PROCEEDINGS OF THE
MERCHANT MARINE COUNCIL
UNITED STATES COAST GUARD

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The
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Case Histories of Some Tanker Accidents

This Article made available through the courtesy of the Marine Department of the Standard Oil Co. of California.

As a part of our organized safety program, all accidents are investigated for the purpose of finding out how similar accidents can be prevented. Since our records cover many years, I have had a ready source of material from which to select case histories.

In order to form, a pattern for such a discussion, let us ask ourselves: into what classes can the hazards found on a tanker be divided?

It seems to me that the hazards can be divided into, first, those connnected with the cargo. In this class we can put fires and explosions and the danger of asphyxiation. Let's include in this class fires any place on the ship inasmuch as the major danger is the possibility of their spread to the cargo.

Another class of hazards are those common to any ship; falls on the deck, down ladders and from aloft, danger from boarding seas, from booms and cargo gear.

Another class would be those hazards found in industrial establishments ashore: eye hazards, burns, scalds, injuries from moving machinery, cuts from knives, broken glass and back strains.

These classifications are quite loose but they will serve to lend form to the discussion today, then they can be discarded.

Now a word about the safety record of the Marine Department of Standard Oil Co. of California. It's good. You might get the impression, after listening to a recitation of case histories of accidents that we are constantly having one catastrophe after another. Actually serious accidents are few and far between. Our frequency and severity rates are consistently low, year after year. This favorable state of affairs is the result of the keen interest shown in the problems of accident prevention work by our management and the efforts of the men on the ships, particularly the ships' officers. This last group is as fine a body of seamen as can be found any place in the world. They are experienced and conscientious and their vigilance is largely responsible for the fine safety record which we claim.

Now for some case histories of accidents. My topic says unusual cases.

One unusual case that comes to mind is that of the wiper who while asleep somehow managed to get his head between two bars at the head of his bunk and then fell out of bed. Before he was completely strangled someone found him and sawed him loose. It took the skipper about 3 days to get the wiper breathing regularly again. The moral in this accident appears to be "don't stick your head between bars and fall out of bed." This accident is filed under the heading "bedroom hazards," a file containing some interesting stories.

Fire and Explosions

Now for some case histories from the class of fire and explosions:

In 1925 a vessel was alongside a wharf washing tanks. Starboard No. 3 had been steamed for 9 hours and washed with a hand hose from the deck for 1 hour. It was then decided that the tank could be entered for further cleaning. Five men were standing on deck around the hatch opening. One of them lowered a large extension light into the tank. It slipped from his hands and fell to the bottom of the tank, breaking. There was an explosion. Smoke and flames shot upward for 50 feet. The five men were lucky and escaped with slight burns.

What lessons did this casualty teach? For one thing it showed that this method of gas freeing a tank was poor. Better methods have been developed. In those days ready means for testing for explosibility were not available. Now, with the development of the portable gas indicator, it is an iron-clad rule that a tank must be tested by a licensed officer and passed as "Safe for Men" before a portable light is placed in the tank.

In 1943 another vessel was discharging a cargo of natural gasoline. Early in the morning the starboard main cargo pump was shut down on account of a broken steam valve rod. Because the port main suction line was leaking in No. 9 tank, it was necessary to repair the starboard pump in order to complete discharging the cargo. Accordingly, at 10:15 a. m. the vessel shut down and started circulating the lines in the pumproom in order to flush out the gasoline. About 11 a. m. seven men were in the pumproom, one was making a survey of the repair work and the others were washing the bilges preparatory to their being tested by a yard chemist.

At 11:13 a. m. an explosion occurred in the pumproom that shook the ship and was audible at some distance.

Two of the men were killed by the explosion and the others recovered.

Investigation showed that the source of ignition was a portable electric extension light which had been dropped in the bilges. The source of fuel was a small amount of natural gasoline in the bilges.

This casualty emphasizes the necessity for testing spaces with a gas indicator before introducing portable electric lights into the spaces; likewise, it shows the importance of keeping the bilges clean. Another lesson taught is the need for good ventilation in pumprooms. This need has been answered in modern pumprooms with power ventilation taking suction in the bilges, and gratings instead of floor plates to promote good circulation.

Welding Fire

In 1943 a tanker was in a shipyard having new lifeboats installed amidships, an operation that necessitated burning and electric arc welding. The vessel was "gas free" and all her hatch covers were raised. Three of her seamen were working in No. 2 port wing tank when a fire occurred in the after end of the tank. The men climbed out of the tank through the flames and the fire was extinguished by lowering the cover. One man required hospitalization but the other two were only singed.

