falls may rot undetected, unless lifesaving equipment is used occasionally.

4. **Drills help keep movable lifesaving equipment from being lost or stored in out-of-the-way places.** Life preservers and other gear, carried but seldom used, tend to sift down to the bottom of the pile. Occasional use tends to keep these items close at hand.

Drills should be held without prior warning. On hearing the ABANDON SHIP signal (usually 7 short blasts and 1 long blast on the whistle), each man should immediately don his lifejacket and take up his duty station. The drill involves the following activities (under the general direction of the captain):

1. **All watertight doors should be closed immediately.**
2. **Emergency generators and bilge and ballast pumps should be started.**
3. **Rafts should be cleared for launching.**
4. **Boats should be cleared and lowered.**



For survival in emergencies, maintain lifesaving gear properly (A), and hold frequent "abandon ship" drills. Drills pay off when seconds count (B).

# FIRE

## FIRE PREVENTION

*Every fire has a cause. Eliminating causes eliminates fire.* Fire prevention is comprised of several elements:

1. **Proper use and maintenance of vessel equipment and machinery.**
2. **Proper storage and use of flammable materials.**
3. **Frequent inspections followed by corrective action.**
4. **Good housekeeping.**
5. **Proper safety attitudes.**
6. **Recognition of fire hazards.**

The best way to fight fires is to prevent them from starting. The causes of fires are well known. Reasonable and practical precautions should be taken so that fires are prevented.

A fire control plan, for shipboard use, must take into consideration:

1. Hazards that contribute to fires.
2. Measures for controlling fires once they occur.

## FIRE HAZARDS

*Fires and explosions DO NOT just happen—they are caused!* Crew members often take too much for granted, feeling “it can’t happen here.”

All flammable materials aboard a fishing boat are fire hazards and may contribute to starting a fire unless proper precautions are taken.

Four types of ignition may occur on fishing boats—*flames, sparks, heated materials, and spontaneous ignition.* These make potential fires out of even the most insignificant pile of rubbish, and it is well known that “nothing grows as fast as a rubbish pile.”

Ignition to start a fire may come from such sources as:

1. **Flame**—open lights, matches and cigarette lighters, water heaters, cooking stoves.

2. **Sparks**—static electricity, electric shorts, motors, snap-type switches.

3. **Heated materials**—unprotected light bulbs, hot plates, exhaust pipes, stacks.

4. **Spontaneous ignition**—oxidation of oils and fats on wiping rags.

Some of the more important fire precautions are as follows:

1. **DO NOT** allow trash to accumulate.

2. Provide covered, metal containers for oily rags, and empty these containers often.

3. Keep oil out of bilges and off the deck. **NEVER** neglect a leak or delay cleaning a spill.

4. Keep fuels and solvents in closed, approved safety containers.

5. Inspect lockers frequently for accumulations of oily clothes and other combustibles.

6. See that all cooking and heating appliances are properly installed.

7. Prohibit all makeshift electrical connections and electrical work by nonqualified persons.

8. Keep galley and engineroom ventilators clean. Fires in ventilators are extremely difficult to confine and control.

9. Provide separate, well-ventilated storage lockers if paint and solvents must be carried. Better yet, **DO NOT** carry paint.

*Fires require a combination of heat, oxygen, and fuel.* Eliminate any one of these elements and there can be no fire.

## **FIRE CLASSIFICATION AND CHARACTERISTICS**

Fires are classed in three groups:

1. **Class "A" fires**—involve the combustion of materials such as paper, wood, cloth, rubber, and rubbish.

2. **Class "B" fires**—occur in flammable liquids such as oil, gasoline, grease, and paint.

### 3. Class "C" fires—electrical fires.

Each type of fire has its own unique features and characteristics, and each can be controlled best by specific types of treatment.

## *FIRE CONTROL*

*Regardless of cause, once started the fire must be controlled. Every vessel should provide for fire control.*

Fire control involves:

1. **Proper vessel design.**
2. **Adequate firefighting equipment.**
3. **Maintenance of equipment in usable condition.**
4. **Acquaintance of all crew members with firefighting equipment and methods and with the layout of the vessel.**
5. **Placement of properly constructed and designed firefighting equipment at points where it is readily available.**
6. **Development of a plan of action suitable for combating fires at all points aboard the vessel and acquainting all crew members with this plan.**

## *EQUIPMENT PLACEMENT AND FIRE DRILLS*

An effective fire control system depends on men who are trained in fighting fires as well as on men who will conscientiously try to prevent them. Every man aboard the vessel—from the newest to the oldest—should have a clear understanding of the components of fire, a knowledge of the design of the vessel on which he is sailing, and the location and use of all firefighting equipment. He should have a thorough knowledge of the combustible material in each section of the ship.

