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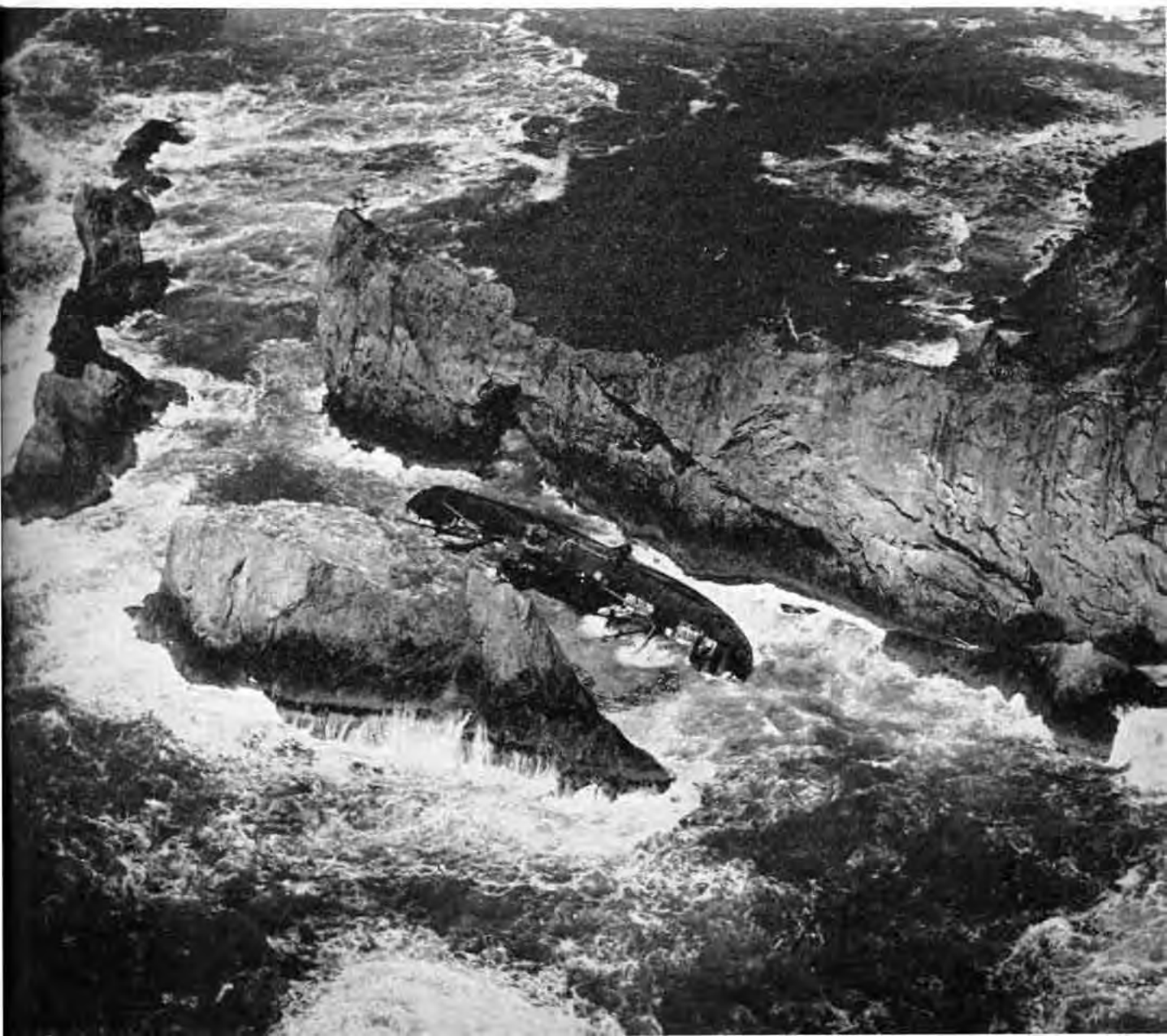

Proceedings of the

MERCHANT MARINE COUNCIL

Published monthly at Coast Guard Headquarters, under the auspices of the Merchant Marine Council, in the interest of safety at sea and the prosecution of the war effort.

VICE ADMIRAL R. R. WAESCHE
U. S. C. G.
Commandant of the Coast Guard

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The Cover: Russian freighter wrecked during a storm on the North Atlantic coast. Coast Guardsmen who rescued 54 of the crew are in operation on the rocks.

Activities of the Council

THE Merchant Marine Council has approved an amendment to section 153.21, Emergency Regulations, setting forth all the means of escape required on vessels during the present emergency. The only change made in present regulations is that the requirements for means of escape or emergency exits heretofore set forth in Navigation and Vessel Inspection Circular No. 30 are set forth in greater detail in this amendment. The amendment as approved embodies many of the suggestions made by panel members of the Council. This regulation becomes effective on October 1, 1944. Vessels that are certificated for the first time after October 1, 1944, must be in full compliance with the requirements of this amendment. Existing vessels, that is, vessels certificated on or before October 1, 1944, are required to have only the number of means of escape required by this amendment. Effective prosecution of the war demanded that attainment of the degree of safety sought on existing ships by these regulations be accomplished in a manner that will cause the least interference with the operation of the vessel. Accordingly, although existing vessels will not be delayed for noncompliance, it is expected that operators will seek to bring their vessels into compliance in the same spirit which prompted this amendment. It was realized that the application of the regulation to any given ship is open to various interpretations by field officers; therefore, the present inspection procedure has been changed in this instance to the extent that once a vessel has been found to be in compliance with the intent of these regulations no further requirements under this section may be imposed by another District Coast Guard officer until the approval of Coast Guard Headquarters has been obtained.

Other amendments to regulations were promulgated under Titles 33 and 46 of the U. S. Code and will be found in full in the Appendix.

The U. S. Coast Guard specifications for approved lifesaving suits were amended to permit the use of certain balloon cloth in the construction of drawstring channels of neck closures.

The Council also approved the design of a refrigerated tank barge for the transportation of liquefied inflammable gases in bulk and recommended issuance of a waiver of regulations necessary to permit construction. The design employs mechanical refrigeration and other compensating

features as a substitute for a part of the structural strength and thickness of the shells of the cargo tank required by Section 38.1–1 (b), Subchapter D. The cargo tanks are insulated, and refrigeration will keep the liquid cargo temperature down to 45 degress Fahrenheit, at which temperature the vapor pressure is approximately 70 psi gauge. The cargo tanks are designed for 100 psi. The approval is limited to a single experimental unit consisting of one tow not exceeding four barges.

The Chairman has appointed a technical committee which is making a study of the various types of life rafts and is testing various life rafts and buoyant fillers to determine combustibility. The approval of "styrofoam," an expanded polystyrene plastic, as a filler for buoyant apparatus, life floats, and life rafts, has been temporarily suspended, pending further tests for combustibility. Information was obtained that it was desirable to supplement the previous tests.

Routine action was taken by the Council recommending approval of equipment submitted to the Commandant pursuant to Coast Guard regulations.

NOTICE OF PUBLIC HEARING

Enemy action casualties resulting from the present war at sea caused the Coast Guard to develop and require the use of an improved raft in order to increase as much as possible the chances of survival of merchant seamen serving upon United States merchant vessels operating in theatres of war all over the world. These improved rafts have not been in service for a sufficient period of time or in adequate numbers to enable a determination of the relative merits of the various types to be made upon the basis of actual experience. Therefore, it is the desire of the Commandant to give all interested persons an opportunity to express to the Coast Guard their opinions on the relative merits of the types of improved rafts. Accordingly, the Commandant has directed the Chairman to call a general session of the Council for the purpose of holding a public hearing to inquire into the general suitability, deficiencies, and desirable characteristics of improved life rafts for the purposes intended. The chairman will announce the time and place of this public hearing at an early date. Notice of the hearing will be published in the Federal Register. Panel members will be advised by letter.

Commandant Addresses Congressional Committee

VICE ADMIRAL Russell R. Waesche spoke on May 12, 1944, before the Senate Committee of Congress on Post-War Policies, the particular issue before which was the consolidation of the Nation's armed forces into a single department. Admiral Waesche's statement, however, was concerned not with the relative merits of a single military department, but with an outline of the peacetime duties of the Coast Guard, how these are extended and adjusted in time of war when the Coast Guard serves as a specialized arm of the Navy, and with an estimate of the scope of its duties after the war.

In his discussion of the Coast Guard's responsibility for safety at sea, particularly of its marine inspection duties, Admiral Waesche stated, "I should like also to point out in passing that the Coast Guard's maritime safety responsibilities are the result of two significant trends in the development of Federal activities relating to maritime safety. First, there has been a growing acceptance of Federal responsibility for the protection of life and property at sea. The second trend has been the development of a comprehensive maritime safety program through the consolidation of safety activities under a single Federal agency. This consolidation was effected through the transfer to the Coast Guard of the functions of three other agencies. The first of these consolidations came in 1915, when Congress combined the Revenue Cutter Service and the Life-saving Service to create the United States Coast Guard. The second step was the transfer of the functions of the Bureau of Lighthouses to the Coast Guard in 1939. The most recent consolidation was the 1942 transfer to the Coast Guard of the marine inspection functions formerly administered by the Bureau of Marine Inspection and Navigation of the Department of Commerce. As a result of these consolidations the Coast Guard is now recognized as the principal maritime safety agency of the Federal Government, with a wide variety of service and regulatory activities relating to the safeguarding of life and property at sea.

"Because of the vital role played by the merchant marine in the war effort, the administration of marine inspection functions is one of the Coast Guard's most important wartime duties. The unprecedented expansion in the construction of merchant vessels, together with the need for adjusting inspection regulations to meet wartime operating conditions, has required a considerable expansion of the merchant marine forces. An intensive program of drills and instruction to familiarize merchant seamen with firefighting, lifesaving, and safety equipment and its operation has been carried on by the Coast Guard in all major ports. Marine casualties, whether due to enemy action or other causes, have been carefully investigated as a basis for developing safety improvements in vessels and their equipment that will provide greater protection to the American Merchant Marine."

In speaking of the post-war plans of the Service, Admiral Waesche said, in part, "This problem of the proper location of the Coast Guard within the administrative structure has already received the careful consideration of the Congress and the Chief Executive on several occasions. The arrangement resulting from these deliberations seems to me to be the best practicable answer to the problem. Under this arrangement, the Coast Guard is located in normal times within the civil establishment. This insures that its civil objectives will receive primary emphasis in time of peace, and that its personnel and facilities will be developed and utilized in the light of its peacetime program. Furthermore, this civil control in normal times provides assurance to the maritime industry, with whose operations the Coast Guard is primarily concerned, that the Coast Guard's service and regulatory activities will not be administered from a military point of view.

". . . The tremendous wartime expansion of our merchant fleet is bound to have important postwar implications. Not only will we have a larger merchant fleet than ever before in our history, but new technical developments in communications and navigation equipment will require significant modifications of safety regulations, as well as corresponding adjustments in the Coast Guard's aids-to-navigation facilities. Likewise the anticipated expansion of transoceanic aviation after the war will add to the Coast Guard's responsibilities for air-sea rescue services. Furthermore, there will be an urgent need for the development and extension of international collaboration on maritime safety matters. As the principal maritime safety agency of the Federal Government, the Coast Guard is the logical representative of the United States in any such development."

The Bombay Disaster

SAFETY IN TRANSPORTATION OF EXPLOSIVES

ON 14 April, 1944, about 4:00 in the afternoon a partially unloaded vessel with a considerable amount of military ammunition, high explosives, cotton, and other general cargo on board, blew up in Bombay Harbor.

The subsequent results represent a casualty comparable only to that which occurred at Halifax during the last war. At the time of writing, an official investigation is underway. Such information as is now at hand is fragmentary but sufficient to reach some conclusions, subject to correction when official results of the investigation are received.

It appears that the unloading of the cargo of this vessel was proceeding under the conditions peculiar to the war times and the necessities of the place and conditions surrounding. At 1:30 p. m. the longshoremen returned to work after having lunch. At about 2:00 p. m. white smoke was observed rising from one of the lower forward holds of the vessel. In some five to ten minutes fire engines that were summoned arrived and efforts were underway to control the fire. At 3:55 "Abandon ship" order was given and 12 minutes later the vessel blew up, followed 30 minutes thereafter by a second explosion, which apparently occurred in the aft part of the vessel.

The two explosions drove missiles of various kinds over a very wide area and threw burning cotton, blazing timbers (from ship's cargo) and white hot fragments of metal into the same areas, setting fire to buildings that were hit. These areas included warehouses, pier sheds, administrative office buildings, the custom house, and a portion of the poorer residential areas of Bombay. Warehouses containing highly combustible stores added materially to the fire. In the wet basin, within an area of approximately 1,000' by 1,000', were 11 other vessels. Of these vessels, one had its stern completely blown off, one was destroyed by the blast and sunk, and the others were rather completely burnt out by the fire following the explosion. In the dock next to where the explosion occurred there were eight other vessels moored. This dock is separated from the dock where the explosion occurred by a quay about 400' across. Of these eight vessels in the second dock, two were rather completely burnt out, another had its upper works burnt off, another had a bad fire in the stern portion, two were undamaged, and two others believed to be undamaged.

Reports vary as to the number of lives lost and the number of persons injured. Some information alleges 200 lives lost, other information 400, and still others set it much higher. Information regarding the number of persons sustaining injuries also varies from hundreds to several thousands. The loss of cargo vital to the prosecution of the war, the loss of the vital dock facilities, warehouses, and the private property lost outside the port

Bombay Harbor showing destruction of ships and docks. Burned cotton bales are afloat.

Burned out vessels standing after the explosion and fire at Bombay Harbor.

area are impossible of reasonable estimate. Suffice to say, it will be extensively harmful to the war effort.

The regulations of the United States Coast Guard require a permit to be obtained by every vessel loading or unloading explosives and certain piers or areas are designated for this purpose. Vessels having these highly dangerous cargoes on board are not permitted to enter congested areas in our ports. Vessels that have such dangerous cargoes on board are not permitted to become immobile. It is required that the vessel be ready to move, that a sufficient number of the crew to constitute a standby watch be on board and on duty. If for any reason the ship must be immobile, it is required that tugs stand by during that period. Personnel engaged in handling and stowing this dangerous cargo of explosives or ammunition are required to have an explosive handling permit issued by the Captain of the Port. Before securing this permit, the applicant is checked as to his qualifications for this task, and also for subversive tendencies. No unauthorized persons are permitted to be in the hold of a vessel taking on or discharging cargoes of explosives. Certain other prescriptions are laid down to safeguard the actual handling of the explosives. Regardless of the functions performed by the military personnel in supervising the loading or unloading of explosives, these functions do not relieve the masters of the vessels from the responsibility of providing security for their vessels.