An investigation revealed the following details. Gasoline had been carried in these tanks on the previous voyage. In preparing the ship for the yard, the tanks were steamed, washed, and thoroughly ventilated. At this time, quantities of water were pumped through the pipe line. Subsequently, the tanks were tested and found gas-free. On the afternoon of the fire, the men were bailing water out of the tank in preparation for the next cargo. At this time, the valve in the tank was opened and left open to let any water in the line run out. As the vessel was trimmed by the stern, a small amount of water had collected in the after end of the tank covering the suction lip of the cargo line. Most of the water was bailed out and the men were gathering the last of the rust when the fire occurred. One man climbed out of the tank immediately and was burned about the arms in so doing. The other two men retreated to the forward end away from the fire and the hatch opening. They watched the flames for a short time. Dense smoke was pouring from the fire and soon they saw that they could not remain in the tank. Accordingly, they dashed through the flames and climbed the ladder to the deck, a distance of approximately eight feet. The chief mate, attracted by the cries of "Fire," arrived on the scene, shut off the valve leading into the tank and lowered the tank top, thus extinguishing the flames which had been burning for some 2 or 3 minutes.

It is the consensus that a small quantity of gasoline remained in the suction line despite repeated washings. Probably it was held in the line by a water seal and hence was not discovered when the tank was tested with the gas detector. When the level of the water was lowered below the suction lip by bailing, the gasoline escaped and later ignited. The fact that the gasoline ignited without audible concussion supports the theory that the gasoline had been held in place by the water seal and was released only shortly before ignition. If the gasoline had been free to vaporize the full length of time the men were in the tank it probably would have formed an explosive mixture.

The men involved were asked if they had been smoking. They said they had not. While this question may appear to experienced tanker men to be unnecessary, it should be remembered that there have been bad accidents in tanks which have been the direct result of men smoking.

After the accident it was observed that a number of sparks were falling from burners' torches onto the closed tank top of No. 2 wing tank. Presumably a spark could have fallen into the tank when it was open, although the men in the tank did not observe any such happening. It would therefore appear that sparks from burners' torches were the most likely source of ignition.

This accident was serious and could have been much more serious. If, for example, it had been a warm day, the gasoline would probably have vaporized and formed an explosive mixture which upon igniting might have killed the men instead of burning them.

A Lesson Learned

As we have said before, accidents are investigated so that we may learn something from them which will enable us to prevent similar accidents in the future.

Let us, therefore, see what we can learn from this accident. This accident shows that we can never predict with certainty the conditions inside a pipe line; hence, when a ship is "gas free" any action that might allow petroleum vapors to escape from a line into a tank must be undertaken with the greatest deliberation. If, as in this case, a valve is opened, it should be opened only under the direction of the mate. At this time he must consider all possibilities and guard against any possible danger. When valves are opened in a "gas free" ship, all tanks must be retested with a gas detector before the ship can again be

considered "gas free." When sediment is removed, ballast shifted, blanks removed or lines broken, similar precautions must be taken.

This accident shows one of the unforeseen things that can happen. Gasoline floated on top of the water in the suction line and thus escaped detection at the initial inspection of the tank. The men in the tank failed to note the gasoline on the water. The gasoline was ignited by a spark and a fire resulted. (Note that the ship was supposedly safe "for men and fire" and the burners cannot be criticized for their part in the accident.)

Noncargo Fires

Let us now consider some fires which did not involve the cargo.

In 1918, on a pre-First World War tanker, a fireman slacked off on a live burner, that is, he started to remove a burner without shutting off the fuel oil. As a result, oil fanned out between the burner and the burner base, spraying over the fireroom. It ignited almost at once and all hands had to get out.

The fireroom could not be entered from the engine room. They tried to shut off the fuel-oil pump suctions with remote controls provided for the purpose but could not find the special socket wrench needed to turn the reach rod. This wrench was supposed to be in brackets on the bulkhead but someone had other ideas—probably kept it under his mattress. They tried to shut off the steam stops on the top of the boilers but could not reach the valve on account of the heat.

Then the first assistant went into action. He soaked himself with water, dropped a line down the fireroom ventilators and slid down it. He attempted to reach the fuel pump to shut it off but the fire drove him back. A hose was passed down the ventilator and he fought the fire from the floor plates, hoping to blast his way to the fuel pump. In the meantime they found the socket wrench and shut off the fuel-pump suctions. This didn't make much difference as the fuel pump had become warped from the heat and the water had stopped running. With the supply of fuel shut off, the fire soon burned itself out.

Pulling Live Burners

A somewhat similar accident happened aboard another vessel in 1930. In this case the 12–4 fireman put in a burner and didn't get it in quite straight. When he turned on the oil a little leaked out. Instead of shutting off the oil, he slacked off the yoke and tried to straighten the burner. Oil flew out in a fan shape and caught fire and there was soon quite a blaze going. The fuel pumps were shut off with reach rods from the boat deck and the fire was extinguished with water. The fireman was seriously burned. Fortunately a battleship was nearby and undertook the care of the fireman. With skilled medical attention he recovered completely except for a few scars.

The hazard in pulling live burners has been met in several ways. Modern design no longer places the fuel pump in the fireroom but in the engine room where it can be reached and turned off by the engineer if trouble occurs in the fireroom. The majority of our seagoing vessels have been equipped with a type of burner that has a built-in safety device which shuts off the oil if a fireman pulls a live burner. We are studying the problem of installing a similar check on the ships not now so equipped. We also control this hazard by education through the medium of our organized safety program, constantly emphasizing the necessity to shut off oil before changing burners.