The most likely places for fire are in the engine room (classes "B" and "C"), the galley (all classes), and the forecabin (classes "A" and "C"). Special care must be exercised in these areas and each of these areas should be made the subject of a specific fire control plan. Each area should be fully equipped with firefighting equipment:

1. **Engineroom** should be provided with an automatic *dry chemical* or *CO<sub>2</sub> system* operable from outside the engineroom and with an automatic alarm system and a shutoff valve for the engine fuel supply. Small hand extinguishers (dry chemical or CO<sub>2</sub>) should also be available.

2. **Galley** should be provided with at least two CO<sub>2</sub> extinguishers of about 5-pound capacity.

3. **Forecastle** should be provided with at least one *water-type* extinguisher for paper and clothing fires plus *dry chemical* extinguishers for electrical fires.

**Firehoses should also be available on the main deck**, neatly coiled in special racks, hooked to the pumping system, and equipped with nozzles.

**Fire drills are useful for crew training and for testing equipment.** Ideally, at least one fire drill should be held on each trip. Each man should be assigned a fire station and duty. The drill should be started without prior warning by sounding a predetermined FIRE WARNING signal. Persons assigned should report to their stations with lifejackets on.

**Firehoses should be stretched out and played over the side.** This is a good test of the strength and condition of the hose and of the pressure in the pump system. After the drill, the hoses should be well drained and dried before recoiling.

**Fire extinguishers should be removed from wall hangings and held but not discharged.**

**Bridge to engineroom communication systems and signals should be tested.**

It should be a point of pride to see how rapidly each person aboard can get to his fire station and prepare for fire action. Establishing time records and attempting to beat the time needed in the last drill often aids in establishing a pride in "readiness."

## FIREFIGHTING

*Once a fire occurs, it must be combated with:*

1. **Proper equipment.**
2. **Trained men.**
3. **A well-thought-out plan of action.**

All fire extinguishers function by cooling, smothering, or a combination of both. Selection of the right fire extinguisher for the right job is an important factor in effective fire control. In general, reliance can be placed on *water* (supplied largely through the vessel's pumping system), *dry chemical* system, and *CO<sub>2</sub>* systems. *Use of vaporizing liquid (carbon tetrachloride) systems is NOT encouraged.* Coast Guard approval has been lifted from vaporizing liquids for fire control. Side effects (serious injuries from fumes and danger of explosions) can occur if vaporizing liquids are used in the wrong way or for the wrong purpose.

1. For Class "A" fires (*paper, cloth, trash*) **USE WATER.** CO<sub>2</sub> or dry chemical extinguishers are also helpful in controlling such fires, although they will not always extinguish them completely. They will knock the flames down to where the fire can be smothered or stamped out.

2. For Class "B" fires (*oil, grease, paint*) **USE DRY CHEMICAL OR CO<sub>2</sub>.** DO NOT USE WATER. Class "B" fires are most prevalent in the galley and in the engine room. CO<sub>2</sub> is probably the best chemical for firefighting in the galley because it leaves no residue. Dry chemical systems are excellent in the engine room.

3. For Class "C" fires (*electrical*) **USE DRY CHEMICAL OR CO<sub>2</sub>.**

## WEATHER WORRIES

Failure to recognize the hazards of bad weather is the cause of most weather-produced accidents.

*Weather produces its damaging effects in two major ways:*

1. **It may reduce visibility** through fog, snowstorm, and blinding rain. Lack of visibility, no matter what the cause, should always be kept in mind as a hazard to both traffic and deck operations.

2. **It may cause heavy strains and sudden jars** with consequent effects to vessel, equipment, and personnel.

**Preventative maintenance, inspections, intelligence, and safeguards** are the principal tools for prevention of accidents due to bad weather.

**Safety lines or life lines should be rigged on the foredeck** for protection of the crew when the vessel is steaming or jogging in rough weather, or when the decks are icy. On most trawlers, it is necessary for the crew members to pass from the forecastle to the vessel's afterquarters several times during an operation.

**Safety lines should be employed solely for this purpose and should be stowed separately** so they will not be used for any other purpose.

## FIRST AID AT SEA

All vessel crewmen should know how to administer first aid. Ashore the person administering first aid can often "get by" with limited skill as he is usually relieved of his duties by a doctor or hospital technician within a relatively short time. At sea, greater skills are required. Every crewman should be a first aid man.