It has been the experience of the Coast Guard that one of the most effective functions which it undertakes in providing for the security of vessels and our ports is its fire prevention and firefighting activity. When a vessel applies for a permit to load explosives, it is inspected. All potential fire hazards are eliminated or safeguarded before the vessel may proceed to an explosives loading terminal. During the time the vessel is at the terminal, constant inspections are made to insure, as far as is humanly possible, that no fire hazards exist. The vessel's firefighting equipment is checked and so placed as to be instantaneously available in usable condition while dangerous cargo is being handled on board. This includes operation of the fire pumps on the vessel itself. If a vessel is at an explosives loading pier, land lines are run out prepared for instant use. It is customary also to moor one of the Coast Guard fireboats alongside the vessel or the pier while the operation is underway. In some areas, especially where the pier water supply may be inadequate or of low pressure, the Coast Guard provides mobile pumper units manned by men trained in firefighting on board vessels. To handle oil fires, foam and fog nozzles are provided by the Coast Guard and ready for instant use. All of this equipment is modern and up-to-the-minute, and is manned by trained personnel of the Coast Guard. To complete the fire extinguishing planning, the security officials and the chiefs of the fire departments of the adjacent communities are taken into the confidence of the Army, Navy, and the Coast Guard, with reference to the work being carried out which is so necessary to the war effort. The local fire departments appreciate the constant supervision of the Coast Guard and the presence of its firefighting equipment in the area.

It is the responsibility of the vessel operators, masters of vessels, pier owners, stevedores, longshoremen, and personnel of the Army, Navy, and Coast Guard to see that there never is a casualty similar to this Bombay disaster allowed to occur in any of our ports. This can best be accomplished by everyone remaining alert, observing the regulations, cooperating with each other, and keeping his own house in order.

The existing regulations governing the handling, stowage, and transportation of explosives and ammunition are not restrictive or onerous. They are not the brain child of a theorist. They represent the learning of many men and the experiences of many casualties. Prior to promulgation, they were passed upon and agreed to by a group of qualified and experienced men drawn from the Ordnance Departments of the Army and Navy, the Transportation Corps of the Army and Navy, the 40 years experience of the heads of the Bureau of Explosives, the experiences of the promulgating agency, the U. S. Coast Guard, the vessel underwriters, and vessel operators of this country.

The regulations have the authority of law. To protect your own life and limb, observe them. That policy can be a contribution on your part to preserving the safety of vessels and our vital port facilities, and thereby represent a major contribution by you to the early and successful conclusion of the war.

Recipe for Survival

THIS is the title of an article by Lt. Comdr. William C. Chambliss, U. S. N. R., which appeared in the *United States Naval Institute Proceedings* for July 1943. It has since been extensively reprinted for the information of naval personnel. Much of the material in the article applies to special situations which would exist only on naval vessels, but some of the points which he brings out and the lessons he learned by experience are equally applicable and valuable to the personnel of merchant vessels. Excerpts of these are quoted below.

"Numerous and lucid are the authoritative texts on the more desirable phases of life at sea. But there is a sad dearth of information on what the prospective survivor as an individual should do in order to further his chances of attaining that status. Yet the grim fact that in every well-regulated war some ships are bound to be sunk compels the admission that the subject merits serious consideration.

"It is not being unduly timorous or pessimistic to prepare ahead of time for such a misadventure. Indeed, self-salvation is a positive duty.

"Probably the first step, both in chronology and in importance, to prepare oneself against the necessity of taking to the deep and briny, is to learn the ship thoroughly. Even in such a relatively small community as a war vessel, the paths of travel from bunk to mess to duty station tend to take routine patterns along the shortest usually traveled routes. The larger the ship, the more likely is the individual to miss knowing alternative routes to various parts of the vessel.

"The problem of what to wear is usually settled by circumstances—you wear what you have on at the time, unless you are involved in one of those leisurely shipleavings which admit of a choice of apparel. Such are not the rule. However, if you happen to be torpedoed while partially disrobed, by all means try to grab a shirt and pair of trousers on your way out. Clothes have several advantages. They'll spare you much barked hide while you're going over, whether you go down a rope, climb along a canted hull, or follow the more decorous procedure of getting into a boat.

"Of prime importance are gloves. You may have to tear away debris, climb over jagged or hot wreckage, or take to a rope. One cannot afford injury to the hands, principal tools of salvation. A pair of light leather gloves, habitually carried in the hip pocket of one's trousers when not being worn, will prove worth more than their weight in gold in abandoning ship.

"Very useful is a knife. Handy, too, is a flashlight of the pencil type. It is easily carried in a shirt or blouse pocket, and can solve some pressing problems. You may, for example, be below decks when disaster overtakes the ship. Almost invariably the lights go out. Travel with the aid of a flashlight is much easier, in such circumstances, than doing it by the touch system.

"Of course, to be effective when you're in the water, the flashlight must be kept dry. Many methods have been devised for accomplishing that end. The most successful this reporter has seen is to enclose the flashlight in a rubber sheath, securely closing the open end with a rubber band or by tying a knot; a bit inelegant, but elegance has no place in abandoning ship. The rig is sufficiently translucent to permit radiation of an easily seen beam of light.

"Now, for getting over the side. *Don't jump*, unless there's no alternative. A leap from any appreciable height is an invitation to a broken neck or to getting yourself knocked out by the slap of the life belt against your jaw. Further, you cannot be certain that just below the surface there isn't some obstruction, such as a projecting hull fitting, which may end right there your efforts to reach safety.

"First choice is a fire hose, if there's one rigged which reaches close to the surface. Because of its "squeezability," the hose offers a surer grip than does a rope. But, if you use a hose, look out for that nozzle at the end. Don't let it sneak up on you unawares during your downward progress. It can be very painful. Lacking a hose, you will have to take a rope. First, be certain it has been belayed!

"Once on the rope or hose, remember the cardinal rule: *Don't slide*. Go down hand-over-hand. If you slide, you may not be able to stop. And, if you have not provided yourself with a pair of stout gloves, your efforts to stop will result in reducing your hands to a pulpy, seared mass. Be always alert for any tendency to slide unintentionally (ropes become slippery from water, oil, and blood), and snub up promptly before the slide develops. There's good use, on a hose or rope, for the old station-keeping axiom, 'Remember the next astern.' Only in this instance, it's for your benefit, not his. The next man on the rope after you may elect to slide. In that case, be well braced, and have your head out of the way so that you take the shock on your shoulders.

"Arriving at the end of the line, ease yourself into the water. *Don't jump*. Under stress of abandoning ship, with familiar marks dislocated by rolling or listing, it is all too easy to misjudge the distance to the water. Try not to let go until your feet are immersed. Then get under way smartly on the previously determined course, putting as much distance as possible between yourself and the ship with an initial speed run. You want to get well clear (a couple of hundred yards) as soon as you can.

"It is near the ship that the almost inevitable leaking fuel oil is thickest, with consequent danger of fire on the water. One way to determine that you are beyond this latter peril is to look at the oil in the water. If it is broken up in small, isolated globules instead of forming an unbroken sheet, you are reasonably safe from fire.

"Should your ship be in company with others at the time of its destruction, you probably will be picked up in 3 or 4 hours, provided you have adopted a common-sense course of preparation to favor that happy denouement. Once aboard the rescuing vessel, try not to make a damned nuisance of yourself. If you have suffered some slight hurt (a bit of rope burn, a small cut), get hold of a first-aid kit and fix yourself up temporarily. The ship's medical people will be busy aiding your more seriously injured shipmates. If you are picked up by a destroyer or similarly small vessel, *get below decks* right away. Sure, you'd like to stay topside, and see what's going on. But a destroyer that has taken aboard 600 or 700 survivors (and individual tin cans have rescued that many) is in a precarious state of balance. People staying topside may well cause the ship to turn over.

"There is a large element of that imponderable factor called luck in surviving the destruction of one's ship. But luck, alone, cannot be counted upon to effect your salvation. When the time comes, you're going to have to think your way out. And the more thinking you've done ahead of time, the more likely you are to be in a position to tell your grandchildren a highly embellished account of what happened."

Safety Aboard Ship

By L. E. Mitchison, Safety Engineer, American Oil Company

I THINK that in considering the question of safety aboard ship the first thought should be of that bugaboo of all seamen, the cry of "Fire!" The problem of preventing and controlling fire aboard ship has received the earnest attention and best efforts of some of the nation's most brilliant fire fighting and fire prevention engineers.

When fire occurs at sea, it is not possible to run to the next street corner and turn in an alarm that will bring the nearest fire company "on the double." And so each ship must have its own complete fire fighting equipment and trained personnel to handle it. The master who puts out to sea without both is more than foolish.

Fortunately, most seagoing vessels are fairly well supplied with fire pumps, hose, and other fire fighting equipment. It is a sad fact that many masters fail to properly train their crews in fire fighting and the use of their particular ship's equipment.

Each man of the ship's crew should be assigned some definite duty in the event of fire, and drills should be held at sea at regular intervals. It is far too late to train a crew after fire actually breaks out. Regular drills, with no advance notice, in some cases, to advise the crew that the alarm is a practice drill and not the real thing will pay real dividends when or if fire really occurs.

In addition to fire drills, occasional classes in the basic causes of fire, what fire is, what is necessary for its extinguishment, the various extinguishment agents and how they work, should be held for the education of the crew, along the following lines.

The Basic Elements of Fire. What is fire? It is the result of rapid oxidation, resulting in combustion or burning; in other words, fire or flame.

In order to have fire we must have a combination of three essentials, namely, fuel, heat, oxygen. In the absence of any one of these three things fire cannot exist.

Fire Extinguishment. To extinguish fire, we must do one of three things:

1. Remove the fuel, which is seldom possible since it may be part of the ship's structure or tightly packed cargo that is burning.
2. Lower the temperature of the burning material below the ignition point.
3. Cut off the supply of air or oxygen to the fire.

If any one of these three things is done the fire will go out. Since the first, removal of the fuel, is seldom possible, all modern fire fighting is based on one or the other of the remaining two.

Water is applied to a fire for the purpose of lowering the temperature to below the ignition point.

"Carbon-dioxide" displaces the oxygen in the air around the fire and it literally "smothers to death" for want of air or oxygen

"Chemical Foam" covers the burning material with a blanket of foam bubbles filled with carbon dioxide which acts as a blanket to cut off the air from the fire. Again we have a "smothering" effect.

The small portable "Soda and Acid" extinguisher contains water, bicarbonate of soda, and sulphuric acid. When the extinguisher is turned "bottom side up" to operate it, the acid mixes with the bicarbonate solution and generates pressure to expel the contents. The extinguishing effect is exactly that of plain water, that is, to lower the temperature; the acid and bicarbonate generate pressure only. There are other extinguishing agents, such as "Dry Powder," "Carbon Tetrachloride," etc., but these are seldom part of a ship's fire fighting equipment.

Fire Extinguishment Agents

WATER. The usual method of applying water to fire aboard ship is with the fire hose and nozzle or play pipe. This is about the best method of fighting deck fires or other fires where the destructive force of the stream can do little or no damage.

In the ship's interior, that is, salons, staterooms, cabins, and sometimes in the holds, depending on the type of cargo, the rending, tearing effect of a high pressure water hose can sometimes do as much damage as might have been done by the fire itself. For applying water streams where high pressure solid streams might do damage, one of the adjustable "fog" nozzles should be used. One nozzle, manufactured by the American La France Company, is so made that it will project a solid stream, a coarse spray, or a fine mist, simply by a twist of the nozzle.

The solid stream, aside from its destructive force, concentrates on a small area, when it might be far better to use a spray which covers a wide area and wets down without tearing things apart. Using a fog nozzle, a fire fighter can throw up a wall of water vapor ahead of him that will permit him to get in close to the fire without suffering from reflected heat. And a few of these nozzles introduced into a burning hold through the hatch can cover a tremendous area of fire.

Since these adjustable nozzles can be used either for a solid stream or spray or fog, they are far preferable for shipboard fighting to the standard solid stream nozzle.

CARBON DIOXIDE. Of all fire extinguishing agents for shipboard, the carbon dioxide, or CO_2, is cleanest, quickest, and most efficient for enclosed areas, such as holds, engine

IDENTIFICATION, PLEASE—Coast Guard's Port Security Detail inspecting identification card.

rooms, pump rooms, etc. Where CO_2 can be brought into play, particularly in confined spaces, its work is all but magical. The fire just disappears, and there is no water damage and no mess to be cleaned up afterwards.

Ships' installations for CO_2 usually consist of a battery or several batteries of cylinders, filled with liquid CO_2 under a pressure of about 600 pounds at 70° F. From these cylinders a piping system runs to the parts of the ship to be protected, with projectors or "horns" installed around the bulkheads and at other points to disperse the "gas." In the cylinders the CO_2 is liquid, but becomes a gas as it leaves the projectors or "horns."

In addition to the above installation of cylinders and piping, there are alarm systems, ranging from a fire gong or siren operated by the heat of fire, up to the more elaborate "rich cabinet" which looks like a juke box and is generally installed in the master's cabin. This cabinet constantly draws samples of air from the various holds, and the instant there is a trace of smoke in any air sample, it sounds an alarm and indicates the location of the fire. Pulling a lever or opening a valve on the piping system to the location of the fire immediately floods that area with CO_2 gas and the fire is smothered. These installations are somewhat costly, but more than justify the expense.

FOAM. Foam is usually used as a fire extinguishing agent on tankers carrying gasoline or other petroleum products. It is applied with a hose and nozzle much the same as is water.

The foam is generated by mixing two chemicals, bicarbonate of soda and aluminum sulfate, with water by means of a foam generator. The two chemicals are stored in cans usually of 50 pounds each, the aluminum sulfate cans being marked "A" powder and the bicarbonate of soda cans marked "B" powder. The generator is connected into the fire hose line at a safe distance from the fire. The water is turned on and the buckets of "A" and "B" powder are dumped into the hoppers of the generator. The two powders mix with the water as it passes through the generator and are converted into a thick foam which, when applied to a petroleum fire, spreads a blanket of tough foam bubbles and cuts off the air from the burning liquid, thus starving the fire.

The above descriptions of the various elements of fire, fire extinguishing agents, and methods of application are, of course, brief, but if all crews of ships were schooled in the causes of fire, and properly instructed in what to do and *why they do it*, many ships that might otherwise be lost at sea due to internal fires, would come back to port to sail again.

Auxiliary Patrol

THE Coast Guard Auxiliary, organized 2 years before Pearl Harbor, has enrolled 50,000 members, of whom 30,000 are members of the Temporary Reserve. Among the several purposes for which the Auxiliary was formed was the provision that it should "facilitate the operations of the Coast Guard." Shortly after war was declared, Auxiliarists, who, like the Coast Guard itself, were primarily interested in the use of boats to patrol and protect our shore lines, volunteered to use their own vessels and to invest their own time in coastal patrol. In the Third Naval District alone some 600 privately owned craft were employed in this capacity.

As the war progressed, the need for so extensive a patrol of coastal waters has been lessened. There was less danger from submarines operating in our coastwise shipping lanes and less likelihood of saboteurs being landed on our shores. However, it is still considered necessary to maintain patrols and tower lookouts and to be on guard against the activities of saboteurs already within our borders. So the emphasis of the Auxiliary's contribution to facilitating the operations of the Coast Guard has changed. The duties now most essential include border and inlet patrol, emergency stand-by duty with vessels, watch tower duty, beach patrol, the patrol of docks and storage installations, and administrative work. In all these fields thousands of Auxiliarists are doing their weekly trick of 12 hours.

Much of this duty is routine and does not provide the element of exciting participation which the Auxiliary shared earlier. It is the more credible, therefore, that they have been so very faithful in carrying out their new duty assignments. Thousands of Auxiliarists enrolled in the Temporary Reserve take pride and credit in knowing that now and then their vigilance is visibly rewarded, that fires are prevented, and that assistance is rendered. A few individual instances which demonstrate the service of the Auxiliary are narrated here.