The space in which a fire is most likely to occur on a tanker are the living quarters. This has been proved time after time. The most likely cause of a fire is improper disposition of smoking materials. We have had numerous small fire resulting from the discarding of cigarettes into wastepaper baskets. This hazard is controlled through education, by requiring that quarters be kept shipshape, by not allowing containers to acquire accumulations of trash and by providing metal wastebaskets.

A fire of another type in the living quarters occurred aboard another vessel in 1948. The paneling in the recreation room caught fire but was quickly extinguished with comparatively little damage. Investigation revealed that when the blackout switches were removed from the doors the shipyard workers had simply cut off the wires, taped them up, and shoved them into the holes in the jamb. After a couple of years the insulation wore off and the wires shorted and set fire to the jamb. After the fire was extinguished, the paneling was removed and the wires traced back to the junction box where they were disconnected in a workmanlike manner.

This fire shows that an installation which was originally correctly installed can be made unsafe by some subsequent act.

Another type of fire against which we must be continually on guard is that produced by spontaneous combustion of paint rags. In 1948 aboard a tanker, smoke was detected coming from under the fo'c'sle head at 1 a. m. A man was sent to investigate and he reported a fire in the paint locker. The general alarm was sounded. The vessel was stopped, then run before the wind. Bulkhead doors were closed, hose lines led out, water turned on in the main lines, and steam in the smothering lines in the paint locker. Quick action extinguished the fire in a few minutes with minor damage. Happenings of this sort have led to the practice of having a man inspect the paint locker at the conclusion of each working day. Likewise, watch officers have a man make periodic rounds of the ship during the night.

Asphyxiation Cases

Discussion up to this point has revealed around fire. Let us now consider a few cases involving the anaesthetic qualities of petroleum products. In 1943 a tanker was cleaning tanks for change of product. The tanks were butterworthed and the hatch covers were opened. The next day the mate tested No. 2 tank and found it to be gassy. Later he sent two men into the tank to bail out some water, equipping these men with fresh air hose masks. After the men had been in the tank some 4 or 5 minutes, one man looked around to see his partner taking off his mask. The latter passed out and fell on the tank bottom. On seeing this, the first man became dizzy but shortly regained control of himself and attempted to replace the mask on his mate.

The alarm was given and the unconscious man was hauled on deck and given artificial respiration. A thorough investigation was made of this accident with the following conclusions: First, the responsibility for this accident lay directly on the officer in charge, as he freely admitted. Under the circumstances the men should not have been in the tank. Our tank-cleaning regulations state definitely that men are not to be allowed in tanks unless the vapor content of the tank has been tested and found to be without hazard to man. Fresh air hose masks are supplied for emergencies and not for routine work. The most interesting aspects of this accident were the human factors involved—why did the man take off his mask? This man was comparatively inexperienced but a sensible, level-headed, perfectly normal person. He did not remember taking off his mask nor could he give any reason for doing so. We think we know why he did.

When the fresh air masks were first placed on the ships, many years ago, they were new to all hands. Before the fellows got used to them and gained confidence in them, incidents somewhat similar to the one we are discussing took place.

Before human beings accept anything new they have to get used to it. In the case of these masks, experience was gradually gained in their use and, as the experience grew, the mental hazards diminished.

Now let's see if we can picture the frame of mind of the new man asked to put on one of these funny looking contraptions and to climb 40 feet down a ladder into a tank containing petroleum vapors.

He is surrounded by factors he does not have the experience to evaluate. First, the mask, then the tank, then the gas. He may not be aware that these things bother him, but they bother any new man whether he recognizes the fact or not.

Some little things may bring these feelings to the fore—maybe the man can't see through the goggles—or he may stumble—or he may start to sweat.

For some reason he stops thinking and his feelings take charge. Then he's in trouble. He's got to get out of there. He rips off his mask and starts for the ladder. He may make it—he may not.

Testing Tanks

Let us repeat that this is perfectly normal and is an old story. Lots of good men have been "panicked" in their time and are none the worse for it. Ask some pumpman or engineer what can happen when a man crawls into a close compartment through a small opening and gets "panicked." He'll tell you that a man swells up and can't get out again. Well, that's another story. Let us continue with this one.

Why did the man with the mask on get dizzy? It would appear that when he saw his partner pass out he suffered a case of shock. Again a mental hazard but notwithstanding a perfectly normal happening. Shock in an accident is a serious matter, often doing more damage to a man than any hurt he may have suffered.

The lessons taught by this accident are that men should not be sent into atmospheres which contain petroleum vapors in hazardous amounts; that experienced men should be selected for unusual jobs and that all of your rescue equipment should not be used at one time. These vessels are equipped with two fresh-air hose masks. One of these should be held in reserve so that if the first man gets into trouble he can be rescued.

In 1943, aboard a tanker, the chief mate and the pumpman were checking over the pumproom while at sea. Everything seemed shipshape except that the bilges needed pumping. There was no hurry about the job and nothing was done at the time. A short time later, the vessel changed course sharply and started to roll. The pumpman decided to pump the bilges and went below to start the pump. By a lucky chance the mate wanted him and started looking for him. He found him on the floor plate unconscious. The mate carried him up on deck and gave him artificial respiration and he recovered completely. This accident teaches that no one should go into a pumproom, cargo hold, forepeak, afterpeak, or other isolated compartment without telling someone where he is going.