*The first-aid man at sea should have available:*

1. **A first aid manual and a copy of the U.S. Public Health Service book, *Ship's Medicine Chest and First Aid at Sea*.**

2. **A well-stocked first aid kit.**

3. **A knowledge of how to request assistance from the nearest U.S. Public Health hospital by radio telephone.**

*The ship's medicine, or first aid chest, should contain the following:*

| <i>Item</i>  | <i>Quantity</i> |
|--|-----------------|
| Adhesive plaster:  |                 |
| 1 inch by 5 yards in individual container.....   | 3 spools        |
| 2 inches by 5 yards in individual container.....   | 3 spools        |
| 3 inches by 5 yards in individual container.....   | 3 spools        |
| Ammonia inhalants—(10 per unit).....   | 3 units         |
| Antiseptic (skin-antiseptic solution), 2-ounce bottle with applicator .....  | 6 bottles       |
| Applicator, wood—72 dozen per box.....   | 1 box           |
| Cotton swabs may be purchased or made.   |                 |
| To make cotton swab sticks to paint the throat, to spread ointments on the skin, or to paint wounds and the surrounding skin with antiseptics: Grasp a bit of sterile cotton, pulled thin, between the thumb and forefinger of one hand. Lay one end of the applicator on the cotton and with the thumb and forefinger of the other hand twist the applicator around until the cotton is firmly and smoothly attached to the end of the stick. |                 |
| Aspirin tablets, 500-tablet bottle.....  | 1 bottle        |
| Bandage, cotton, elastic, 3-inch, 12 in a box.....   | 1 box           |
| Use: For strains or sprains of joints. The bandage should be stretched slightly as it is wound on the part, care being taken not to stretch too much or exert too much pressure.   |                 |
| Bandage, Esmarch triangular.....   | 6               |
| Use: As an emergency dressing or arm sling.  |                 |
| Bandage, roll, gauze, 1-inch, 12 in a box.....   | 2 boxes         |
| Use: For holding dressings in place on small parts of the body such as fingers and wrists, and for finger splints.   |                 |
| Bandage, roll, gauze, 2-inch, 12 in a box.....   | 2 boxes         |
| Use: For holding dressings in place on medium-size parts of the body such as arms, ankles, and head.   |                 |
| Bandage, roll, gauze, 3-inch, 12 in a box.....   | 2 boxes         |
| Use: For holding dressings in place on larger parts of the body such as leg, groin, abdomen, shoulder, or chest.   |                 |
| Bandage, triangular, compressed.....   | 6               |
| Basin, wash, 12 inch.....  | 1               |
| Bedpan, "relax type".....  | 1               |
| Boric acid powder.....   | 8 ounces        |
| Compress, adhesive, 1 inch, 25 per box.....  | 5 boxes         |

|   |             |
|---|-------------|
| Cotton, absorbent, sterile, ¼-lb. package.....  | 2           |
| Dressing, gauze and adhesive strip, 1 by 3 inches,<br>100 per box.....  | 2 boxes     |
| Use: For dressing cuts and injuries.  |             |
| Eyecup, glass .....   | 1           |
| Forceps, splinter .....   | 1           |
| Use: To remove splinters.   |             |
| Gauze (plain), 36-inch, 1 yard per package.....   | 25 packages |
| Gauze, compress, 4 by 4 inches, sterile, wrapped<br>separately (25 per box).....  | 3 boxes     |
| Use: To dress wounds. These dressings are sterile,<br>and care should be taken to keep them sterile.<br>The cellophane or other covering should not be<br>removed from the package, but a gauze pad<br>should be removed from a small opening in the<br>center of the covering. |             |
| Ointment, tin, 1-ounce (burn treatment).....  | 5           |
| Safety pins, assorted sizes.....  | 2 cards     |
| Scissors, surgical, 5½-inch.....  | 1           |
| Splint, basswood, 18 by 3½ inches.....  | 1 dozen     |
| Use: As an emergency measure to immobilize broken<br>bones. Pad splints with soft material before<br>applying.  |             |
| Thermometer, oral .....   | 2           |
| Tourniquet unit .....   | 2 units     |

To avoid having to take the ship's medicine chest to the scene of the injury a portable first-aid kit should be readily accessible to the crew. The contents of the portable kit is as follows:

| <i>Item</i>                             | <i>Quantity</i> |
|---|-----------------|
| Adhesive tape, 1-inch, 5-yard roll..... | 1               |
| Ammonia inhalants (10 per unit).....    | 1 unit          |
| Antiseptic, 2-ounce bottle.....         | 1               |
| Applicators, cotton swab, in box.....   | 12              |
| Bandage, adhesive, 1-inch.....          | 10              |
| Bandage, compress, 2 by 2 inches.....   | 8               |
| Bandage, compress, 4-inch.....          | 3               |
| Bandage, roll, 1-inch.....              | 2               |
| Bandage, roll, 2-inch.....              | 2               |
| Bandage, roll, 3-inch.....              | 2               |
| Bandage, triangle (1 per unit).....     | 3               |
| Tourniquet (1 per unit).....            | 1 unit          |

In addition to the material recommended for first-aid treatments, the ship's medicine chest should also contain the following medication to treat minor illness and aches and pains:

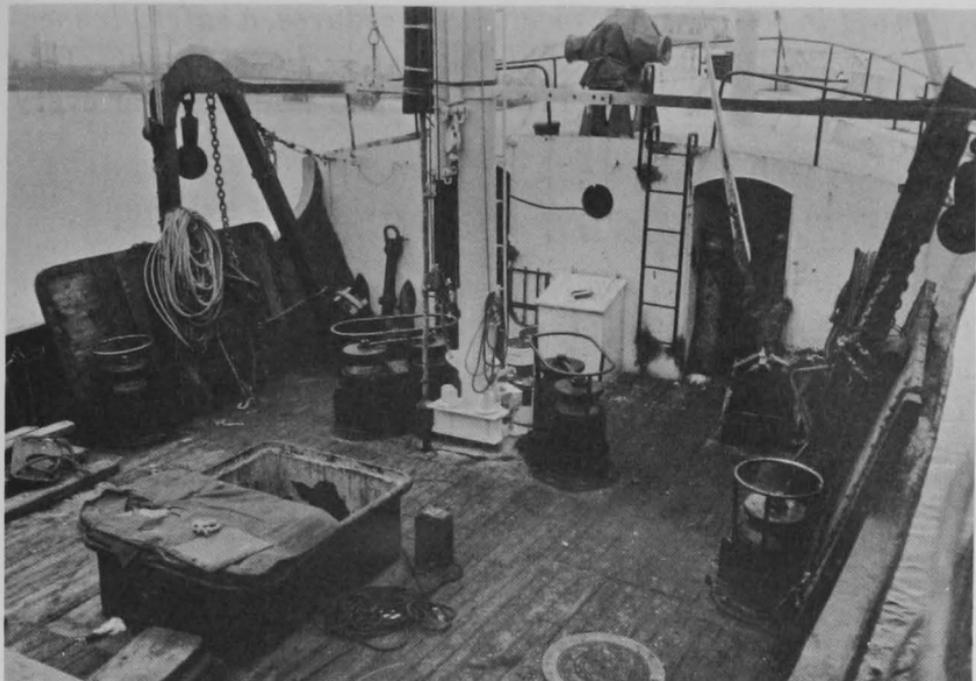
| <i>Ailment</i>               | <i>Item</i>                             | <i>Quantity</i> |
|------------------------------|---|-----------------|
| Athlete's foot ..            | Fungicide solution .....                | 2 bottles       |
| Colds .....                  | Coricidin tablets .....                 | 3 bottles       |
|                              | Antihistamine tablets .....             | 3 bottles       |
| Constipation ...             | Milk of magnesia.....                   | 2 bottles       |
| Coughs .....                 | Elixir of terpinhydrate and codeine.... | 2 bottles       |
| Dysentery .....              | Kaolin-pectin mixture .....             | 2 bottles       |
| Earache .....                | Antipyrene, benzocaine and glycerine... | 1 bottle        |
| Eye inflam-<br>mation .....  | Ophthalmic ointment .....               | 3 tubes         |
| Infections <sup>1</sup> .... | Terramycin ointment .....               | 2 boxes         |
|                              | Ichthyol salve .....                    | 2 boxes         |
|                              | Epsom salts .....                       | ½-lb. box       |
| Sore throat ....             | 20% solution of argyrol.....            | 1 bottle        |
|                              | Throat lozenges .....                   | 5 boxes         |
| Sprains-stains .             | Limbering oil .....                     | 2 bottles       |

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<sup>1</sup> A local physician or U.S. Public Health Service official should be consulted for up-to-date advice on biotics to be carried.

An icebag and a hot water bottle are also valuable additions to the medicine chest.

Every vessel should be provided with a copy of the U.S. Public Health Service book, *Ship's Medicine Chest and First Aid at Sea*.



The work area of a typical New England fishing vessel. Test your knowledge of safety principles by picking out the safe and unsafe practices shown in the photo. (*Good*—proper handrails around foredeck, ladder to foredeck clear and in good condition, guards around bollards, high hatch coamings, separate engine and gypsy-head for removing fish from holds, bunker plates flush with deck, doors properly stowed. *Poor*—cluttered deck, cluttered working spaces, unguarded open hatch, no steps to gallows block, extension wire coming from port on forepeak bulkhead, escape hatch from forecastle partially blocked.)

## SAFETY INSPECTIONS

**Merely setting up safe practices and outfitting a seaworthy vessel with adequate and proper equipment are not sufficient to prevent accidents.** Time affects all things, and safety is a continuous concern. Safeguards must be set up to insure the maintenance of safe practices, seaworthiness of the vessel, and adequacy of the equipment.

**Periodic inspections of all portions of the vessel and of all vessel operations must be made if a vessel is to remain safe.** Moreover, the inspections must be followed by analyses and corrective actions where unsafe conditions exist.