A Coast Guard Auxiliary vessel on patrol duty last July discovered a blazing mattress drifting toward one of the large piers in an important Atlantic seaport. The vessel went to the scene immediately, but by the time it reached the mattress, it had drifted under the pier. The pilings of the pier were creosoted and would have ignited easily were it not for the quick action of the Auxiliary crew. The fire was immediately extinguished, and no damage was done. Investigation failed to reveal any explanation for the floating fire trap.

In another instance, an Auxiliarist, a civilian employee of a contracting company, while working on a Naval Operating Base contract job, prevented the sinking of a Coast Guard patrol boat. The vessel had been rammed and was going down rapidly when the Auxiliarist took charge of the salvage outfit and managed, through the use of hydraulic pumps, to raise the nearly sunken craft and prevent severe damage. He worked untiringly over a period of 8 hours. A large quantity of gasoline covered the water, and had it not been for the rescue squad under the cautious command of the Auxiliarist, a waterfront catastrophe might have occurred.

Some time ago a patrol boat manned by three Auxiliarists gave the exact location of an upheaval in a bay, which was thought to be the result of the explosion of a shell from a nearby firing range. Later the Temporary Reserve was asked to render assistance in that area to the Army Air Corps in recovering a plane and the body of its pilot. An Auxiliary crew and six men rigged a cable 300 feet in length, strung at close intervals with heavy sheet metal to which sharp hooks were attached, secured between two boats, for the purpose of sweeping the bottom. The material was furnished by a member of the flotilla. In the vicinity of the upheaval noticed earlier, four Auxiliary vessels dragged the sea for approximately 12 hours despite heavy weather and succeeded in locating an object that could not be moved with the combined power of all four boats. Extreme high winds for 2 days prevented further search, but the location was well marked, and the search was continued later. The object was again located, and the crew was successful in bringing to the surface parts of the plane as well as the aviator's body, and recovered all necessary identification data.

Early in May 1943 two Auxiliarists received a call that a Navy patrol plane had caught fire and was forced to land in rough water a short distance offshore, but a considerable distance from the patrol base. The position given by radio call was found to be untrue, varying several miles from the correct location. The patrol, therefore, searched the bay until the plane was located. Moving in close to the burning plane, the Auxiliarists pumped water over the motors and fuselage, picked up several survivors, and with complete disregard for their

personal safety boarded the plane and extinguished the flames inside the cabin.

When two tankers collided a few months ago, five Auxiliary vessels arrived at the scene of the accident within 45 minutes. The Captain of the Port, aboard one of the vessels, took charge of operations. Auxiliarists assisted in picking up the 29 survivors and carrying them to the nearest hospital for medical attention. These vessels continued on duty throughout the night searching for survivors and bodies. After fireboats had arrived and the fires were under control, Temporary Reserve officers were selected among others to board the vessels and assist in the recovery of 21 additional bodies while the vessels were still partially afire.

During the last week of October, a howling northeaster smashed its fury against the shores of the North Atlantic coast. Particular havoc resulted along New Jersey's "storm coast" where beaches were shifted, sea walls crumbled, homes were carried away, roads were washed out, and vessels broke and dragged their moorings. The Coast Guard immediately assumed its usual task of rescue, aid, and salvage. In the midst of the storm a number of strandings occurred, among which was a large freighter blown onto the beach at Bel Mar. The Section Coast Guard Officer for northern New Jersey, at whose stations Auxiliarists enrolled in the Reserve were serving, requested the Jersey Shore Division of the Auxiliary to mobilize. The Division Captain responded to the call at once and eight flotillas reported for duty. The unusual high tide accompanying this storm had swept into some of the shore towns flooding streets and highways and creating disruption of communications. Auxiliarists were rushed to key points to divert traffic from the washed out roads and to establish communications. Others aided the Coast Guard in evacuating families from inundated homes and in salvaging vessels which had broken their moorings. At Bel Mar Auxiliarists joined the station's regular surf crew at the scene of the stranding, helped to set up and man the breeches buoy, and assisted in removing the crew of the stricken vessel. All hands were brought ashore without loss, a noteworthy achievement under the existing storm conditions. Later when the sea subsided slightly, Auxiliarists boarded the vessel with a Coast Guard detail to inspect the hull plates.

These instances are only a few examples of the participation of the Auxiliary in facilitating the operations of the Coast Guard.

National Maritime Day

THE PRESIDENT of the United States proclaimed May 22, 1944, as National Maritime Day, a day on which to recognize publicly the patriotism, courage, sacrifice, and services of those men and women, ashore and afloat, who make it possible for our merchant ships to carry men and materials to the far-flung battlefields of this global war. The Coast Guard, by reason of the nature of its functions in connection with the merchant marine, was eager to join in paying tribute to all of those who have participated in this vital field.

Vice Admiral R. R. Waesche, Commandant of the Coast Guard, attended the ceremonies held in New York under the auspices of the War Shipping Administration and the American Merchant Marine Institute, and spoke briefly. In the course of his remarks he said:

"I doubt that one can visualize the magnitude of the task until he has seen the vast extent of the supply dumps at our outlying bases. Great piles of bombs, shell cases, gasoline and oil tins, machine parts, mess equipment, C rations, and numerous other items extend for miles and miles. The men who move these supplies across oceans and seas are actually taking part in war operations. Many of them are as definitely engaged in the combat as is an Army motor convoy that moves supplies to the front.

"The splendid and spectacular scene of a ship sailing over hazardous seas, manned by those who live constantly with danger must not cause us to forget the persons whose hard and long labors have enabled the ship to put out on her voyage. The operators and their employees, the shipbuilders, ship repairers, and their employees, unions, operators associations and countless others are all entitled to respect and recognition. Our successes and our ultimate triumph will be due, in great part, to the splendid efforts, hard work, and great courage of the men and women of the maritime industry."

In the afternoon the Commandant attended the ceremonies held by the National Maritime Union and unveiled a memorial to merchant seamen who had lost their lives at sea in this war. His closing remarks were as follows:

"On this National Maritime Day it is appropriate that we look, not only to the past glories and present trials of the American Merchant Marine, but also that we turn to the future. In the last two and one half years we have come far enough along the road to victory so that we may look with confidence to the day when the enemies of democracy and liberty will be finally and thoroughly vanquished and when the seas will again be the free highways of world commerce.

"That day should and will find the United States with the largest and best fleet of merchant vessels in its history. The many hazards and trying circumstances that characterize shipping today should, in the postwar world, bring us hard-earned compensation in the form of skilled, experienced, and capable sailors for that fleet. Furthermore, perpetuating the memory of the gallant sacrifices of those whom we honor here today will go far towards insuring that our future merchant fleet will be adequately manned. With the best ships, the best seamen, and a free world in which to trade, the future of the American merchant marine is bright."

Duties of the Chief Mate

NEXT to the Master, the position of Chief Mate is probably the most exacting and responsible position on board a merchant vessel, primarily because of the fact that the Chief Mate is expected to assume the position and responsibilities of the Master should that officer for any causes be unable to perform his duties.

On vessels carrying three licensed mates, the Chief Mate usually stands the morning and evening watches, not only because they are the most desirable watches and are his by prerogative but also that he may have closer supervision of the work going on during the day.

Because of the nature of his position and the broad scope of his duties it is the practice on larger vessels to assign an additional licensed deck officer to relieve the Chief Mate of his watch standing duty.

It seems to be the impression among certain seafaring personnel and operators of vessels that the fact that the Chief Mate is relieved of watch standing also relieves him of all responsibility toward the vessel other than the maintenance and policing of the deck department, or, in other words, makes the Chief Mate a "glorified Bosun."

In a recent investigation of the grounding of a vessel it was ascertained that the Chief Mate paid very little if any attention to the navigation of the vessel, being presumably interested in the supervision of maintenance work and discipline of the deck crew.

The Coast Guard believes that the position of Chief Mate is of extreme importance and that it requires considerably more than a mere routine supervision of day work of the crew.

The Chief Mate is second to the master in chain of command and

therefore is the master's direct representative, and all officers are under his orders in matters pertaining to operation and maintenance of the vessel except insofar as such matters are the direct responsibility of the Chief Engineer, Chief Steward, and heads of other departments. He is in charge of the cleanliness, sanitation, condition, appearance, and safety of his vessel.

The Chief Mate is always on duty and is responsible for the proper execution of the master's orders. He has charge of the maintenance of the vessel's hull and equipment, of life saving and fire fighting apparatus, and of the discipline and efficiency of the crew.

He should arrange and coordinate the ship's work and drills, prepare daily routines, and lay out work for the deck department. He should consult with the heads of other departments relative to coordination of work and drills.

He should correct abuses, prevent infractions of discipline, and suppress disorders.

He shall aid the master in every way and see that the other officers are vigilant in the performance of their duties and that they conform with orders. He should be able to instruct the watch officers in the performance of duties and take over if necessary in the absence of the master.

He should set an example for the officers and crew under him and should make frequent inspections.

He should be familiar with all parts of his vessel and equipment and make frequent inspections.

As personnel officer of his vessel he should be familiar with the crew and their abilities and deficiencies.

When not standing a regular watch the Chief Mate may relieve the watch officer for convenience, and in any case should keep close track of the location of the vessel and be ready to assume command if the master is incapacitated.

In times of emergency or disaster to the vessel it is expected that the Chief Mate will be in charge of the damage control or emergency squad and direct the crew in combatting the particular peril.

The position of Chief Mate with its broad administrative and executive authority requires unusual ability and good old fashioned common sense and is one toward which all junior officers should aspire.

Censorship Violations

NOT long ago a licensed seaman was called before a Hearing Officer on a charge of violating the censorship rules by attempting to transmit data of routings and details of military establishments through the mails. This seaman was well aware of censorship regulations. It was brought out at the hearing that the Security Officer aboard his ship had warned him on previous occasions and often had to return letters not conforming to regulations to such a degree as to make it impossible to transmit even after drastic deletions.

Before shipping, this seaman arranged a code by which he could tell his girl back home where he was by referring to certain numbers which represented various ports on his anticipated route, and could give the dates of arrival and departure for her to post on a map with pins. Not satisfied with sending this vital information, he also described in detail various advance bases and their growth.

The code was not extensive enough to cover his travels. He realized because of former warnings that the Security Officer would never permit information such as he wanted to send to go through. In addition, he reasoned that he did not like the idea of this one man continually reading his personal communications to his girl, although, as he admitted at the hearing, he had nothing against the officer himself. So this man waited until he was on shore leave one day, and on plain paper bearing a fictitious sender's address he wrote his girl extending the code to include new ports, giving his complete itinerary in detail, and describing the growth of the bases they had touched on more than one occasion. This vital information was put in the mails so that a girl back home could stick pins in a map with dates beside them!

An investigation of the man's background produced no evidence of disloyalty or subversive activities. In fact he had completed a hitch in the Navy before Pearl Harbor and had been honorably discharged. He realized that he was violating security regulations as he stated in his letter that it would probably be censored. But to satisfy a selfish desire on his part to let his girl know where he was and when, he was willing to risk the lives of hundreds of his countrymen in an attempt to get the information past the censors by hiding his identity and profession, and to circumvent the officer who, he knew, would prevent its transmission.

At the hearing he was asked:

"Mr. ———, in fairness to yourself, I would like you to answer this question: Would you write this letter with the intention of divulging military information or would you say it was just dumbness on your part?

"Ans.—I guess plenty of dumbness on my part. I didn't realize at the time——"

This man's license was revoked for this violation of censorship regulations, a penalty far less severe than he could expect had he lived in one of the enemy's countries into whose hands this vital information might have fallen. These regulations are not designed to prevent contacts with friends and families at home, but to ensure that seamen, soldiers, and sailors can survive to tell personally where they have been, and what they have seen and done. A second thought would not have let this man risk losing his license.

Latest Editions of Light Lists Issued

THE 1944 editions of the light lists for all coasts of the United States and its island possessions, the Great Lakes, and the Mississippi and Ohio Rivers, have just been issued. The Light List for the Intracoastal Waterway will be available in July.

With the exception of the Atlantic and Gulf coasts, and the Pacific coast light lists, which are available only through U. S. Navy distributing offices, the light lists are for sale by the Superintendent of Documents, Washington, D. C., and from various sales agencies in many of the ports of the country.

Following are the various Light Lists, published annually by the Coast Guard, and the areas which they cover.

LIGHT LIST, ATLANTIC AND GULF COASTS.—Describes all aids to navigation maintained by or under the authority of the Coast Guard on the Atlantic and Gulf Coasts of the United States from the St. Croix River, Maine, to the Rio Grande and including the United States West Indian Islands.

LIGHT LIST, PACIFIC COAST.—Describes aids to navigation in United States waters on the Pacific Coast and on the coasts of Alaska and the Hawaiian Islands. For the convenience of mariners there are also included the lighted aids on the coast of British Columbia, maintained by the Canadian Government.

LIGHT LIST, GREAT LAKES.—Describes aids to navigation maintained by the Coast Guard, and the lighted aids maintained by the Dominion of Canada, on the Great Lakes and the St. Lawrence River, above St. Regis River.

LIGHT LIST, MISSISSIPPI AND OHIO RIVERS.—Describes aids to navigation on the Mississippi and Ohio Rivers and navigable tributaries.

LIGHT LIST, INTRACOASTAL WATERWAY.—Describes aids to navigation in the Intracoastal Waterway and inside waters, from Hampton Roads to the Rio Grande.

Liberty Hull to Fire School

THROUGH arrangement with the War Shipping Administration, the Coast Guard Training Station at Fort McHenry, Baltimore, Maryland, is to be furnished with the hull of a Liberty-type cargo ship for use in the work of the station. At Fort McHenry the Coast Guard has located a school for instructing in fire-fighting and damage-control on board ship. Heretofore mock-ups representing ship compartments have been used but when the new acquisition is available, actual ship structure and conditions can be practiced on.

The vessel, the GASPAR DE PORTOLA, became a constructive total loss through heavy bottom damage. Such machinery and equipment as could be salvaged was removed from her and the hull was offered to the Coast Guard. It is planned to secure the vessel alongside the seawall at Fort McHenry and, if necessary, enclose it with a cofferdam or breakwater.

The value of having an actual, modern, ship hull, particularly one of the Liberty-type which presently constitutes such a large part of our wartime merchant marine, is obvious. Not only does it afford opportunity for problems of fire- and damage-control with a minimum of artificiality, but it will lend itself, as a sort of marine guinea-pig, to laboratory work in the testing of fire equipment, fire-resistant materials, and the like.

Activities of Merchant Marine Hearing Units

COAST GUARD Merchant Marine hearing units, during April, handled cases involving 232 licensed officers and 1609 unlicensed men. In the case of officers, 3 licenses were revoked, 32 were suspended, 80 were suspended on probation, 9 were suspended plus suspension on probation, 2 were voluntarily surrendered, 51 admonitions were given, and 55 cases were dismissed. Of the unlicensed men, 37 certificates were revoked, 225 were suspended, 460 were suspended on probation, 46 were suspended plus suspension on probation, 42 were voluntarily surrendered, 399 admonitions were given and 400 were dismissed.

DERELICT DESTROYED IN NORTH ATLANTIC—The bow of a United Nations' tanker, torn in half by a Nazi torpedo, is blown up and sunk by the U. S. Coast Guard.