In 1936 aboard another vessel, a pumpman and ordinary seaman were overcome by gas and in consequence of which they were also injured from falls due to their entering a cargo tank in violation of safety rules. In this case, pumpman without contacting a responsible officer or testing the atmosphere in the tank, entered it to make a small repair to a gauge tape. Upon being overcome by gases which had remained in the tank although it had recently been cleaned, he fell a considerable distance to the bottom of the tank whereupon the ordinary seaman, acting on his own initiative, went to the pumpman's rescue without the use of a fresh air hose mask and was overcome and fell several feet to the tank bottom. Fortunately other assistance was near at hand by this time and the men were rescued with the use of fresh-air hose masks. These accidents emphasize the absolute need for testing tanks or any compartment which might contain petroleum vapors, prior to permitting men to enter the tanks or compartments and also the need of proper supervision in this respect.

Fire Line Filled With Gasoline

Going back to the general subject of fire for a moment, we recall an incident where the ship's fire-fighting system got filled with gasoline. The vessel concerned was a small motor tanker. She had discharged a part cargo of gasoline to a shore plant. Local regulations required that the shore line be flushed with water after such a delivery. In order to avoid filling the pumps and deck lines with water, the ship decided to flush the shore line with the fire pump. Accordingly, a fire hose was hooked up to the offshore riser, the valves opened and the order given, "water on the deck." The shore lines were flushed, hoses were disconnected and the vessel sailed. A couple of days later at sea a strong odor of gasoline was detected at the fire hydrant on the master's deck. An investigation showed that the fire line was full of gasoline. It was flushed out at once. Here's what had happened.

The fire hose was hooked up between the fire line and the deck line through which cargo had been pumped ashore and the valves on these respective lines opened. Since the fire line was empty, gasoline gravitated from the wharf, through the deck line, and filled the fire line. When the fire pump was started some of the gasoline was flushed out but much of it remained in the dead ends. Later, at sea, the heat of the sun caused the gasoline to expand and it was forced through the closed fire hydrant valve out on deck where it was detected. The lesson taught by this incident is that while the use of the fire pump for purposes other than fire fighting may be desirable, it should never be used for anything which would make it less effective for fighting fire or which would prevent its instant use for fighting fire.

The conversation so far has largely been of the hazards connected with petroleum products. Let us now consider a few accidents in the other two classes which we mentioned in our introduction, namely, hazards common to all ships and hazards common to industrial establishments. One of the most unusual accidents which I know of and which falls in the first class is that which occurred to a chief mate aboard a tanker. The vessel was heading up the San Pedro Channel toward the wharf in the middle of the night. The chain had a half turn in it and the anchor could not be housed. The chief mate ran a 3-inch line out the bow chock above the anchor and dropped a running bowline over a fluke. The line was taken to the windlass and the anchor hove over. The next thing was to free the line from the anchor. The knot was untied. Efforts to shake the line loose failed so it was taken to the gypsyhead and hove taut. As a strain was put on the line, it slipped off the fluke as intended. The end whipped up on deck on the outside of the bulwark and wrapped itself around the mate's neck. The man on the windlass did not hear the mate's order to stop and could see nothing in the dark. He continued heaving with result that he hove the mate over the side and started to pull him through the chock. Fortunately at this point the line came free and the mate fell into the water. There was a tug tied up on that side amidships; nevertheless the mate managed to pass between the ship and the tug. Meanwhile the alarm "Man overboard" had been given. The bosun and a couple of men rushed aft from the fo'c'sle head. Aft-right where they needed it—was a small line. They threw it

overboard and it landed on the mate. He grabbed it and was hauled aboard. The only injury he suffered was a black eye.

The lesson taught by this accident is a general one as the incident illustrates the need for constant alertness on the part of all hands, and particularly, on the part of men handling lines on gypsyheads.

An unusual accident falling in the class of hazards common to industrial plants is that in which a chief engineer aboard the first full-fledged tanker on the Pacific was involved. The second assistant was keying up the tumbling block of the valve gear in the engine room. His hand was caught in the moving machinery and the forefinger was amputated. This accident was investigated by a committee. In this case, the committee consisted of the master, chief engineer, and the first assistant. This group went to the engine room and the chief engineer proceeded to illustrate how the accident had occurred. He unfortunately got his hand too close and he, too, lost a forefinger. Truly a practical demonstration.

Once again the lesson taught by this casualty is general; namely, that great caution should be exercised when reaching into moving machinery.

We have said that our record is good. This naturally brings the question, "How good?" Referring to statistics issued by the American Petroleum Institute for the year 1948, we find that our injury and frequency rates for the seagoing and inland fleets were about half the national average. This places us among the leaders.

In conclusion, let us refer again to our topic. How is responsibility for the prevention of accidents fixed?

The responsibility for the prevention of accidents is basically the responsibility of top management. They in turn delegate this responsibility to the line supervisor. On the ships, the ships' officers are told specifically in writing that upon them rests the responsibility for prevention of accidents.