To aid in setting up inspection procedures, a safety inspection checklist is appended at the end of this manual. This checklist is a **guide** only. It does not, and cannot, cover every contingency.

## CONDITION OF THE VESSEL

In addition to being inspected by the vessel's captain, every vessel should be drydocked and inspected periodically by a qualified marine surveyor with fishing vessel experience. The hull should be examined internally and externally in a manner that will disclose any conditions that may cause accidents or cause the vessel to become unseaworthy.

To observe all conditions relating to safety and the vessel's seaworthiness, the surveyor may request the owner to:

1. Remove fastenings, sheathing, and plates.
2. Clean steel work and bilges.
3. Make borings.
4. Remove tanks.

Hull arrangement contributes to the safety and operating efficiency of the vessel. Once the vessel has been commissioned, many aspects of arrangement are fixed and cannot be changed, but the following should be minimal:

1. All hull compartments must be readily accessible.
2. Escape hatches should allow convenient access to the deck from all areas.
3. Escape hatches should never be obstructed or their use curtailed by gear stored in the escape route.
4. Engine compartments should be separated from other ship areas by bulkheads sufficiently tight to serve as effective firebreaks.
5. Adequate provision must be made for drainage of bilges, whether the vessel is hauled out or afloat.
6. So far as practical, combustible materials should NOT be used for insulation.
7. Quick-opening doors should be provided at all points where a heavy sea might strike, and all doors should be

provided with a means of securing them in the open and closed positions.

*Check for:*

1. Danger points not guarded.
2. Defective tools.
3. Defective machines.
4. Defective lines, blocks, tackle, or gear.
5. Improper or inadequate lighting.
6. Material improperly stowed or lashed.
7. Personal safety equipment poorly maintained, defective, or not available.
8. Untidy or otherwise dangerous passages or working spaces.
9. Fishing or vessel operations conducted in haphazard or dangerous ways.

**Safety inspections are one of the principal means of locating accident causes.** They assist in determining what safeguards are necessary to protect against hazards before accidents and personal injuries occur, and they help to determine what maintenance and repairs are necessary to keep the vessel seaworthy. They also help to disclose whether firefighting equipment and other emergency devices are in good condition and ready for use.

**Safety inspections are conducted to determine if everything is satisfactory, not to find out how many things are wrong.** The whole purpose should be one of helpfulness in discovering conditions which, if corrected, will maintain the vessel and all equipment at an acceptable standard of seaworthiness and efficiency and provide a safe and healthful place to work.

**A record of inspection findings should be kept for future reference.**

*Approximate, suggested schedules for major inspections are as follows:*

1. **Wooden hulled vessels** should be hauled; and the hull, rudder, and steering gear inspected at least *every 6 months*.

2. **Steel hulled vessels** should be hauled; for hull, rudder, and steering gear inspection at least *once a year*.

3. **Electrical equipment and wiring** should be inspected at least *every 4 years*.

4. **All sea suction and discharge valves and cocks** below the waterline, or which exceed 2 inches in diameter, should be opened for inspection at least *every 4 years*.

5. **Screw shafts and tube shafts**, in general, should be withdrawn for inspection *every 2 to 4 years*, depending on the shaft type.

6. **Air receivers** should be tested by hydrostatic pressure *when new and once every 4 years* thereafter.

7. **All propulsion and auxiliary machinery** should be opened up for inspection at least *every 4 years*. This includes clutches, reverse and reduction gears, fuel pumps, other pumps, thrusts, main shafting, fuel tanks, bilge pumping arrangements, pipes, and valves.

## LIFESAVING EQUIPMENT

1. **Lifeboats, dories, and skiffs** should be swung out and lowered into the water *every 6 months*.

2. **The condition of these boats** (emptied of gear) and of their falls should be inspected *every 6 months*.

3. **Lifeboat markings and supplies** should be checked *every 6 months*.

4. **All air cases or inflation apparatuses** should be removed for complete inspection and testing annually.

5. **Lifejackets, buoys, and buoy lines** should be inspected at *frequent intervals*.

All equipment should be restowed promptly after inspection.

## SHIP'S MEDICINE CHEST

Inspect and replenish before each trip or at least once a month.

## HANDTOOLS, HANDRAILS, WINCH, BOLLARDS, AND FAIRLEAD GUARDS

These objects are subject to normal wear and tear and often to excess strains. *Inspect once a month.*

## BLOCKS, TACKLE, LINES, PINS, SHACKLES, AND RELATED GEAR

**Deck gear** should be given at least *superficial inspection before each use and thorough inspection monthly.* All **handling equipment**, including deck gear, should be disassembled and the component parts inspected not less often than *once every 6 months.*

# ACCIDENT INVESTIGATION AND EXPERIENCE

## PURPOSE OF INVESTIGATIONS

Investigation of accidents and determination of their causes are vital steps in prevention of the recurrence of similar accidents. Such investigations and determinations are important not only to current safety plans, but also to future safety activities.