The Structural Reinforcement of Liberty Ships

SINCE the inception of the "Board to Investigate the Design and Methods of Construction of Welded Steel Merchant Vessels" numerous specific steps have been taken to control the difficulties which have occurred. There has been a great deal of conjecture in shipbuilding and shipping circles regarding the measures which have been taken and their intended purpose. It has been impossible in the past to disclose the problems in their true light, but now that the difficulties are more fully understood and the scope and gravity of the situation can be evaluated, it is possible to set down the problems that presented themselves and the steps which were taken through the combined efforts of the U. S. Navy, U. S. Coast Guard, U. S. Maritime Commission, and the American Bureau of Shipping.

The first step taken was to educate the shipyard personnel, inspectors and surveyors in the more obvious causes which were contributing to the structural failures. Three pamphlets, whose contents were quite similar, were issued. The Coast Guard and American Bureau of Shipping issued instructions to their inspectors and surveyors, and the Maritime Commission printed a handy pamphlet which was circulated to all shipyard personnel in supervisory capacities and to all inspectors and surveyors. At the same time orders were issued to the shipyards to make specific alterations in two or three items on new vessels which were known to have contributed to the failures. These included the elimination of a cut in the sheer strake of the Liberty ships in way of the gangway, freeing of the bulwark from the top of the sheer strake on the Liberty ships, serrating the bilge keel on both the Liberty ships and T-2 tankers, and adding large girders beneath the deck of the T-2 tankers.

It was apparent that there was a tendency in the repair yards to conclude that, since a plate had cracked, it must of necessity have been rolled of defective material. The ship repair yards were removing large quantities of plating in effecting the repairs. Study showed, however, that the material complied with existing specifications and that new material introduced in the repair was, in all probability, in no way superior to that removed. Instructions were therefore issued in Marine Inspection Memorandum #64 covering the repairs of structural failures. By the end of the summer of 1943, the more obvious difficulties had been largely removed from new ships.

It also became evident that the majority of reports of structural failures were not complete enough to permit study of the more elusive causes. New forms were therefore devised for making the reports so that important information would not be omitted. Large diagrams were drawn for the Liberty ships and T-2 tankers on which the location of the fracture or buckling could be indicated and on which spaces were provided for all of the pertinent data so that inadvertent omission of important facts would be avoided. A third form of letter-size, NAV-CG 2752, was devised for reporting structural failures on vessels other than the Liberty ships and tankers. In order to establish definite procedures for making these reports, Marine Inspection Memorandum #57 was issued, which included detailed directions for making the reports. All of these data were distributed, not only to the Merchant Marine Inspectors of the Coast Guard, but to the Maritime Commission, Navy Department, American Bureau of Shipping, the British Corporation, and the British Admiralty, and at the present time structural failure reports are being received through the regular channels of all these agencies.

The structural reinforcements to be added are intended to serve two purposes: First, steps are taken to eliminate as many crack starters as possible; and second, barriers are introduced to limit the progress of any crack which might start from an undetected origin.

It has been found that practically any square corner introduced into the material may prove a source of difficulty. Square corners are therefore to be rounded in so far as practicable,

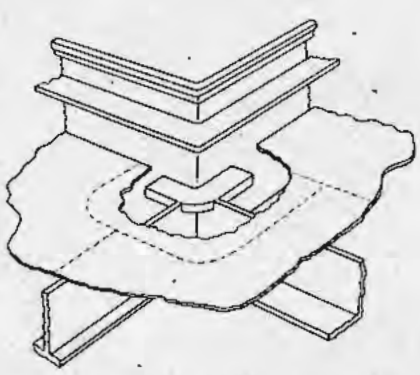


Figure 1.—Outside view of hatch corner in upper deck of earlier Liberty ship shows original design including 51 pound doubler beneath deck and welding around insert plate.

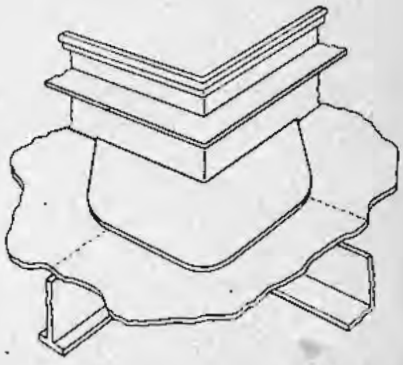


Figure 2.—Outside view of hatch corner in upper deck of new Liberty ship. The 20 pound doubler is shown on top of deck and covering insert plate.

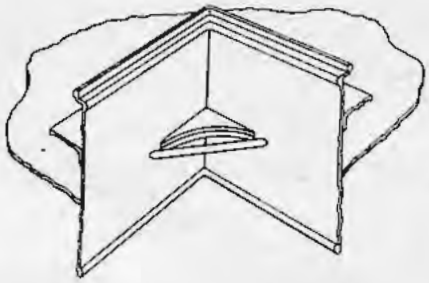


Figure 3.—Inside view of hatch corner in upper deck of new Liberty ship. The 20 pound doubler plate and insert plate are shown slotted through the hatch coaming and rounded to a one foot radius.

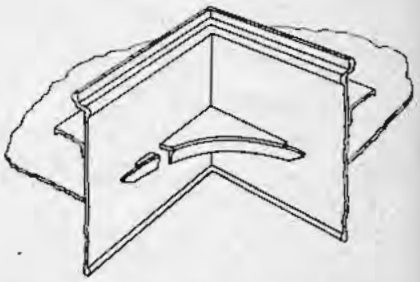


Figure 4.—Inside view of hatch corner in upper deck of Liberty ship. The corner reinforcement to be provided on existing vessels is shown in place.

and, in the case of the hatch corners which are a proven source of difficulty, specific reinforcements are to be added. Figure 1 shows the original reinforcement provided on most of the existing Liberty ships.

On new vessels an improved corner reinforcement is being fitted during the construction period. The reinforcement for new vessels is shown in Figures 2 and 3. Orders for this change were issued in August, 1943. On vessels which were not reinforced at the hatch corner, as shown in Figures 2 and 3, a rounded insert corner with face plate is being fitted as shown in Figure 4.

On the earlier Liberty ships a bulb bar bilge keel was used. In welding the butts care was seldom taken to see that the entire section was penetrated by the welding and a cavity was generally left in the heart of the bulb. The bilge keel is the outermost bottom fiber of the ship's hull girder and as the vessel bends and twists in the seaway it is severely strained. About half of the underwater shell fractures have been traced directly to a defective butt-weld in a bilge keel.

On vessels whose bilge keel had not been serrated during construction, holes are to be made opposite the butt welds, as shown in Figures 5 and 6.

Since there is a possibility that some cracks may emanate from undetected starters, such as cracked or imperfect welds, a barrier is to be provided to arrest such cracks before extensive damage results. From years of experience on riveted vessels, it is known that a riveted seam forms a barrier to a crack and, although an extensive study is still underway, no barrier has yet been found which is more satisfactory than a riveted seam. In reinforcing the Liberty ships, a riveted seam was, therefore, provided at the gunwale by cutting either the stringer plate or the sheer strake and fitting a riveted gunwale angle or strap, as shown in Figures 7 and 8. In order to limit further the propagation of fractures and in order to stop them near the hatches, which are the principal offenders, another riveted seam is to run beside the hatches, as shown in Figures 9 and 10.

In January 1944 it was found that some of the Liberty ships which had been operated in extremely heavy weather had developed buckles in the bottom of the after end of #3 hold. These buckles occurred in both the bottom and inner bottom of the vessel. Not many vessels developed this buckling and since it appeared that it was not serious enough to occasion great concern, no steps were taken except in the case of the troopships where difficulties in ballasting aggravated the situation and where so many lives were at stake that it became advisable to lean over backward in pro-

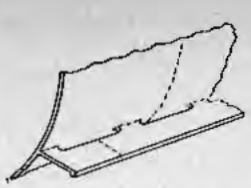


Figure 5.—Bilge keel showing serrations such as would be provided on a new vessel.

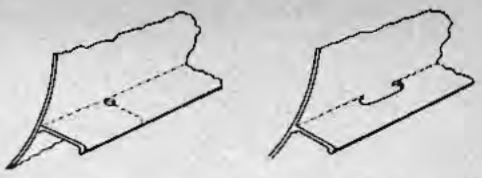


Figure 6.—Bilge keels on existing vessels showing holes provided at each bilge keel butt on dry cargo and tank vessels (left) and troop-ship conversions (right).

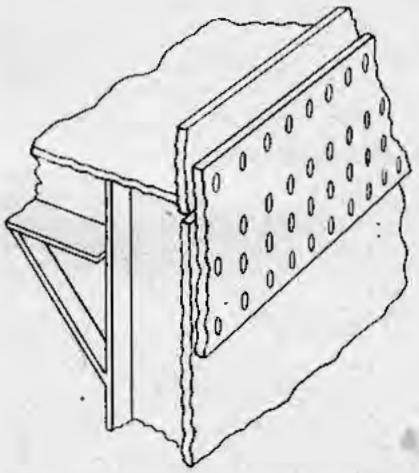


Figure 7.—Sheer strake showing torch cut in sheer strake just beneath upper deck.

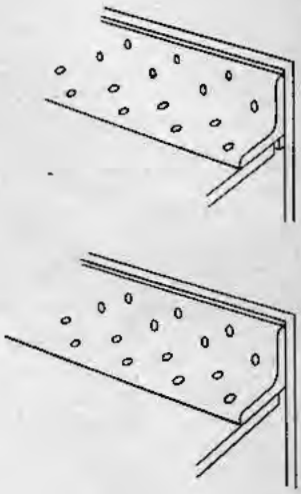


Figure 8.—Riveted gunwale angle showing arrangement for existing vessels with torch cut through stringer plate (above) and for new vessels (below).

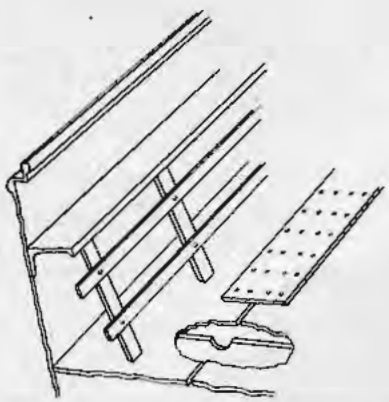


Figure 9.—Deck strap beside hatch on dry cargo or tank vessel.

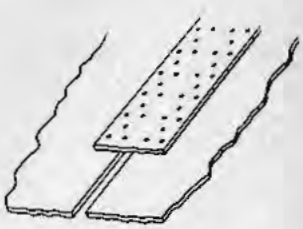


Figure 10.—Deck strap on troop-ship conversion.

viding extra precautions. In these vessels four additional longitudinal girders are to be fitted.

The Board appointed by the Secretary of the Navy to study the problem is still vigorously pursuing the causes of the fractures and will continue until a complete solution to all of the problems involved is reached. While the program of reinforcement is going on, various government, commercial, and university laboratories are engaged in tracking down the more remote causes for the difficulties. The details of the design, the characteristics of the materials, the methods of construction and restrictions on ballasting during operation are being studied. There is every reason to believe that these studies will locate the causes and cures of practically all of the difficulties which have beset our vessels and that after the war we shall be in a position to continue to build welded merchant vessels with the expectation of 100% security.

Time Limits for Fitting Reinforcements

In February, 1944, a policy was agreed upon by representatives of the Navy Department, War Department, Coast Guard, Maritime Commission, War Shipping Administration, and American Bureau of Shipping, relative to the urgency of reinforcements on the various types of vessels. In establishing this policy, the vessels were divided into three classes: (1) Vessels Under Construction; (2) Existing Dry Cargo and Tank Vessels; and (3) Troopship Conversions. The details of this policy follow:

Vessels Under Construction (Policy established 13 March 1944)

Vessels under construction where the stringer plate has not been welded to the sheer strake plate shall be considered new vessels and shall have the gunwale angle fitted during construction. Vessels under construction where the stringer plate has already been welded to the sheer strake shall be considered existing vessels (insofar as the fitting of the deck straps and gunwale connections are concerned). On existing vessels where the date of delivery is still two or three weeks remote, structural reinforcements should be fitted even if a delay of three or four days in delivery results. A short delay in the beginning is better in the long run, because the vessel will not have to be removed from service in order to fit the reinforcements at a later date. For existing vessels, where the date of delivery is only two or three days off, the urgency of the vessel's expected mission, its anticipated route, etc., should be considered in accordance with the specifications of 8 February, 1944 (below).

Existing Dry Cargo Ships and Liberty Ships Converted to Tankers

(a) Vessels which have sustained hull damage serious enough to require extensive repairs shall have these alterations made in addition to the repairs.

(b) Vessels which are scheduled to make voyages where low atmospheric temperatures and heavy seas may be expected, such as in the North Atlantic or Gulf of Alaska in wintertime, shall have the hatch corners reinforced as per item (A) (in specifications which follow) prior to making such voyages, except where extreme military emergency will not permit.

(c) All vessels must have all of the alterations completed as soon as possible.

Existing Liberty Type Troopship Conversions

(a) Vessels which are undergoing extensive repairs shall have these alterations made in addition to the repairs.

(b) Vessels which are scheduled to make voyages where low atmospheric temperatures and heavy seas may be expected such as in the North Atlantic or Gulf of Alaska in wintertime shall have the hatch corners reinforced as per item (A) (in specifications which follow), the deck altered as in Item (B), and shall have an alteration made at the gunwale in accordance with Item (C), prior to making such voyages. No exceptions will be made to this requirement, unless serious delay would result because of a lack of repair facilities or a condition of extreme military emergency prevails.

(c) All vessels must have all of the alterations specified herein completed at the earliest possible date.

Detail Specifications

Vessels Now Under Construction

All Liberty-type vessels under construction in the shipyards on which stringer plates have not yet been welded to the sheer strake shall be subject to the following:

1. Maritime Commission Plan EC2-S-C1-S-11-6-6, "Structural Reinforcements." This plan was forwarded to the Officers in Charge, Marine Inspection, having jurisdiction over shipyards constructing Liberty ships on 26 February, 1944.

2. Maritime Commission Plan S11-6-4A, Alt. A, "General Arrangement of Gunwale Angle—Deck Scupper and Details." This plan was forwarded to the Officers in Charge, Marine Inspection, having jurisdiction over shipyards constructing Liberty ships on 13 March, 1944.

Plans are being prepared to cover the Liberty-type collier, Maritime Commission design EC2-S-EW1.

Existing Dry Cargo and Tank Ships

All Liberty-type existing dry cargo and tank ships, as well as vessels under construction on which the deck stringer plate has been welded to the sheer strake, shall be subject to the following:

1. "Specifications for Alterations to Liberty Type Dry Cargo Ships and Liberty Ships Converted to Tankers," dated 8 February, 1944, and forwarded to all Officers in Charge, Marine Inspection, coastal ports, on 16 February, 1944.

2. Coast Guard Plan MI14-S11-17-1, "Liberty Type Dry Cargo Ships and Tankers—Structural Reinforcements." This plan was forwarded to all Officers in Charge, Marine Inspection, coastal ports, on 16 February, 1944.

3. In connection with Detail A of MI 14-S11-17-1, diagonal braces shall be fitted between the lower flanges of the hatch side and end girders. These diagonals are shown on Maritime Commission Plan EC2-S-C1-S16-2-3, detail No. 3. Prints showing this detail were forwarded to all Officers in Charge, Marine Inspection, coastal ports, on 13 March, 1944.