OPERATION OF SHIP RADAR STATIONS

On May 12, 1950, the Federal Communications Commission, Washington 25, D. C., released its report and order in the matter of an amendment of Parts 8 and 13 of the Commission's rules and regulations governing the ships' service and commercial radio operators, respectively, in docket No. 8913. On January 24 and 25 and September 19 and 20, 1949, hearings and oral arguments were held before the Commission in which representatives of interested manufacturers and users of ship radar equipment and labor unions, as well as members of the Commission's staff, participated. The operator problem in regard to ship radar stations is comprised of two major aspects, viz, the interference aspect and the safety and navigational aspect. The proposal in docket 8913 expressly limited itself to dealing directly with only the interference aspect of the ship radar operator problem. The Commission will continue to have under consideration the second aspect dealing directly with the safety and navigational aspect of the ship radar operator problem.

The proposed rules as designated for hearing consisted of three main parts:

(a) The normal operation of ship radar stations would be permitted to be performed by a limited class of unlicensed persons.

(b) Installation, servicing, and maintenance of the ship radar station would be required to be performed by persons either licensed as radar operators or performing such duties under the immediate supervision and responsibility of a licensed operator with the exception that replacement of "receiving types" of end fuses would be permitted to be performed by unlicensed persons on their own responsibility. The licensed operator would be required to possess either a radiotelephone or radiotelegraph, first- or second-class license bearing a "radar indorsement" on its face. The "radar indorsement" would be issued after ascertainment of the operator's specialized knowledge of radar.

(c) The third part of the proposed rules contained provisions designed to insure in any event the continuing responsibility and control of the ship radar station by the station licensee.

The first and third portions of the proposed rules arouse no controversy. The principle of the second portion of the proposed rules, however, engendered comment which to a large extent was generally adverse in nature, and a testimony was accordingly directed primarily and almost solely to the question of the desirability, from the standpoint of preventing interference of the proposed requirement of a licensed operator in connection with the installation, servicing, and maintenance of the ship radar station.

With regard to the matter of the installation (aside from servicing and maintenance of ship radar stations), it is clear from the testimony that persons who install ship radar stations must possess certain minimum qualifications in order that a proper installation be accomplished with regard to the matter of service and maintenance of ship radar stations. It is likewise clear from the testimony that some service and maintenance duties are of such complex nature that only technically competent persons may perform such duties. Other servicing and maintenance duties may be performed by persons with no great degree of technical skill. Adequate service and maintenance are related to the prevention of interference insofar as it is directed to the preservation and restoration of those original conditions of installation which were necessary to prevent interference. Such conditions seem to be concerned primarily with the filtering, bonding, and shielding of the radar equipment.

The Commission considers that there is no doubt but that, in order to prevent interference, persons who perform the installation of certain servicing and maintenance duties at ship radar stations must possess a minimum level of technical competence.

The Commission is of the opinion that the requirements in the regulations set forth below will tend to insure the possession by ship radar operator licensees of both the general knowledge of radio and the specialized knowledge of radar considered necessary to enable such licensees to perform their functions properly. Although admittedly such operator requirements limit somewhat flexibility in the selection and use of installation and maintenance personnel, it is believed that the operator waiver ordered for normal operation and certain types of maintenance of ship radar stations minimizes this objection to an extent consistent with the Commission's statutory responsibilities. The Commission finds that the public interest, convenience, and ne-

cessity will be served by the adoption of the rules given below and has accordingly, pursuant to the authority of sections 303 (f), (g), (l), (r), and 318 of the Communications Act of 1934, as amended, ordered this 11th day of May 1950, that the following rules are adopted and shall become effective on the dates specified therein.

Part 8 of the Commission's Rules Governing Ship Service and part 13 Governing Commercial Radio Operators are amended as follows:

1. Section 8.195 of part 8 is amended by adding thereto a new paragraph "o" reading as follows:

(o) *Radio operator requirements.*[1]—(1) No radio operator license is required for the operation on board ship, during the course of normal rendition of service, of ship radar stations licensed in the Ship Service, provided that the following conditions are met or provided for by the license of the station:

(i) The radar equipment shall employ as its frequency determining element a nontunable, pulse-type magnetron.

(ii) The radar equipment shall be capable of being operated during the course of normal rendition of service in accordance with the radio law and the rules and regulations of the Commission by means of exclusively external controls, and

(iii) Operation during the course of normal rendition of service pursuant to this subparagraph (1), must be performed exclusively by the master of the radar-equipped ship or by one or more other persons responsible to him and authorized by him to do so.

(2) All adjustments or tests during or coincident with the installation, servicing, or maintenance of the equipment while it is radiating energy must be performed by or under the immediate supervision and responsibility of a person holding a first- or second-class commercial radio operator license, radiotelephone or radiotelegraph, containing a ship radar endorsement, who shall be responsible for the proper functioning of the equipment in accordance with the radio law and the Commission's rules and regulations and for the avoidance and prevention of harmful interference from improper transmitter external effects, provided, however, that nothing in this subparagraph shall be construed to prevent persons not holding such licenses or not holding such licenses so endorsed from making replacements of fuses or of receiving-type tubes.