**If accidents are to be avoided, we must know what to guard against.** The circumstances surrounding an accident are often complex and far-reaching.

**All accidents and near accidents should be investigated and each made the subject of a written report.** The information will then be available for reference, analysis, and action.

**Accident investigations should point out existing weaknesses—not fix blame.** The sole concern of the accident investigator should be preventing the re-occurrence of a similar accident.

*Ask and report:*

1. What all persons concerned were doing at the time of the accident.

2. Where these persons were at the time.

3. What each believes caused the accident—what each person saw.

*Then analyze findings and report:*

1. **Conditions and causes found.**

2. **Means of preventing a recurrence.**

*Then put means of preventing recurrences into action.*

**Develop a vessel safety program.** All members of a vessel crew should actively participate in the safety program. Active participation can be achieved by:

1. Serving on accident investigation committees.

2. Serving on committees organized to check for unsafe practices and conditions.

3. Participating in port safety programs where these exist.

## ACCIDENT CAUSES

*There are two basic causes for accidents:*

1. **Unsafe acts of crew members.**

2. **Unsafe conditions of vessel, equipment, gear, or work area.**

## VESSEL OWNERS' AND CAPTAINS' RESPONSIBILITY

Accidents caused by unsafe conditions most often are under the control of the owners and captains.

Numerous accidents are caused by the following factors that are the responsibility of owners and captains:

1. Employees not instructed, not instructed properly, or not instructed completely.

2. Instructions not enforced.

3. Employees not sufficiently skillful to perform the tasks assigned.

4. Employees neglect rules.

5. Danger points not guarded or guarded only inadequately.

6. Materials improperly stored.

7. Improper housekeeping aboard the vessel.
8. Tools, gear, or tackle defective.
9. Hull in unsafe condition.
10. Lighting insufficient or improper.
11. Structures improperly braced, supported, or guyed.
12. Improper work planning. Improper distribution of men, materials, or time.
13. Nonavailability of proper personal safety equipment.

## *CREW MEMBERS' RESPONSIBILITY*

Accidents resulting from unsafe practices or acts are generally under the control of the crew members.

Most personal injury accidents are caused by the injured man himself or could have been prevented by him. The owner can help prevent accidents by providing a safe, seaworthy vessel; the captain can help by instituting safe and reliable methods of operation; but the crew member, in the final analysis, is the one who comes in actual contact with the gear and who carries out the operations in which most injuries occur.

Factors causing frequent accidents and that could be controlled by crew members include:

1. Inattention.
2. Poor judgment.
3. Use of short cuts.
4. Wearing loose or otherwise dangerous clothing.
5. Disobedience of rules.
6. Interference among crew members.
7. Fooling (horseplay).
8. Sluggish thinking or mental fatigue.
9. Sluggish movement or physical fatigue.
10. Taking chances.
11. Using improper tools when proper tools are available.
12. Being hasty.
13. Being intemperate.
14. Not using available personal safety equipment.

# TYPES OF ACCIDENTS INVOLVING THE NEW ENGLAND FLEET

Tables 1 and 2 summarize types of accidents reported in which vessels were damaged or men injured during a recent 6-year period.

TABLE 1.—*Vessel accident summary*

| Cause of damage <sup>1</sup>              | Percent of reported damage cases |
|---|----------------------------------|
| Striking submerged object.....            | 29                               |
| Grounding or collision.....               | 24                               |
| Disablement due to equipment failure..... | 20                               |
| Damage due to heavy sea or weather.....   | 18                               |
| Unseaworthiness.....                      | 6                                |
| Fire.....                                 | 3                                |
| Total.....                                | 100                              |

<sup>1</sup> Period of study not specified.

TABLE 2.—*Crew accident summary*

| Type of accident <sup>1</sup>           | Percent of reported injuries |
|---|------------------------------|
| Falls:                                  |                              |
| On deck.....                            | 23.0                         |
| Elsewhere.....                          | 7.0                          |
| Blows:                                  |                              |
| from sea.....                           | 8.0                          |
| from falling objects.....               | 6.0                          |
| from trawl doors.....                   | 6.0                          |
| from scallop dredges <sup>2</sup> ..... | 6.0                          |
| from nets.....                          | 3.0                          |
| from trawl warps.....                   | 2.5                          |
| from miscellaneous objects.....         | 8.0                          |

TABLE 2—*Crew Accident Summary*—Continued

| Type of accident <sup>1</sup>     | Percent of reported injuries |
|-----------------------------------|------------------------------|
| Puncture wounds:                  |                              |
| from hooks . . . . .              | 2.5                          |
| from knives . . . . .             | 4.0                          |
| from fishbones . . . . .          | 7.0                          |
| from wire . . . . .               | 4.0                          |
| Winch accidents . . . . .         | 6.0                          |
| Eye injuries . . . . .            | 4.0                          |
| Burns and miscellaneous . . . . . | 3.0                          |
| Total . . . . .                   | 100.0                        |

<sup>1</sup> Period of study not specified.