4. As an alternate to cutting the sheer strake and fitting a strap as indicated on Coast Guard Plan MI 14-S11-17-1, Detail C, the stringer plate may be cut and a riveted gunwale angle fitted in accordance with Maritime Commission Plan No. MCE S11-6-4B, "Details of Gunwale Angle—Deck Scuppers, etc., for Existing EC2-S-C1 Cargo Vessels." This plan was forwarded to all Officers in Charge, Marine Inspection, coastal ports, on 16 February, 1944.

5. An alternate and more desirable scupper arrangement has been prepared and is shown on War Shipping Administration Drawing No. MR 15-S48-8-1, "Under Deck Scuppers." Copies of this plan were forwarded to all Officers in Charge, Marine Inspection, coastal ports, on 13 March, 1944.

An especial plan MC No. Z-ET1-C3-S16-2-3 has been prepared covering the reinforcement of the corners of the expansion trunks on the tanker conversion. The diagonal braces described under item #3 are not to be fitted on the tank vessels.

Specifications for Alterations to Liberty Type Dry Cargo Ships and Liberty Ships Converted to Tankers

The following specifications were mutually agreed upon by the Maritime Commission, the Coast Guard and the American Bureau of Shipping on 8 February, 1944.

All Liberty cargo ships and Liberty vessels converted to tankers presently in service shall have the structural

alterations made at the time, indicated above, and in the manner described herein, and shown on Coast Guard Plan MI 14–S–11–17–1 and Maritime Commission Plan MCE S11–6–4B.

A. Hatch Corner Reinforcement

On vessels where a rounded reinforcement has not already been fitted, the corners of Nos. 2, 3, and 4 hatches on the upper deck shall be reinforced in accordance with Detail A of Drawing MI 14–S11–17–1.

B. Upper Deck Alteration

A torch cut shall be made port and starboard in the upper deck plating 28" outboard of the line of the hatch side coaming extending from frame #40 to #144½. The torch cut is to be covered with a double riveted strap in accordance with Detail B of Drawing MI 14–S11–17–1.

C. Gunwale Alterations

One of the following alternate arrangements shall be provided:

(1) A torch cut shall be made in the stringer plate about 1" from the sheer plate and extending from frame #28½ to #144½. The torch cut is to be covered by a 7" x 6" riveted gunwale angle fitted in accordance with MCE Plan S11–6–4B; or,

(2) A torch cut shall be made in the sheer strake below the upper deck plating extending from frame #28½ to #144½. The torch cut is to be covered with a double riveted seam strap in accordance with Detail C on Drawing MI 14–S11–17–1.

D. Bilge Keel

For vessels, which have continuously welded bilge keels, a 1" hole is to be drilled tangent to the shell in way of each butt in the bilge keel. This is to be done at the time of the first docking of the vessel after issuance of this instruction.

Existing Troop Ship Conversions

All Liberty-type vessels converted or being converted to troop ships shall be subject to the following:

1. "Proposed Specification for Alterations to Liberty-type Troop Ship Conversions," dated 22 February, 1944, and forwarded to all Officers in Charge, Marine Inspection, coastal ports, on 23 February, 1944.

2. Coast Guard Plan MI 15–S11–17–1, "Liberty-type Troop ship Conversion—Structural Reinforcements." This plan was forwarded to all Officers in Charge, Marine Inspection, coastal ports, on 23 February, 1944.

3. In connection with Detail A of MI 15–S11–17–1, diagonal braces shall be fitted between the lower flanges of the hatch side and girder. These diagonals are shown on Maritime Commission Plan EC2–S–C1–S16–2–3, Detail No. 3. Prints showing this detail were forwarded to all Officers, in Charge, Marine Inspection, coastal ports, on 13 March, 1944.

4. As an alternate to cutting the sheer strake and fitting a strap as indicated on Coast Guard Plan MI 15–S11–17–1, Detail C, the stringer plate may be cut and a riveted gunwale fitted in accordance with Maritime Commission Plan MCE S11–6–4B, "Details of Gunwale Angle—Deck Scupper, etc., for Existing EC 2–S–C1 Cargo Vessels." This plan was forwarded to all Officers in Charge, Marine Inspection, coastal ports, on 16 February, 1944.

5. An alternate and more desirable scupper arrangement has been prepared and is shown on War Shipping Administration Drawing No. MR 15–S48–8–1 "Under Deck Scuppers," copies of which were forwarded to all Officers in Charge, Marine Inspection, coastal ports, on 13 March, 1944.

Proposed Specification for Alteration to Liberty Type Troop Ship Conversions

The following specifications which were mutually agreed upon by the War Department, Maritime Commission, American Bureau of Shipping and the Coast Guard, were set down on 22 February, 1944, and do not apply to Liberty type hospital ships.

All Liberty type troop ship conversions presently in service shall have the structural alterations made at the time indicated above, and in the manner described herein and shown on Coast Guard Plan MI 15–S11–17–1 and Maritime Commission Plan MCE S11–6–4B.

A. Hatch Corner Reinforcement

On vessels where a rounded reinforcement has not already been fitted, the corner of Nos. 2, 3, and 4 hatches on the upper deck shall be reinforced in accordance with Detail A of Coast Guard Plan MI 15–S11–17–1.

B. Upper Deck Alteration

A slot 2½" wide shall be made in the upper deck plating. The location of this slot and the arrangement of the triple riveted strap to be used in connection with it shall be in accordance with Detail B of Coast Guard Plan MI 15–S11–17–1.

C. Gunwale Alteration

One of the following alternate arrangements shall be provided:

(1) A torch cut shall be made in the stringer plate about 1" from the sheer plate and extending from frame #28½ to #144½. The torch cut is to be covered by a 7" x 6" riveted gunwale angle fitted in accordance with Maritime Commission Plan MCE S11–6–4B; or,

(2) A torch cut shall be made in the sheer strake below the upper deck plating extending from frame #28½ to #144½. The torch cut is to be covered by a seam strap in accordance with Detail C on Coast Guard Plan MI 15–S11–17–1. This strap is to be 18" x 1" between frames #68 and #108. The strap is to be 16" x ¾" between frames #28½ and #68 and between frames #108 and #144½.

D. Bilge Keel

For vessels which have continuously welded bilge keels, an oval opening is to be cut tangent to the shell in way of each butt in the bilge keel and as indicated in Detail D on Coast Guard Plan MI 15–S11–17–1. This is to be done at the time of the first docking of the vessel after issuance of this instruction.

E. Double Bottom Girders

Additional intercostal girders shall be fitted in the double bottom, port and starboard, as follows:

(1) A full depth girder 15.3 pound plate 6'4" off centerline between frames #46 and #92 and then angling in to 5'6" off the centerline at frame #96. This ties into existing girder forward and into the engine girder aft.

(2) A half depth girder 15.3 pound plate 18'6" off the centerline between frames #46 and #108. This ties into existing girders forward and a bracket is to be fitted aft of frame #108 extending aft at least three frame spaces.

F. Existing and New Deck Openings

Especial care shall be executed to eliminate discontinuities and notch effects in the vessel's structure. The deck openings for all companions, ventilators, etc., shall be properly rounded. All bulwark openings shall be rounded and ground smooth. Companions and ventilator openings where possible shall be kept inboard of the line of hatches.

Existing Hospital Ship Conversions

All Liberty type vessels converted or being converted to hospital ships shall be subject to the following:

1. Coast Guard Plan MI 16–S11–17–1, "Liberty Type Hospital Ship Conversions—Structural Reinforcements," which was forwarded to New York on 9 March, 1944, and to Boston on 11 March, 1944.

2. For vessels now under conversion and on which the work has already progressed too far to provide a deck arrestor in accordance with the above mentioned plan, the details of the deck arrestor to be fitted are shown along with the other reinforcements on War Department, Transportation Corps, Water Division Plan LI–68–A–R1.

3. As an alternate to cutting the sheer strake and fitting a strap as indicated on Coast Guard Plan MI 16–S11–17–1, Detail C, the stringer plate may be cut and riveted gunwale angle fitted in accordance with Maritime Commission Plan MCE S11–6–4B, "Details of Gunwale Angle-Deck Scupper, etc., for Existing EC2–S–C1 Cargo Vessels." This plan was forwarded to all Officers in Charge, Marine Inspection, coastal ports, on 16 February, 1944.

4. An alternate and more desirable scupper arrangement has been prepared and is shown on War Shipping Administration Drawing No. MR 15–S48–8–1, "Under Deck Scuppers," copies of which were forwarded to all Officers in Charge, Marine Inspection, coastal ports, on 13 March, 1944.

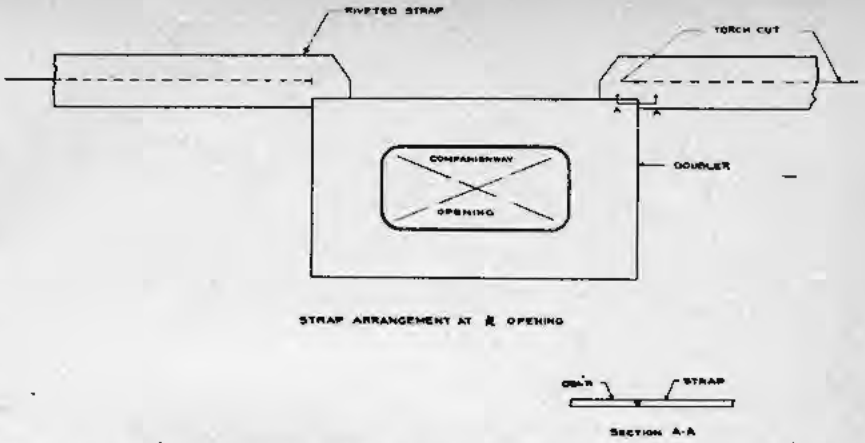


Figure 11.—Alternate arrangement of deck strap in way of companionway at frames 93 to 95.

Relaxations and Notes

General

1. In making these alterations, it is suggested that the tanks of the vessel be ballasted so that the ship is in a nearly neutral condition from the standpoint of longitudinal bending.

2. The shipyards making the alterations shall be careful not to have too great a length of cut on deck or at the gunwale or in the sheerstrake in advance of fitting the required straps.

3. Vessels are not classed as troopships for these alterations unless the entire ship is fitted for troops.

Hatch Corner Reinforcement

1. The hatch corner reinforcement devised for new vessels (Maritime Commission drawing EC2–S–C1–S16–2–3–Detail 2) involves fitting an insert plate and doubler both slotted through the hatch coaming and cut to a one foot radius on the inside. This type of reinforcement is not acceptable for existing vessels. An insert plate should not be introduced at a hatch corner of an existing vessel except in repairing damage. Even this should be avoided if possible by repairing the crack with welding (see Marine Inspection Memorandum #64).

2. If in repairs it becomes necessary to remove the 51 pound doubler at the hatch corner, it need not be replaced in reinforcing the corner.

3. Not all Liberty ships have an insert plate at the hatch corner.

4. On some Liberty ships the 51 pound doubler is above the deck.

5. Some of the newer vessels have already had their hatch corners reinforced during construction and no additional hatch corner reinforcement should be provided on such vessels. One of the approved types of reinforcements should be found in or placed in the corners of Nos. 2, 3, and 4 hatches in the upper deck of every Liberty ship.

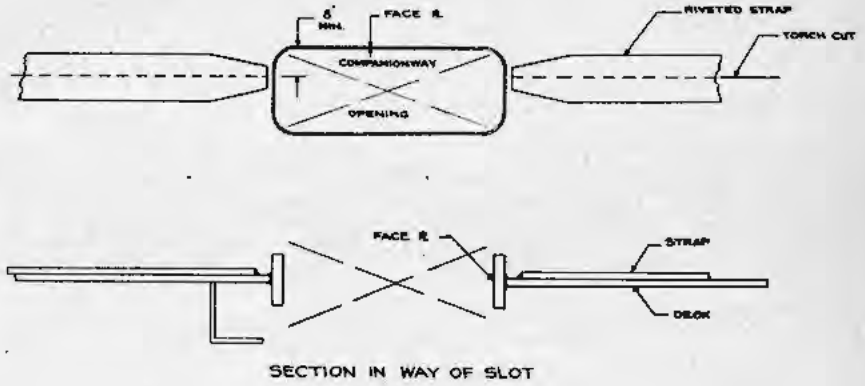


Figure 12.—Arrangement of deck strap where it falls in line with companionway.

Upper Deck Alteration

1. The deck strap shown on Maritime Commission Plan EC2–S–C1–S11–6–6 and Coast Guard Plans MI 14 & 15–S11–17–1 may be stopped at frame #40 instead of running to frame #39 as it is shown on the plans. This relaxation was made on all new and existing vessels because the additional assurance gained by running this strap forward one additional frame space does not warrant the expense and delay incurred by interference with the sounding tubes at frame #39.

2. The deck strap on the troopships may be increased in width from 16" to 19" if this appears desirable in order to avoid the close spacing of the triple rows of zigzag riveting indicated on Coast Guard Plan MI 15–S11–17–1.

3. Permission has been granted to allow the slot in the deck to stop at the edge of the doubler around the companionway at frame #93 to #95 and to weld the 16" x $\frac{3}{4}$" strap thereto, provided that rounded reinforcements with face plates are fitted in the corners of the companions so that the companion will have the strength to arrest a fracture which might cross the deck in this region. See Fig. 11. This alteration may be permitted on new vessels, and existing dry cargo ships, tank ships, and troop ships of the Liberty type. A specification which could be used as a general guide in reinforcing deck openings of this nature was forwarded to Coast Guard Merchant Marine Inspection offices with Headquarters' letter of 10 April, 1944.

4. As an alternate to the above for the companionway at frames #93 and #95, the companionway doubler may be trimmed back on the inboard edge so that it clears the outboard edge of the deck strap. The seam between the doubler and strap should then be welded with a deep V weld.

5. At other points if companionways lie in the path of the deck strap the cut should be carried right into the opening and its athwartship location should be altered by splaying outboard or inboard over a distance of not less than 4 frame spaces so that it enters the opening not less than 8" from the corner, see Fig. 12. Tapered liners should be used to carry the strap

over existing doublers but if the deck is cut for the crack arrestor before fitting the companion doubler (as for a new companionway) the ends of the strap may then be welded to the edge of the doubler. In any case the cut must go into the companionway.

Gunwale Alteration

1. It is left to the local authorities to determine on the basis of economy of time and money and availability of materials whether it will be more practical to fit a gunwale bar or a strap on the sheer strake.

2. The heel of the gunwale angle may not be chamfered to a radius of more than $\frac{3}{8}$" to ride over the filletweld at the gunwale. If the weld (stringer to sheer strake) is too large to permit a proper fit up with this chamfer the weld is to be chipped away to suit.

3. Deck drains may be cut through sheer strake and sheer strake strap but regular scuppers are preferable.

4. Where scuppers are fitted and the existing deck drain hole has been sealed by a light weld between the sheer strake and new gunwale bar or sheer strap there has been a tendency for this weld to crack. For this reason it will be permissible to seal off the old deck drain hole by welding a light plate over it.

LESSONS FROM CASUALTIES

Deficiency of Oxygen in Empty Molasses Tank

ALMOST everyone is aware of the fact that explosive and suffocating gases are likely to be present in tanks which have contained gasoline or other petroleum products, but many of us are not alive to the fact that these same dangerous gases may be present in tanks which have contained other substances.