[1] Effective January 2, 1951.

(3) Nothing in this paragraph shall be construed to change or diminish in any respect the responsibility of any ship radar station licensee for having and maintaining control over the station licensed to him, or for the proper functioning and operation of such station in accordance with the terms of the station license.

2. Section 8.195 of part 8 is further amended by adding thereto a further new paragraph "p" reading as follows:

(p) *Installation and maintenance record* [1].—(1) The station licensee of each ship radar station shall provide and require to be kept at the station a permanent installation and maintenance record. Entries in this record shall be made by or under the personal direction of the responsible installation, service, or maintenance operator concerned in each particular instance, but the station licensee shall have joint responsibility with the responsible operator concerned for the faithful and accurate making of such entries as are required by this paragraph.

(2) Each entry in this record shall be personally signed by the responsible operator concerned.

(3) The following entries shall be made in this record:

(i) The date and place of initial installation.

(ii) Any necessary steps taken to remedy any interference found to exist at the time of such installation.

(iii) The nature of any complaint (including interference to radio communication) arising subsequent to initial installation, and the date thereof.

(iv) The reason for the trouble leading to the complaint, including the name of any component or component part which failed or was misadjusted.

(v) Remedial measures taken, and the date thereof.

(vi) The name, license number, and date of the ship radar operator endorsement on the first- or second-class radio operator license of the responsible operator performing or immediately supervising the installation, servicing, or maintenance.

3. Section 8.195 (b) of part 8 is amended to read as follows:

(b) Application for license and condition of issuing license.[2]

(1) Applications for ship radar station licenses shall be made in accordance with the provisions of part 1 of the Commission's Rules and Regulations.

[1] Effective January 2, 1951.
[2] Effective June 1, 1950.

(2) Any license issued shall be subject to the condition that the station licensee, in relation to the proper operation of the station in accordance with the radio law and rules and regulations of the Commission, will be represented on board the radar-equipped vessel by the person who at any given time occupies the position of master.

4. Section 13.21 of part 13 is amended by adding thereto a new examination element to read as follows:

(8) Ship radar techniques [3].—Specialized theory and practice applicable to the proper installation, servicing, and maintenance of ship radar equipment in general use for marine navigational purposes.

5. Section 13.61 is amended by adding to paragraphs (a), (b), (d), and (e) new exceptions numbered (5), (6), (3), and (8), respectively, to read in each instance as follows: [4]

At a ship radar station licensed in the Ship Service, the holder of this class of license may not supervise or be responsible for the performance of any adjustments or tests during or coincident with the installation, servicing or maintenance of the radar equipment while it is radiating energy unless he has satisfactorily completed a supplementary examination qualifying him for that duty and received a ship radar endorsement on his license certifying to that fact; provided that nothing in this subparagraph shall be construed to prevent persons holding licenses not so endorsed from making replacements of fuses or of receiving-type tubes. The supplementary examination shall consist of.

(i) Written examination element: 8.

6. Section 13.61 is further amended by adding to paragraphs (c) and (f), new exceptions numbered (7) and (6) respectively, to read in each instance as follows: [4]

At a ship radar station licensed in the Ship Service, the holder of this class of license may not supervise or be responsible for the performance of any adjustments or tests during or coincident with the installation, servicing or maintenance of the radar equipment while it is radiating energy; provided, that nothing in this subparagraph shall be construed to prevent any person holding such a license from making replacements of fuses or of receiving-type tubes.

[3] Effective at a date to be announced after June 1, 1950, but prior to January 2, 1951.
[4] Effective January 2, 1951.

SMALL-BOAT SURVEY IN THE GREAT LAKES AREA

The district engineer of the Buffalo District, Corps of Engineers, foot of Bridge Street, Buffalo 7, N. Y., will conduct a small-boat survey in the Great Lakes area. The Chief of Engineers has directed the various district engineers in the Great Lakes Division to conduct a small-boat survey during 1950. Shortly RHB Form Recreational Craft Operation Report No. 3 will be mailed to each owner of a registered craft in the Great Lakes area with the request that same be filled out, indicating on this form the number of trips made and the harbors visited and used.

The data obtained from this survey will be used in computing the economic benefits on any projects relating to boating activity, such as harbors of refuge or mooring basins.

These forms are returnable to the various district engineer offices as soon as possible after the close of the 1950 boating season, but in no case later than October 15, 1950.

LESSONS FROM CASUALTIES

ASPHYXIATION FROM CARBON DIOXIDE

The use of solidified carbon dioxide (dry ice) for the preservation of perishable foodstuffs has been greatly on the increase in recent years. It has been found that besides maintaining meat, vegetables, and other perishables, at a low enough temperature to insure against their spoiling, the carbon dioxide gas which is evolved from the dry ice has a marked beneficial effect in that it seems to inhibit the formation of various fungi, surface slimes, etc. Accordingly, a great deal of the material is used in railroad refrigerating cars, highway trucks, and other vehicles used for the transportation of foodstuffs. Ordinarily as in railroad cars and highway trucks, the evolution of the carbon dioxide from the dry ice causes no harm as it is dissipated immediately in the surrounding atmosphere.