<sup>2</sup> Blows followed by crew members becoming jammed against bulwark.

# APPENDIX I

## MONTHLY SAFETY INSPECTION CHECK LIST NEW ENGLAND FISHING FLEET

Name of Vessel \_\_\_\_\_ Year Built \_\_\_\_\_ No. in Crew \_\_\_\_\_

Type of Fishing \_\_\_\_\_ Date of Inspection \_\_\_\_\_

Check columns that apply and  
most accurately describes  
conditions

|   | Yes | No | Good | Fair | Poor |
|---|-----|----|------|------|------|
| <b>Engine room:</b>   |     |    |      |      |      |
| Emergency escape hatch?.....  |     |    |      |      |      |
| Guard on power takeoff?.....  |     |    |      |      |      |
| Belt and chain drives guarded?.....                                       |     |    |      |      |      |
| Condition of electric wiring?.....  |     |    |      |      |      |
| Ventilation?.....   |     |    |      |      |      |
| Date air tanks last tested _____  |     |    |      |      |      |
| Is emergency control for main engine<br>located outside engine room?..... |     |    |      |      |      |
| Are main switchboard circuits identi-<br>fied?.....                       |     |    |      |      |      |
| Are pipes and valves identified by<br>name or color code?.....            |     |    |      |      |      |
| Is deck oil-soaked?.....  |     |    |      |      |      |
| Are tools properly secured?.....  |     |    |      |      |      |
| Are guards on portable lights?.....                                       |     |    |      |      |      |
| Is there metal receptacle with self-<br>closing lid for oily rags?.....   |     |    |      |      |      |
| Fire detection alarm system?.....   |     |    |      |      |      |
| Housekeeping conditions?.....   |     |    |      |      |      |
| <b>Hull:</b>  |     |    |      |      |      |
| Condition of decking?.....  |     |    |      |      |      |
| Condition of pen boards?.....   |     |    |      |      |      |
| Do fish-hold hatches have strong backs<br>for securing?.....              |     |    |      |      |      |
| Date of last haulout for underwater<br>inspection?.....                   |     |    |      |      |      |

Check columns that apply and most accurately describes conditions

|  | Yes | No | Good | Fair | Poor |
|--|-----|----|------|------|------|
| Deck:  |     |    |      |      |      |
| Wire guide to steer trawl wires on winch drums? .....                |     |    |      |      |      |
| Any oil or grease cup leaks? .....                                   |     |    |      |      |      |
| Date last inspection of overhead tackle and gear? _____              |     |    |      |      |      |
| Are deck bollards and fair leads guarded? .....                      |     |    |      |      |      |
| Are lifelines rigged from forecastle aft during heavy weather? ..... |     |    |      |      |      |
| Is deck lighting adequate? .....                                     |     |    |      |      |      |
| What deck areas have skid-resistant surface? _____                   |     |    |      |      |      |
| Are bunker plates set even with decking? .....                       |     |    |      |      |      |
| Are winch heads and trawl winch drums free from grooves? .....       |     |    |      |      |      |
| Broken or frayed strands in wire ropes? .....                        |     |    |      |      |      |
| Housekeeping conditions? .....                                       |     |    |      |      |      |
| Lifesaving equipment:  |     |    |      |      |      |
| Number of lifeboats on board? _____                                  |     |    |      |      |      |
| Capacity _____   |     |    |      |      |      |
| Is ship's name on each lifeboat? .....                               |     |    |      |      |      |
| Are lifeboats painted orange for visibility? .....                   |     |    |      |      |      |
| Date of last lifeboat launching? _____                               |     |    |      |      |      |
| Date of last lifeboat drill? _____                                   |     |    |      |      |      |
| Are lifeboats covered with canvas? .....                             |     |    |      |      |      |
| Condition of lifeboat falls? .....                                   |     |    |      |      |      |
| Is lifeboat launching area equipped with emergency lights? .....     |     |    |      |      |      |
| Lifeboat supplies:   |     |    |      |      |      |
| Number of oars. ....   |     |    |      |      |      |
| Spare oarlocks. ....   |     |    |      |      |      |
| Matches, sealed container. ....                                      |     |    |      |      |      |
| Rations. ....  |     |    |      |      |      |
| Water. ....  |     |    |      |      |      |
| Bailer. ....   |     |    |      |      |      |
| Compass. ....  |     |    |      |      |      |