A casualty has recently come to the attention of Headquarters wherein a molasses tank vessel suffered a punctured hole in a cargo tank as a result of a collision with a projecting railroad iron while docking at a pier. After the damage had been surveyed, it was decided to weld a plate over the hole on the outside of the tank. This was done by two local workmen. Later in the day these men came on board and announced that they were going to weld a doubler over the hole on the inside of the tank also. The second mate, the only officer aboard the vessel at the time, consented to the men entering the tank to make the repairs.

Through oversight or lack of knowledge of the possible dangers, no test was made to see that the tank was gas free and not deficient in oxygen. It was not long before the two men collapsed. The deck officer called two seamen and then proceeded to enter the tank himself to rescue the men, but he also collapsed. A canister type mask (of no use where a deficiency of oxygen exists) was secured from the engine room. Donning this mask, and with a lifeline made fast around his waist, a seaman entered the tank, but he too was soon overcome and was hauled out in an unconscious condition.

A fresh air mask, one of which is required to be carried on all tank vessels where tanks exceed 15' in depth, was now brought on deck, was lowered into the tank and fresh air pumped in through the hose. A little later a seaman put this mask on, entered the tank, and removed the bodies of the two workmen and the deck officer, but not before asphyxiation had caused the death of all three.

Molasses may appear to be a harmless sticky substance with no potentiality for giving off dangerous gases in an emptied tank. However, molasses residue in such tanks often ferments and evolves carbon dioxide gas, which, being heavier than air, occupies the lower spaces of the empty tanks. Undoubtedly such a condition existed in the tank in question. In addition to this, the heat produced by cutting and welding on the ship's side cooked the molasses, which resulted in the absorbing of oxygen and the giving off of carbon monoxide. The evolution of these two dangerous gases and the decrease in oxygen made the tank in question as dangerous to enter as a compartment containing petroleum vapors.

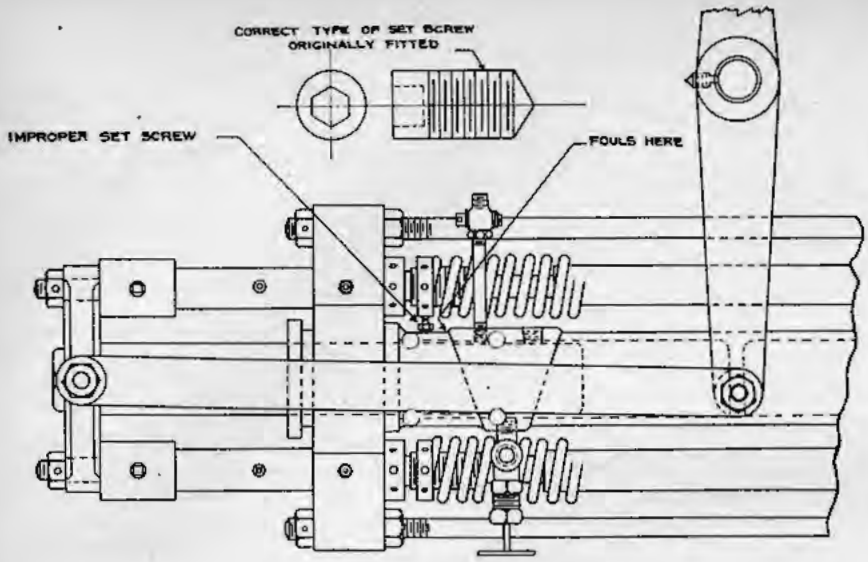
When preparing to work in tanks which have been closed for any length of time, regardless of what they previously contained, make sure that the tanks are gas free and that sufficient oxygen is present. In this respect, it is advisable to secure the services of a certified chemist to perform these tests, if in a port where one is available. Ventilate thoroughly by means of blowers or windsails before permitting anyone to enter, and have a party assigned to a tank opening to watch the men below and to summon aid if needed. Always have the men secured to a line with the other end on deck, so that they may be hauled out in case an accident occurs.

With the careful observance of these safety precautions the lives of the three men lost in this tank accident could have been spared. Let's take a little time to make sure conditions are right when entering empty tanks and not endanger our lives or those of our shipmates.

Steering Engine Casualties

So many collisions, near collisions, and groundings have resulted from the failure of steering gear in one way or another that Headquarters feels that a few of these cases should be brought to the attention of merchant ship personnel. Steering gear failures are always serious matters, particularly when ships loaded with dangerous war cargoes are traveling in convoy with little room for maneuvering. In one recent collision between a gasoline tanker and an ammunition ship, the resulting fire and explosions caused the loss of all hands on one of the vessels and all but two on the other.

Many of these casualties arise from seemingly insignificant defects, yet their importance is obvious when one takes into account the resultant loss of life, let alone the monetary damage to ship and cargo and the consequent delay in delivery of vital war goods. A very interesting illustration of the above recently occurred in connection with a Liberty ship on which the use of the wrong type of a set screw on the telemotor resulted in jamming the steering gear. Fortunately, the incident occurred in uncongested waters and the auxiliary equipment could be brought into operation before a collision resulted. The particular type of telemotor on board this vessel contained two springs, whose degree of compression was controlled by two adjusting nuts which in turn were held fixed by means of Allen setscrews. The length of these setscrews is such that the top of the heads is nearly flush with the surface of the adjusting nut when tightened. When this Liberty ship had the telemotor overhauled, one of these setscrews was replaced by one of a different type having a protruding head. The error was not discovered until the vessel was on the high seas and the bridge called for full right rudder. Due to insufficient clearance between the setscrew and the cylinder casting, the telemotor jammed and was rendered inoperative. This illustration emphasizes the need on the part of the engineer officer for close surveillance of all engine room repair work while in



shipyards and repair bases, and also the necessity of giving all overhauled equipment a thorough examination and test before leaving port.

Other casualties have occurred on vessels with electrically-operated auxiliary machinery where failure of the generator rendered the steering gear, as well as all other auxiliary machinery, powerless. An instance of this kind involved a vessel equipped with two generators for supplying the power to the machinery and a Diesel electric plant which operated the emergency lighting system only. Insofar as capacity was concerned, either of the two ship's service generators was adequate to insure continuous operation of all electrically-driven auxiliaries. It was the practice on this vessel while under way to use the generators alternately at intervals of from 8 to 10 days. When changing over, a minimum period of ten minutes was required to bring the spare generator into operation from a cold condition. While this vessel was traveling in convoy a sudden mechanical failure stopped the operating generator, thus depriving the steering gear and engine room auxiliaries of all electrical power. This rendered the vessel uncontrollable, and during the interval required for warming up the second generator, a collision resulted with another vessel traveling in the same convoy. This occurrence clearly illustrates the necessity of having more than one generator in operation or of having a spare set kept in such condition that it can be put into immediate operation in the event of failure of the first generator, particularly at night or when navigating in convoys or crowded waters. Had this been done, or had the hand steering gear been ready for immediate use, the accident undoubtedly would not have occurred.

The accidents described above, as well as many others that have come to the attention of Headquarters, could probably have been prevented by the application of adequate precautions on the part of the ship's officers. The General Rules and Regulations require that on vessels making voyages of more than 48 hours' duration the entire steering gear, the whistle, the lines of communication, and the signal appliances between the bridge or pilot house and the engine room shall be examined and tested by a licensed officer of the vessel within a period of not more than 12 hours before leaving port. Vessels making voyages of less than 48 hours' duration shall conduct similar tests at least once in every week. The rules also require that the fact and time of such examination and test shall be recorded in the ship's log book. Compliance with the foregoing might not have prevented the failure of the electrical machinery described above, but it would probably have led to the discovery (before the vessel sailed) of the improper setscrew and the consequent jamming of the steering gear when trying to obtain full right rudder. These examinations and tests should never be perfunctory but should be carefully performed by a deck officer on the bridge and an engineer officer in the steering engine room.

An indifferent attitude toward accident prevention measures and routine examinations, and lack of forethought in envisioning possible accidents, lead to machinery breakdowns with their train of serious and possibly fatal consequences, such as boiler explosions, groundings, collisions, and sinkings. During war time risks occasionally must be taken but at least we can and must be alert and as ready as possible to cope with emergencies when they arise.

A Reader Comments

CLEVELAND, OHIO, *May 19, 1944.*

Editor
Proceedings of the Merchant Marine Council
United States Coast Guard
Washington, D. C.

SIR:

The article on page 83 of the Proceedings Merchant Marine Council for April on "Overtaking in Narrow Waters" is of interest.

The explanation is based on the fact that a ship travels in a shallow bowl which accounts for the squat of vessels under way.

There is another phenomenon often observed on the Lakes that is not mentioned but the cause of which may be similar. When a vessel A overtakes and tries to pass another vessel B, the speed of which is only slightly less, it frequently happens that as A comes alongside she carries B along, increasing the speed of B so that the actual passing takes considerably longer than it would if A and B had both retained their original speeds.

Also, in some cases it is said the two vessels take the lead alternately. Whether this action results or that explained in the article, where a change in heading is caused by the proximity of the two ships, is probably determined by the distance apart and the relative speeds.

The author of the article may be interested in this situation which I believe is more frequent here than that involving change in course and resulting collision.

Yours very truly,
/s/ L. C. SABIN
Vice President
Lake Carriers' Association

APPENDIX

Amendments to Regulations

TITLE 46.—SHIPPING

Chapter I—Coast Guard: Inspection and Navigation

SUBCHAPTER J—RIVERS: GENERAL RULES AND REGULATIONS

PART 113—BOATS, RAFTS, BULKHEADS, AND LIFESAVING APPLIANCES

Section 113.7 *Wooden Surfboat or seine boat* is amended by changing the reference "§ 113.12" to "§ 113.14". (9 F. R. 4825, May 6, 1944.)

Section 113.14 is amended by the addition of the following paragraph:

§ 113.14 *Carrying capacity of lifeboats.* * * *

Every lifeboat shall have sufficient room, freeboard, and stability to safely carry the number of persons allowed to be carried by the above rule, which fact shall be determined by actual test in the water at the time of the first inspection of the lifeboat, except that where a vessel is carrying lifeboats of different types or capacities, at least one lifeboat of each type or capacity shall be so tested (9 F. R. 5697, May 26, 1944).

SUBCHAPTER O—REGULATIONS APPLICABLE TO CERTAIN VESSELS AND SHIPPING DURING EMERGENCY

PART 153—BOATS, RAFTS, AND LIFESAVING APPLIANCES: REGULATIONS DURING EMERGENCY

Section 153.6 (u) is deleted and the following substituted in its stead:

§ 153.6 *Additional equipment for lifeboats on self-propelled ocean and coastwise vessels.* * * *

(u) *Signaling mirrors.* Two stainless steel or other suitably polished mirrors which shall be wrapped and kept in a waterproof container plainly marked "Signaling Mirrors". All signaling mirrors supplied as new or replacement equipment shall be of an approved type (9 F. R. 5077, May 13, 1944).

Section 153.7 (i) is deleted and the following substituted in its stead:

§ 153.7 *Additional equipment for life rafts approved prior to March 15, 1943, for ocean and coastwise vessels.* * * *

(i) *Signaling mirrors.* Two stainless steel or other suitably polished mirrors which shall be wrapped and kept in a waterproof container plainly marked "Signaling Mirrors". All signaling mirrors supplied as new or replacement equipment shall be of an approved type (9 F. R. 5077, May 13, 1944).

Section 153.21 is deleted and the following is substituted in its stead:

§ 153.21 *Means of escape on vessels*—(a) *Means of escape on new vessels.* On mechanically propelled ocean and coastwise passenger, cargo, and tank vessels, certificated for the first time after 1 October, 1944, the means of escape or emergency exits required by this section shall be provided.

(b) *Definitions.* Certain terms used in this section are defined as follows:

(1) A "crash panel" is a panel of frangible material or a panel of nonfrangible material which, when installed in an opening in a door or other structure, may be readily removed by kicking out.

(2) An "escape panel" is a panel of metal or other nonfrangible material hinged or otherwise secured over an opening by "dogs" or other means.

(3) An "escape hatch" is a covering over an opening in a deck or other structure, hinged or otherwise secured to such deck or structure.

(c) *Number and arrangement of means of escape or emergency exits for new vessels.* Plans and specifications showing location, type and arrangement of means of escape or emergency exits shall be submitted to Headquarters, U. S. Coast Guard, for approval. Deviation from the requirements will be considered only when it is shown to the satisfaction of Headquarters that such deviation is unavoidable due to construction features. In all cases, when plans are submitted to and approved by Headquarters and the escapes are installed in accordance with the plans, the vessel shall be considered to be in complete compliance with the regulations. The means of escape or emergency exits shall be provided and arranged as follows:

(1) Each room occupied by one or more persons shall have at least two means of emergency exit and each passageway, compartment, public room, or space serving or containing more than two rooms shall have at least three means of emergency exit. Spaces used as storerooms are not required to be fitted with crash panels, escape panels, or escape hatches.

(2) Each public bath room, wash room, or toilet room, accommodating four (4) or more persons at one time shall have at least two means of emergency exit. The exits may be of any type specified in this section but where entrance doors are not fitted or where half doors are fitted to such bath rooms, wash rooms, or toilet rooms, no other means of escape shall be required.

(3) The exits for each space shall be located as remotely from each other as possible to reduce the likelihood of damage blocking all avenues of escape.

(4) In general, where there are four or more widely separated means of escape from a deckhouse, it will not be necessary to provide these doors with offset hinges or escape panels.

(5) In no case shall a main fire screen bulkhead be pierced to provide a secondary means of escape, nor shall any watertight bulkhead, watertight deck, or watertight door below the bulkhead deck be pierced for the installation of emergency escapes.

(6) Brigs or other spaces for the confinement of persons need be equipped with only one means of emergency exit which shall be a door of the type specified in paragraph (e) (2) of this section and which may be capable of being secured from the outside.

(7) On mechanically propelled vessels of over 1,000 gross tons it is also required that at least two wire or chain ladders (one on each side) leading directly to the highest part of the engine room casing shall be provided and arranged in a way most likely to allow the escape of engine room personnel in the event of damage to the fixed ladders and gratings. On steam vessels a similar ladder shall be provided in the fire room running through the ventilator if practicable. Such ladders are not to be hauled taut. They are to be lashed loosely at the floor plates.

(d) *Designs and arrangements for means of escape for new vessels.* The following requirements shall be followed in the design and installation of means of escape or emergency exits:

(1) The crash panels, escape panels, and escape hatches shall be operable without the use of tools.

(2) All crash panels shall be designed and installed for ready removal from either side.

(3) Crash panels shall have the same fire-resistive qualities as the door or structure in which they are installed.

(4) The crash panels, escape panels, and escape hatches shall have a minimum clear opening of 18" x 18" or 18" diameter; however, where it can be shown that this size opening is unreasonable or impracticable, a mini-

mum clear opening of 16" x 16" or 16" diameter may be allowed.

(5) Crash panels shall be of frangible material substantially secured to the door or other structure or shall be of non-frangible material and so installed that the fastenings will give way easily when kicked, allowing the panel to be removed whole. The escape openings shall be free from garment entangling projections. The crash panel shall be marked with a suitable permanent notice placed on the side from which it is to serve as an exit. A suggested marking is:

EMERGENCY
CRASH PANEL
KICK OUT

(6) All escape panels and escape hatches shall be arranged so that they may be operated from either side. They shall be clearly marked "emergency exit". A maul or a short length of pipe shall be available to free jammed "dogs" where doors and hatches are fitted with "dogs." Where escape panels and escape hatches are so located that there is a possibility of cargo, equipment, or stores interfering with their operation, special care shall be taken to guard against such interferences.