Recently, however, two trailer vans refrigerated with dry ice were loaded into the lower hold of a vessel in the late afternoon. At the close of the working day the hatches were covered as usual. The next morning when the stevedores returned to the ship the hatches were opened and the stevedores descended immediately into the hold which contained the truck-trailers. During the night large amounts of carbon dioxide gas had evaporated from the dry ice used to refrigerate the trailers and owing to the high density of this gas had filled the lower portion of the hold. Four of the stevedores who had descended into the hold were overcome.

As the vessel concerned was a freight vessel an oxygen breathing apparatus was not required on board by the regulation. It so happened, however, that such an apparatus was on board and available. The chief mate donned it and attempted a rescue of the four unconscious men. However, after getting one of the men out it was discovered that the oxygen in the mask was exhausted. Consequently, it was necessary to await the arrival of the fire department rescue squad before removing the other three stevedores. These three men died from the effects of the carbon dioxide.

To digress for a minute, it was found at the inquiry that the oxygen breathing apparatus on board this vessel had been requisitioned by the chief engineer and was supplied on board by the owners. The testimony disclosed that this apparatus had been tested at the time of each fire and boat drill by opening the oxygen valve to observe the pressure of the oxygen. The cumulative effects of these tests had finally resulted in the almost complete depletion of the oxygen supply. As a matter of fact the presence of the mask even though the oxygen supply was depleted was a direct means of saving the life of one of the stevedores.

Similar accidents resulting in loss of life have happened on at least two other occasions widely separated as to time. Carbon dioxide is regarded as a dangerous material as is shown by the fact that when it is used as a fire-extinguishing agent in the engine rooms of vessels, an alarm must be fitted which is actuated automatically before discharging the gas into these spaces. Accordingly, the Coast Guard has found it advisable to issue a notice to the industry descriptive of the hazards associated with the shipment of this material. This circular is quoted in part as follows:

> Pending r e g u l a t o r y changes, the carriage of dry ice on board vessels as cargo or for refrigeration purposes, should be given "On deck in open" or "On deck protected" stowage only.

The notice, Navigation and Vessel Inspection Circular No. 2-50, dated April 19, 1950, is reproduced in full on page 97 of this issue of the Proceedings of the Merchant Marine Council.

EXPLOSION WHILE CLEANING A TANK VESSEL

Considering the dangerous cargoes carried by tank vessels there are relatively few casualties that occur on board such vessels when compared to other types of vessels carrying less dangerous cargoes. However, on occasion, certain situations either exist or are created by a chain of circumstances where there is a fire, explosion or other casualty. Unmanned tank vessels are sometimes open to criticism and the reason for this is probably that unmanned tank barges require a certificated tankerman or a licensed ship's officer to be present only when cargo is being loaded, carried or discharged. Rules provide for the presence of a certificated tankerman or ship's officer either on the barge itself or on the towing vessel during the time the barge is underway.

When an unmanned barge is alongside a dock and not gas-free, watchman service may be provided by the plant or towing vessel.

From this it may be seen that when such an unmanned barge has discharged its cargo or has proceeded to a ship's service yard or safe anchorage when ship-cleaning operations can be carried out, no person is required to be present. This means that in case of an accident, unless criminal negligence on the part of the owners can be shown, no control over cleaning methods can be effectively exercised.

Recently a tank barge discharged a cargo of gasoline in a southern river port and proceeded to a ship's service yard for the purpose of cleaning the tanks for the reception of a cargo of lubricating oil. All the tanks except two were fitted with steaming out connections and those tanks with such connections were steamed out preliminary to washing. The tanks which had been steamed out together with the two which were not steamed were all washed down by hand with a hose. The sludge and scale were gathered up by means of copper scoops and the debris hauled to the deck by ferrous buckets. Lighting in the tanks was supplied by means of an extension cord and lamp of poor construction. There was no gasket in the handle of the light thus leaving ample room for the surrounding atmosphere to pass into the interior of the fixture by means of the annular space in the handle. In addition to

this the vapor-tight globe was not screwed into a gasketed, threaded socket but was held in place by means of two crossed bands. These bands were loose enough so that the globe could easily be moved from side to side. During the course of the washing an explosion occurred in one of the two tanks which had not been steamed, rapidly followed by another explosion in the second unsteamed tank. Fortunately no one was killed although three men were injured and $20,000 worth of damage was done to the barge.

After the explosion the portable extension cord referred to above was found with the electric light bulb shattered although the vapor globe was uninjured: It was not absolutely and definitely decided that the faulty electric fixture used in the tank caused the explosion. However, it is certain that it could have caused it, and in many cases in the past such rickety electric connections have caused trouble. In this case the Coast Guard points out that the explosion originated in one of the two unsteamed tanks and also points out that the use of a built-in steaming out fixture is not absolutely essential to steaming a tank. An equally good job can be done by leading a steam hose into the tank and fastening it to a ladder rung or stanchion and steaming the tank in this way instead of by means of a permanent fixture.