Check columns that apply and most accurately describes conditions

|  | Yes | No | Good | Fair | Poor |
|--|-----|----|------|------|------|
| <b>Lifeboat supplies:—Continued</b>                    |     |    |      |      |      |
| Flares.....  |     |    |      |      |      |
| Plugs.....   |     |    |      |      |      |
| Lifejackets, Number.....                               |     |    |      |      |      |
| Painter.....   |     |    |      |      |      |
| Hatchet.....   |     |    |      |      |      |
| Flashlights and spare batteries.....                   |     |    |      |      |      |
| First-aid kit.....                                     |     |    |      |      |      |
| Radar reflector.....                                   |     |    |      |      |      |
| <b>Lifejackets:</b>                                    |     |    |      |      |      |
| One approved type jacket for each person aboard?.....  |     |    |      |      |      |
| Colored orange for visibility?.....                    |     |    |      |      |      |
| Are jackets stowed in bunks?.....                      |     |    |      |      |      |
| <b>Liferings:</b>                                      |     |    |      |      |      |
| Number on board?.....                                  |     |    |      |      |      |
| Location.....  |     |    |      |      |      |
| Are lifering stations illuminated?.....                |     |    |      |      |      |
| Equipped with heaving lines?.....                      |     |    |      |      |      |
| Equipped with self-igniting lights?.....               |     |    |      |      |      |
| Painted orange for visibility?.....                    |     |    |      |      |      |
| <b>Inflatable liferafts:</b>                           |     |    |      |      |      |
| Number on board?.....                                  |     |    |      |      |      |
| Capacity of liferafts?.....                            |     |    |      |      |      |
| Orange color for visibility?.....                      |     |    |      |      |      |
| Date of last inflation?.....                           |     |    |      |      |      |
| <b>Line throwing and signalling apparatus:</b>         |     |    |      |      |      |
| Number and type of flares?<br>.....                    |     |    |      |      |      |
| Number of flare guns?.....                             |     |    |      |      |      |
| Date of cartridges and name of flare manufacturer..... |     |    |      |      |      |
| <b>Firefighting equipment:</b>                         |     |    |      |      |      |
| Water-type, number on board.....                       |     |    |      |      |      |
| Dry chemical, number on board.....                     |     |    |      |      |      |
| Carbon dioxide, number on board.....                   |     |    |      |      |      |
| Feet of firehose, number on board<br>.....             |     |    |      |      |      |
| Number of firehose connections?.....                   |     |    |      |      |      |

Check columns that apply and most accurately describes conditions

Firefighting equipment:—Continued

Pressure in pumping system, pounds

\_\_\_\_\_ Date extinguishers last inspected?

\_\_\_\_\_ Date last fire drill?

Fixed extinguishing system in the bilge? .....

Fixed extinguishing system in engine-room? .....

| Yes | No | Good | Fair | Poor |
|-----|----|------|------|------|
|     |    |      |      |      |
|     |    |      |      |      |
|     |    |      |      |      |
|     |    |      |      |      |
|     |    |      |      |      |
|     |    |      |      |      |

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**Before placing the call, obtain answers to the following questions by examining or questioning the patient:**

1. Patient's age.
2. State of consciousness.
3. Respiration rate and difficulty and pain associated with breathing.
4. Pulse rate, strength, and regularity.
5. Temperature of patient.
6. Amount, nature and specific location of pain. Is pain dull, sharp, continuous, intermittent, confined to a small area or widespread?
7. Cause of the injury (blow, crash, burn, scald, fall, deep penetrating wound, ragged cut, or bruise, or other).
8. Determine amount of bleeding or any signs of blood.
9. Describe any deformity or abnormal functioning on the part of the patient.
10. Know what treatment has been given and how the patient has responded.
11. If warranted, complete arrangements for handling the patient when docking—give estimated time of arrival, arrange for ambulance, doctor, oxygen, and other essentials.

**Always give the name of your vessel, its present location, its home-port and destination, and the number of hours from the nearest port.**

## MEDICAL ADVICE BY RADIO TELEPHONE

Expert emergency medical advice may be obtained through a radio telephone call to any U.S. Public Health Service hospital.

Hospitals nearest to most units of the New England fleet, and their telephone numbers, are:

U.S. Public Health Service Hospital  
77 Warren Street Boston (Brighton Station), Mass.  
Telephone 782-3400

U.S. Public Health Service Hospital  
Staten Island, New York  
Telephone 447-3010

During normal business hours (8:30-5:00 weekdays), address calls to the OUTPATIENT DEPARTMENT. Weekends, holidays, and nights address calls to the OFFICER OF THE DAY.

To obtain priority the urgent message code word "PAN"—repeated three times (PAN PAN PAN)—should be given to the Marine Operator.

*Continued inside back cover.*