(e) *Acceptable means of escape or emergency exits for new vessels.* As one means of escape or emergency exit, each of the following will be considered satisfactory.

(1) A door having a crash panel or escape panel.

(2) A door without a crash panel or escape panel and with offset hinges so arranged that it fits against the face of the frame with a bearing surface of at least one half inch, and no part of the door inside the frame.

(3) A crash panel or escape panel in a bulkhead.

(4) An entrance opening to a room to which no door is fitted.

(5) Escape hatch fitted in a deck. Necessary ladders, steps, or hand grabs to insure quick exit shall be fitted in order to reach the escape hatch.

(6) A porthole with a clear opening at least 16" in diameter or a window of at least 16" by 16" when located in a deckhouse and fitted where necessary with steps, hand grabs, or ladders. Portholes in the shell leading directly overboard shall not be considered as a means of escape.

(7) A skylight that may be easily opened at point of exit when fitted with a ladder to afford quick exit and the passage of a person through the skylight will not necessitate the removal or cutting of metal screens or blackout equipment. Skylights which are operated by remote control are not considered as satisfactory means of exit.

(f) *Means of escape on existing vessels.* On all mechanically propelled ocean and coastwise passenger, cargo and tank vessels which are certificated on or prior to 1 October, 1944, the number of means of emergency exits prescribed in this section shall be complied with, insofar as conditions permit. Such compliance shall be made at the time of annual inspection or at such other times as may be appropriate, so as to cause the least interference with the operation of the vessel. While it is not intended that vessels be delayed for non-compliance, it is expected that diligent efforts will be made to meet this requirement as rapidly as is possible.

(g) *Administration.* When the requirements concerning emergency escapes have been substantially complied with to the satisfaction of Headquarters or the District Coast Guard Officer of one district, subsequent changes or additions shall not be required by the District Coast Guard Officer of another district, without prior approval by Headquarters (9 F.R. 5696, May 26, 1944).

Equipment Approved by the Commandant

BUOYANT CUSHIONS FOR MOTORBOATS

15" x 15" x 2" Typha filled buoyant cushion, type S. T. C. 2. (Dwg. No. S. M. B. C. 44, dated 6 April, 1944), approval No. B-221, manufactured by Seaway Manufacturing Co., Inc., 213 N. Peters Street, New Orleans, Louisiana. (For use on motorboats of Classes A, 1, and 2 not carrying passengers for hire, for the duration of the National Emergency and six months thereafter.) (9 F. R. 4825, May 6, 1944.)

15" x 15" x 2" Typha filled buoyant cushion (Dwg. No. 4644, dated 6 April, 1944), approval No. B-219, manufactured by Atlantic-Pacific Mfg. Corp., 124 Atlantic Avenue, Brooklyn 2, New York. (For use on motorboats of Classes A, 1, and 2 not carrying passengers for hire, for the duration of the National Emergency and six months thereafter.) (9 F. R. 4825, May 6, 1944.)

15" x 15" x 2" Typha filled buoyant cushion (Dwg. dated 17 April, 1944, and specification dated 25 March, 1944), approval No. B-222, manufactured by Acme Products, Inc., 152-156 Brewery St., New Haven, Connecticut. (For use on motorboats of Classes A, 1, and 2 not carrying passengers for hire, for the duration of the National Emergency and six months thereafter.) (9 F. R. 5288, May 17, 1944.)

DISENGAGING APPARATUS FOR LIFEBOATS

Rottmer type releasing gear for use with 24' x 8' x 3'5" lifeboat (Arrangement and Assembly Dwg. No. S82-1-28 dated 28 April, 1944) (Maximum working load of 7,650 pounds per hook, 15,300 pounds per set), submitted by the Imperial Lifeboat & Davit Company, Inc., Athens, N. Y. (9 F. R. 5697, May 26, 1944).

Rottmer Type releasing gear, Assembly "A" (Arrangement and Assembly Dwg. No. S82-1-23, dated 5 April, 1944) (Maximum working load of 6,200 pounds per hook, 12,400 pounds per set), submitted by the Imperial Lifeboat & Davit Co., Inc., Athens, New York (9 F. R. 5077, May 13, 1944).

EMERGENCY FISHING KIT

Emergency fishing kit, Model No. 10, submitted by the Peerless Furniture Co., 819 Seventh St., N. W., Washington, D. C. (9 F. R. 5077, May 13, 1944).

FIRE EXTINGUISHER

Model 85 S. O. S. Fire Guard, one-quart, carbon tetrachloride fire extinguisher (Assembly Dwg. No. BF-100, dated 8 November 1943), manufactured by General Pacific Corp., 1800 So. Hooper Ave., Los Angeles, Calif. (9 F. R. 4825 May 6, 1944).

FIRING ATTACHMENT FOR LINE-THROWING GUNS

Croton Cartridge Firing Attachment, Model A (Dwg. No. 013, dated 17 April, 1944), submitted by the Hawley Smith Machinery Company, Croton Falls, New York (9 F. R. 4825, May 6, 1944).

HAND DISTRESS SIGNAL

Hand distress signal, submitted by the Bear Manufacturing and Chemical Co., Inc., Bear, Delaware (9 F.R. 4825, May 6, 1944).

LIFEBOATS

16' x 5.5' x 2.3' metallic oar-propelled lifeboat (121 cu. ft. capacity, .6 rule) (General Arrangement and Construction Dwgs. Nos. 557-A, 557-B, and 557-C, dated 10 March, 1944), for use on lakes, bays, sounds and rivers (capacity limit, 12 persons all services), constructed by the Boatcraft Company, Cor. Cropsey & 26th Ave., Brooklyn, N. Y. (9 F.R. 5697, May 26, 1944).

24' x 8' x 3'8¾" metallic oar-propelled (Coast Guard built-in-tank type) lifeboat (436 cu. ft. gross, S. R. capacity) (General Arrangement Dwg. No. 5US-935, dated 4 April, 1944), submitted by the Globe American Corp., Kokomo, Ind. (9 F.R. 5697, May 26, 1944).

24' x 8' x 3'8¾" metallic motor-propelled (Coast Guard built-in-tank type lifeboat (436 cu. ft. gross, S. R. capacity) (General Arrangement Dwg. No. 5US-934, dated 4 April, 1944), submitted by the Globe American Corp., Kokomo, Ind. (9 F.R. 5697, May 26, 1944).

24' x 9' x 3'6½'' metallic motor-propelled semi-inclosed lifeboat (Willy's lifeboat) (458 cu. ft. capacity, gross) (Construction Plan No. 4), submitted by the Pennsylvania Aircraft Syndicate Ltd., Wilford Building, Philadelphia 4, Pa. (9 F.R. 5077, May 13, 1944).

LIFE FLOAT

20- and 25-person rectangular metal life floats, Type D (Dwg. No. 1738, revised 18 April, 1944), manufactured by L. A. Young Spring and Wire Corp., 900 High Street, Oakland, Calif. (9 F.R. 5077, May 13, 1944).

LIFE PRESERVERS

Adult kapok life preserver, removable pads (Dwg. No. 4–3–44, dated 3 April, 1944), approval No. B–220, manufactured by Atlantic-Pacific Manufacturing Corp., 124 Atlantic Avenue, Brooklyn 2, New York. (For general use and not for use in conjunction with rubber lifesaving suits.) (9 F.R. 4825, May 6, 1944.)

Adult kapok life preserver, Model N–1 (Navy Standard type 23P12, with body strap), approval No. B–218, manufactured by H. D. Gihon, Inc., 21 Muirhead Avenue, Trenton, New Jersey. (For general use and not for use with rubber lifesaving suits.) (9 F.R. 4825, May 6, 1944.)

Adult kapok life preserver, Navy Type 23J1c (C & R Plan No. 83927 and 83928, Alts. 2 January, 1934, and Navy Specification 23J1c, dated 1 December, 1936), approval No. B–214, manufactured by the Atlantic-Pacific Manufacturing Corp., 124 Atlantic Avenue, Brooklyn, N. Y. (For general use and not for use with rubber lifesaving suits.) (9 F. R. 5697, May 26, 1944.)

LIFE PRESERVER LIGHT

Life preserver light, Type A–2050–P (Dwg. No. A–2050–P, dated 10 January, 1944), submitted by the Delta Electric Company, Marion, Indiana (9 F. R. 5077, May 13, 1944).

LINE-THROWING GUN

2½'' Hilyard line-throwing gun (Dwg. No. A–230–A, dated 21 April, 1944), submitted by the Hilyard Company, Norristown, Pa. (9 F. R. 5288, May 17, 1944).

SEA ANCHOR

Sea anchor, Type N–1 (U. S. Coast Guard Dwg. No. MMI–562 and specification dated 1 November, 1943), submitted by Neptune Accessories, 190 Columbia Heights, Brooklyn, N. Y. (9 F. R. 5697, May 26, 1944).

APPROVAL WITHDRAWN

LINE-THROWING GUNS

Line-throwing guns, two types, manufactured by the Steward Davit and Equipment Corporation, New York, N. Y. (Originally approved in 1919.) (Any on board ship in good condition may remain in service.) (9 F. R. 4825, May 6, 1944.)

ITEMS SUITABLE FOR MERCHANT MARINE USE

PRESSURE VACUUM RELIEF VALVE

The Vapor Recovery Systems Co., 2820 North Alameda Street, Compton, Calif., 3½-inch "Varec," Fig. 35A, Serial No. 18252 (female pipe threaded) all bronze pressure vacuum relief valve (drawing No. D–543, dated August 27, 1943); for use with inflammable and combustible liquids of grade A or lower on tank vessels subject to jurisdiction of the Coast Guard.

DESALTING KIT

Permutit Seawater Desalting Kit, manufactured by The Permutit Company, 330 West 42nd Street, New York, New York.

WELDING ELECTRODES

Harnischfeger Corporation, Milwaukee, Wis., type F. W. electrode for all-position welding.

ELECTRICAL APPLIANCES

For the use of Coast Guard personnel in their work of inspecting merchant vessels, the following items of electrical equipment have been examined. This list is not intended to be an all-inclusive list of miscellaneous electrical equipment; accordingly, items not included may also be satisfactory for marine use.

Manufacturer and description of equipment	Location apparatus may be used				Date of action
	a	*b*	*c*	*d*	
Auth Electrical Specialty Co., Inc., New York, N. Y.:					
Navigation light supervisory panel, dripproof, 115 volts, A. C., 60 cycles, drawing No. 11441, sheets 1 and 2, alt. 1	x	x			4/21/44
Navigation light supervisory panel with dimmers, dripproof, 120 volts, D. C., catalog No. 6598, drawing No. 9343A, sheets 1 and 2, alt. 3	x	x			5/3/44
Navigation light supervisory panel with dimmers, watertight, catalog No. 5598, drawing No. 9743A, alt. 4	x	x	x		5/3/44
Navigation light panel transfer switch, dripproof, drawing No. 9543A, alt. 5	x	x			5/3/44
Bendix Aviation Corporation, Brooklyn, N. Y.:					
Electric telegraph indicator with reply, single face, single engine, 16'', 115 volts, A. C., single phase, 60 cycles, bulkhead mounted, drawing No. CAL–1132–D, alt. E	x	x			5/10/44
Vibrating bell, Navy type B2, 2½'', flush mounted, 115 volts, A. C., 60 cycles, single phase, splashproof, drawing No. CAL–4013SF, (no alt. No.)	x	x	x		5/10/44
Vibrating bell, high intensity, watertight, 10'', tone A, 115 volts, A. C., single phase, 60 cycles, drawing No. CAL–17600S–4, alt. D	x	x	x		5/10/44
Vibrating bell, Navy type B1, splashproof, 2½'', 115 volts, D. C., drawing No. CAL–4014SF, alt. A	x	x	x		5/10/44
Telegraph power failure alarm unit, 6 volts, D. C., drawing No. CAL–7962S–5 (no alt. No.)	x	x			5/10/44
Benjamin Electric Manufacturing Co., Des Plaines, Ill.:					
Lighting fixture with reflector, vaporproof, 100 watts maximum, drawing No. 223508, issue No. 1	x	x	x		4/21/44
Junction boxes, explosionproof, catalog Nos.:					
7350V, 7350C, 7350L, 7350T, 7350X				x	4/21/44
7351V, 7351C, 7351L, 7351T, 7351X				x	4/21/44
7355V, 7355C, 7355L, 7355T, 7355X				x	4/21/44
7356V, 7356C, 7356L, 7356T, 7356X				x	4/21/44
7360V, 7360C, 7360L, 7360T, 7360X				x	4/21/44
7361V, 7361C, 7361L, 7361T, 7361X				x	4/21/44
Lighting fixtures, explosionproof, drawing No. 221990, issue No. 7:					
Pendant type, 200 watts maximum, catalog No. 7620				x	4/21/44
Ceiling type, 200 watts maximum, catalog No. 7623				x	4/21/44
Angle type, 200 watts maximum, catalog No. 7623				x	4/21/44
Pendant type, 100 watts maximum, catalog Nos. 7601, 7501, 7601CX, 7501CX, 7601BX, 7501BX				x	4/21/44
Pendant type, 150 watts maximum, catalog Nos. 7602, 7502, 7602CX, 7502CX, 7602BX, 7502BX				x	4/21/44
Pendant type ,200 watts maximum, catalog Nos. 7603, 7503, 7603CX, 7503CX, 7603BX, 7503BX				x	4/21/44
Pendant type, 100 watts maximum, catalog Nos. 7611, 7511, 7611CX, 7511CX, 7611BX, 7511BX				x	4/21/44
Pendant type, 150 watts maximum, catalog Nos. 7612, 7512, 7612CX, 7512CX, 7612BX, 7512BX				x	4/21/44
Pendant type, 200 watts maximum, catalog Nos. 7613, 7513, 7613CX, 7513CX, 7613BX, 7513BX				x	4/21/44
Pendant type, 100 watts maximum, catalog Nos. 7615, 7515, 7615CX, 7515CX, 7615BX, 7515BX				x	4/21/44
Pendant type, 150 watts maximum, catalog Nos. 7616, 7516, 7616CX, 7516CX, 7616BX, 7516BX				x	4/21/44
Pendant type, 200 watts maximum, catalog Nos. 7617, 7517, 7617CX, 7517CX, 7617BX, 7517BX				x	4/21/44
Pendant type, 100 watts maximum, catalog Nos. 7629, 7529, 7629CX, 7529CX, 7629BX, 7529BX				x	4/21/44
Pendant type, 150 watts maximum, catalog Nos. 7630, 7530, 7630CX, 7530CX, 7630BX, 7530BX				x	4/21/44

a. Passenger and crew quarters and public spaces.
b. Machinery, cargo, and work spaces.
c. Open decks.
d. Pump rooms of tank vessels.

Manufacturer and description of equipment	Location apparatus may be used				Date of action
	a	*b*	*c*	*d*	
Benjamin Electric Manufacturing Co. Des Plaines, Ill.—Continued.					
Pendant type, 100 watts maximum, catalog Nos. 7633, 7533, 7633CX, 7533CX, 7633BX, 7533BX	---	---	---	x	4/21/44
Pendant type, 150 watts maximum, catalog Nos. 7634, 7534, 7634CX, 7534CX, 7634BX, 7534BX	---	---	---	x	4/21/44
Pendant type, 200 watts maximum, catalog Nos. 7635, 7535, 7635CX, 7535CX, 7635BX, 7535BX	---	---	---	x	4/21/44
Magazine fixture, watertight, drawing No. 224336, issue No. 2	x	x	x	---	5/1/44
Condi-Lite Corporation, New York, N. Y.:					
Berth and desk light fixture, type E-14, 25 watts maximum, drawing No. K-43-838-1, rev. 3/3/44	x	---	---	---	5/3/44
Lighting fixtures, 50 watts maximum per outlet, drawing No. K-43-838-2, rev. 3/3/44:					
Ceiling fixture, type E-13A	x	---	---	---	5/3/44
2-Light ceiling fixture, type E-13B	x	---	---	---	5/3/44
4-Light ceiling fixture, type E-13C	x	---	---	---	5/3/44
Bulkhead fixture, type E-13D	x	---	---	---	5/3/44
Mirror and toilet cabinet fixture, type E-13	x	---	---	---	5/3/44
Ceiling fixtures with reflector, drawing No. K-43-829-2 (no alt. No.):					
Catalog No. 1746, 60 watts maximum	x	---	---	---	5/3/44
Catalog No. 1746A, 200 watts maximum	x	---	---	---	5/3/44
Lighting fixtures and connection boxes, drawing No. C-43-814-16 (no alt. No.):					
Connection box, catalog No. 700-A, watertight	x	x	x	---	5/3/44
Connection box, catalog No. 710-A, watertight	x	x	x	---	5/3/44
Ceiling fixture, nonwatertight, 50 watts maximum, catalog No. 730-A	x	---	---	---	5/3/44
Ceiling fixture, nonwatertight, with guard, 50 watts maximum, catalog No. 740-A	x	---	---	---	5/3/44
Galley range exhaust hood lights, vaporproof, drawing No. L40-814-1 (no alt. No.):					
1-light, catalog No. 1782	x	x	---	---	5/3/44
2-light, catalog No. 1783	x	x	---	---	5/3/44
4-light, catalog No. 1784	x	x	---	---	5/3/44
Ceiling fixture, 3 60-watt lamps maximum, catalog No. 1737, drawing No. L50-840-1 (no alt. No.)	x	---	---	---	5/3/44
Lighting fixtures, 50 watts maximum, drawing No. C44-844-2, rev. 4/4/44:					
Ceiling fixture, catalog No. 500	x	---	---	---	5/3/44
Bulkhead fixture, catalog No. 503	x	---	---	---	5/3/44
Ceiling fixture with reflector, 100 watts maximum, catalog No. 508, drawing No. C44-844-3, rev. 4/5/44	x	---	---	---	5/3/44
Deck fixture with angle reflector, 100 watts maximum, catalog No. 509, drawing No. C44-844-4, rev. 4/6/44	x	---	---	---	5/3/44
Mirror and desk lights, 50 watts maximum, drawing No. C44-844-5, rev. 4/7/44:					
With switch, catalog No. 510	x	---	---	---	5/3/44
With switch and receptacle, catalog No. 511	x	---	---	---	5/3/44
Ceiling fixture with reflector, 50 watts maximum, catalog No. 506, drawing No. C44-844-6 (no alt. No.)	x	---	---	---	5/3/44
Bulkhead and deck fixtures, 50 watts maximum, drawing No. C44-844-7, rev. 4/7/44:					
Bulkhead fixture with guard, catalog No. 504	x	---	---	---	5/3/44
Deck fixture with guard, catalog No. 505	x	---	---	---	5/3/44
Control Instrument Co., Inc., Brooklyn, N. Y.:					
Salinity indicator equipment, type 17, single cell, drawings Nos. 22273, alt. 0; 22274, alt. 0; 20973, alt. P	x	x	x	---	4/22/44
Salinity indicator equipment, type 14, 14A and 14B, single cell, drawing No. 21125, alt. L	x	x	---	---	4/24/44
Durkee Marine Products Corporation, Staten Island, N. Y.:					
Mechanical telegraph indicator with reply, drawing No. 220, rev. 3/16/44	x	x	---	---	4/22/44
Edwards & Company, Inc., Norwalk, Conn.: Vibrating bells, watertight, 3", 4", 6" and 8" gong sizes, catalog No. 1740ST, drawing No. 5367-SE, alt. 1	x	x	x		4/24/44
The Kilborn-Sauer Co., Fairfield, Conn.:					
Stern light electric, drawing No. 1100-S-E, alt. 1	---	---	x	---	5/5/44
Stern light, oil, drawing No. 1101-S-O, alt. 1	---	---	x	---	5/5/44
Masthead light, electric, drawing No. 1102-M-E, alt. 1	---	---	x	---	5/5/44
Masthead light, oil, drawing No. 1103-M-O, alt. 1	---	---	x	---	5/5/44
Range light, electric, drawing No. 1102-R-E, alt. 1	---	---	x	---	5/5/44
Range light, oil, drawing No. 1103-R-O, alt. 1	---	---	x	---	5/5/44

a. Passenger and crew quarters and public spaces.
b. Machinery, cargo, and work spaces.
c. Open decks.
d. Pump rooms of tank vessels.

Manufacturer and description of equipment	Location apparatus may be used				Date of action
	a	*b*	*c*	*d*	
The Kilborn-Sauer Co., Fairfield, Conn.—Continued.					
Towing light, electric, drawing No. 1102-T-E, alt. 1	---	---	x	---	5/5/44
Towing light, oil, drawing No. 1102-T-O, alt. 1	---	---	x	---	5/5/44
Side lights, electric, drawing No. 1104-E, alt. 1	---	---	x	---	5/5/44
Side lights, oil, drawing No. 1105-O, alt. 1	---	---	x	---	5/5/44
Anchor light, oil, drawing No. 1106-O, alt. 1	---	---	x	---	5/5/44
Anchor light, electric, drawing No. 1107-E, alt. 1	---	---	x	---	5/5/44
Maras Manufacturing Co., New York, N. Y.: Junction box, watertight, drawing No. B-701, change A	x	x	x	---	4/19/44
Murlin Manufacturing Co., Philadelphia, Pa.: Desk light fixture, double arm type, nonwatertight, fixture No. 895, 100 watts maximum	x	---	---	---	5/15/44
Paragon Electric Co., Chicago, Ill.: Semi-automatic running light telltale panel, 115 volts, D. C., drawing No. A-259, alt. 0	x	x	---	---	4/20/44
Russell & Stoll Co., Inc., New York, N. Y.: Telegraph key, watertight, catalog No. 921, drawing No. D-6440, alt. 5	x	x	x	---	4/19/44
Submarine Signal Co., Boston, Mass.: Fathometer, type 896A, specification No. 8046B	---	---	---	---	4/19/44
Zinsmeyer Co., Los Angeles, Calif.:					
Running light panel with dimmers, watertight, pedestal mount, drawing No. MT-21, alt. 2/2/44	x	x	x	---	5/4/44
Running light panel with dimmers, splashproof, drawing No. MT-22, alt. 2/4/44	x	x	---	---	5/4/44

a. Passenger and crew quarters and public spaces.
b. Machinery, cargo, and work spaces.
c. Open decks.
d. Pump rooms of tank vessels.

AFFIDAVITS

It is required by the Marine Engineering Regulations that manufacturers submit affidavits before they manufacture items of equipment in accordance with these regulations for use on vessels subject to inspection by the Coast Guard. These affidavits are kept on file at Coast Guard Headquarters and a list of approved manufacturers is published for the information of all parties concerned. The affidavits received and accepted during the period from April 16 to May 15, 1944, are as follows:

Brisbane & Co., South Gate, Calif., fabricated steel manifold valves.

Catawissa Valve & Fittings Co., Catawissa, Pa., forged steel unions.

Glaser Machine & Equipment Co., 1624 Agriculture Street, New Orleans, 19, La., flanges.

Ostlind Valve, Inc., 601 N. E. 28th Street, Portland, Oreg., fabricated steel valves and fittings, cast iron and cast steel valves and fittings.

ACCEPTABLE FUSIBLE PLUGS

The Marine Engineering Regulations require that fusible plug manufacturers who desire to have their products approved for marine service shall submit samples for testing from each heat to the Commandant, U. S. Coast Guard. If the sample fusible plugs pass the test satisfactorily, the manufacturer is notified and then the plugs may be used on vessels subject to inspection by the Coast Guard. For the information of all parties concerned, a list of approved heats for manufacturers which have been tested and found acceptable during the period from March 16 to May 15, 1944, are as follows:

Glasgow Iron Works & Supply Co., 28 West Street, New York, N. Y., heat No. 468.

The Lunkenheimer Co., P. O. Box 360, Annex Station, Cincinnati, 14, Ohio, heat No. 207.

Merchant Marine Personnel Statistics

MERCHANT MARINE LICENSES ISSUED DURING APRIL 1944

DECK OFFICERS

REGION	Master										Chief Mate										Second Mate									
	Ocean		Coast-wise		Great Lakes		B. S. & L.		Rivers		Ocean		Coast-wise		Great Lakes		B. S. & L.		Rivers		Ocean		Coast-wise		Great Lakes		B. S. & L.		Rivers	
	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R
Atlantic coast	64	89	6	16	----	9	10	96	1	8	94	22	4	8	----	----	2	13	----	----	160	25	1	1	----	----	----	----	----	----
Gulf coast	13	14	----	5	----	1	----	6	1	6	14	6	----	3	----	----	----	1	----	1	27	1	----	1	----	----	----	----	----	----
Great Lakes and rivers	----	1	----	2	4	39	----	1	4	15	----	4	----	----	----	1	----	----	6	14	----	1	----	----	----	----	----	----	----	----
Pacific coast	41	39	3	2	----	----	7	11	----	1	61	8	1	2	----	----	3	9	----	----	103	7	----	----	----	----	----	----	----	----
Total	118	143	9	25	4	49	17	114	6	30	169	40	5	13	----	1	5	23	6	15	290	34	1	2	----	----	----	----	----	----

REGION	Third Mate										Pilots						Master Mate				Totals		
	Ocean		Coast-wise		Great Lakes		B. S. & L.		Rivers		Great Lakes		B. S. & L.		Rivers		Uninspected vessels high seas				Original	Renewal	Grand total
	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R			
Atlantic coast	397	23	----	----	----	----	----	----	----	----	2	7	65	200	3	7	1	----	----	----	810	524	1,334
Gulf coast	38	----	----	----	----	----	----	----	----	----	1	1	1	19	4	8	1	----	----	----	100	73	173
Great Lakes and rivers	----	----	----	----	----	----	----	----	----	----	23	58	6	24	51	26	----	----	1	----	95	186	281
Pacific coast	122	6	----	----	----	----	----	----	----	----	3	1	21	53	8	5	----	----	----	----	373	144	517
Total	557	29	----	----	----	----	----	----	----	----	29	67	93	296	66	46	2	----	1	----	1,378	927	2,305

ENGINEER OFFICERS

REGION	Chief engineer, steam				First assistant engineer, steam				Second assistant engineer, steam				Third assistant engineer, steam			
	Ocean		Inland		Ocean		Inland		Ocean		Inland		Ocean		Inland	
	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R
Atlantic coast	53	101	4	30	76	24	------	5	129	23	2	1	445	28	1	------
Gulf coast	10	26	------	12	22	8	------	3	30	11	------	------	19	4	------	------
Great Lakes and rivers	------	10	13	65	------	3	11	40	1	7	11	11	------	4	4	------
Pacific coast	34	42	------	8	59	8	------	5	92	15	------	------	117	7	------	------
Total	97	179	17	115	157	43	11	53	252	56	13	12	581	43	5	------

REGION	Motor vessels								Uninspected vessels				Total		
	Chief engineer		First assistant engineer		Second assistant engineer		Third assistant engineer		Chief engineer		Assistant engineer		Original	Renewal	Grand total
	O	R	O	R	O	R	O	R	O	R	O	R			
Atlantic coast	23	36	7	10	11	5	412	1	------	------	------	------	1,163	264	1,427
Gulf coast	7	16	7	6	5	1	12	------	------	------	------	------	112	87	199
Great Lakes and rivers	1	11	1	6	------	4	------	1	------	------	------	------	42	162	204
Pacific coast	10	25	5	10	3	1	97	4	------	------	1	------	418	125	543
Total	41	88	20	32	19	11	521	6	------	------	1	------	1,735	638	2,373

ORIGINAL SEAMEN'S DOCUMENTS ISSUED, MONTH OF APRIL 1944

Region	Continuous discharge book	Certificate of identity	A. B., green 3 years [1]	A. B., green 9 months emergency [2]	A. B., blue 18 months 12 months [3]	A. B., blue 6 months emergency [4]	A. B., blue 6 months emergency [5]	Lifeboat 12-24 months [6]	Lifeboat 6-12 months emergency [7]	Q. M. E. D. 6 months	Q. M. E. D. emergency	Radio operators	Certificate of service	Tankerman	Staff officer	Total
Atlantic Coast	143	5,092	148	678	103	15	0	3,585	760	312	1,825	222	4,230	13	179	17,305
Gulf coast	49	669	11	104	7	7	3	462	138	42	237	32	473	30	28	2,292
Pacific coast	23	2,584	56	335	55	3	0	1,447	40	124	513	55	1,977	5	46	7,263
Great Lakes and Rivers	2,365	197	33	55	20	48	0	62	52	70	89	24	2,549	31	8	5,603
Total	2,580	8,542	248	1,172	185	73	3	5,556	990	548	2,664	333	9,229	79	261	32,463

[1] Unlimited
[2] Unlimited
[3] Unlimited
[4] Great lakes, lakes, bays, and sounds
[5] Tugs and towboats and freight vessels under 500 tons (miscellaneous)
[6] 12 months deck or 24 months other departments
[7] 6 months deck or 12 months other departments

WAIVERS OF MANNING REQUIREMENTS FROM 1 APRIL TO 30 APRIL 1944

Authority for these waivers contained in Navigation and Vessel Inspection Circular No. 31, dated 13 March 1943

Region	Number of vessels	Deck officers substituted for higher ratings	Engineer officers substituted for higher ratings	Able seamen substituted for deck officers	Ordinary seamen substituted for able seamen	Qualified members of engine department substituted for engineer officers	Wipers or coal passers substituted for qualified members of engine dept.	Wipers, coal-passers, or cadets substituted for engineer officers	Ordinary seamen, or cadets substituted for deck officers	Tankermen substituted for engineer officers	Ordinary seamen substituted for radio operator	Total
Atlantic coast	531	292	343	52	918	143	55	43	54	1		1,901
Gulf coast	47	17	15	2	77	9	7					127
Pacific coast	279	107	115	20	615	66	39	7	16		1	986
Great Lakes	46				47			33				80
Total	903	416	473	74	1,657	218	101	83	70	1	1	3,094

CREW SHORTAGE REPORTS FROM 1 APRIL TO 30 APRIL 1944

These reports submitted in accordance with Navigation and Vessel Inspection Circular No. 34, dated 1 May 1943

Region	Number of vessels	Ratings in which shortages occurred										Total
		Chief mate	Second mate	Junior third mate	Able seaman	Ordinary seaman	First engineer	Second engineer	Junior third assistant	Qualified member engine department	Wiper or coal-passer	
Atlantic coast	8	1	1		2		1	3		6	1	15
Gulf coast	1		1									1
Pacific coast	9			1	9	3		1	2			16
Great Lakes	4					1	1		1	2	1	6
Total	22	1	2	1	11	4	2	4	3	8	2	38

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