It is submitted that in this case two dangerous practices were indulged in. First of all a "botched up" electric connection was used in a tank which had not been gas-freed, and, second, two of the tanks were not steamed out by the workmen before entering them. It is a source of never ceasing wonder that, in spite of consistent efforts on the part of tank vessel owners to promote safety in operation, incidents as described still occur occasionally. In this case the owner lost the use of his barge for several weeks, he incurred a $20,000 repair bill, and will probably have damage suits from the injured workmen. Presumably the owner and the yard are covered by insurance, but insurance isn't the answer here. A little common sense in the cleaning operation would have prevented the whole casualty.

FIRE IN AN ASPHALT BARGE

A fire occurred on board a tank barge which was apparently caused by certain careless methods of cleaning tanks. The fire in question occurred during cleaning operations on the barge, which had been used for the carriage of emulsified asphalt. As is well known, asphalt is a black tarry substance, which is obtained mainly from Trinidad. It has a very high flash point but will burn under certain circumstances. At ordinary temperatures, however it is semisolid. It is used largely for surfacing roads. Emulsified asphalt consists of a solution of this material in water. It is a rusty red in color and is applied in the form of a spray. As the spray travels through the air it breaks down into water and finely divided asphalt which coats the surface sprayed. The object of this procedure is to enable road surfaces, etc., to be coated with asphalt without heating. The emulsion which is composed of 40 percent water and 60 percent asphalt is, of course, nonflammable in any practical sense.

A tank barge which had been engaged in carrying emulsified asphalt was being cleaned in a shipyard. The method of cleaning was as follows: Water was used to wash down the tanks and the resulting mixture of asphalt and water was then pumped out. The residue was removed by having men go into the tanks, and by means of long handled shovels, fill buckets with the debris, and then carry them out of the tanks.

On the morning of the accident four men were in one of the tanks removing the residue. No electric light or other artificial illumination was used and no air masks were worn. Information given the Coast Guard indicates that the men had a bucket of gasoline in the tank with them. The gasoline was being used to wash the asphalt off their hands. At approximately 9:30 a. m. a sudden intense fire occurred. All four of the men were able to climb out of the tank, but three of them died later from the burns received. No damage to the barge resulted. The fire was extinguished by means of a steam hose in 5 to 10 minutes.

The only clue to the cause of the fire is that the survivor stated that he saw a light similar to that made by a match being struck just prior to the fire. This might indicate that a cigarette had been lit. It is the opinion of the Coast Guard that vapors from the bucket of gasoline which the men were using to wash their hands had accumulated in sufficient quantities to form an explosive vapor in the tank. It is thought that this vapor was then ignited by a match and flashed back to the gasoline in the bucket.

The responsibility for this accident can be laid to the lack of adequate supervision on the part of the yard-foreman, and to lack of common sense on the part of the workmen. To have an open bucket of gasoline in a working space, for any purpose whatsoever, is so incredibly foolish and dangerous a procedure that it is hard to find sufficiently restrained language to condemn such a practice. Three of the four men working in the tank had barge-cleaning experience for periods of from 1 to 3 years. It seems impossible that these men

Don't Cross Over

There's a narrow invisible line separating sanity from insanity, caution from recklessness, safety from suicide. Invisible as it may be, the sane, cautious and safety minded person is fully aware of the presence of this line. He gives it a wide margin while pursuing the activities which daily occupy his hours, either at work or at play.

All too often we fail to realize just how close we are to that line dividing safety from suicide. Those who have thoughtlessly crossed over will long remember that it took but a split second to make the transition, but much, much longer for the recuperation. A careless step near moving machinery is a step nearer the line. Removing safety glasses while chipping rust takes but one quick motion of the hand—it's an even faster leap toward an injured or totally lost eye. Securing a pot of hot soup on the galley range calls for a few turns on the holding bracket. Neglecting to do this can mean that the next turns will be made with gauze dressing, around a badly burned arm or leg.

Now and then one hears of safety campaigns being conducted by certain groups. These campaigns serve to forcibly bring to our attention the need for conducting ourselves in a safe and sane manner. In this regard they are successful; however, it is not enough to act according to the rules of safety only when they are brought to our attention. We should remember that we and our neighbors must live and let live long after those campaigns are concluded. It is important, therefore, to forever guard against accidents which bring injury to ourselves and fellow workers. This we can accomplish by maintaining a continuous personal safety campagin. Being ever conscious of the rules of safety insures that we are never too close to that narrow, invisible line. If, through necessity, one must work dangerously close to it—be careful—don't cross over! *Courtesy, Lykes Fleet Flashes.*

should not have realized the danger of their action. The Coast Guard can only repeat that any procedure which allows gasoline vapor to form in a working space, particularly a confined one, is dangerous and should be avoided. In the instant case 3 men died because of the above described dangerous practice.

EXPLOSION OF EMPTY DIESEL OIL FUEL TANK

The vapors of gasoline, when mixed with the proper proportion of air, are highly explosive, a fact which is known to most men whose work requires them to handle this fuel. In some quarters, however, there seems to be an impression that the vapors of Diesel oil are not dangerous. This is a fallacy which in one recent casualty caused the death of a workman who was attempting to weld a leak in a Diesel oil tank.

As regards the explosive qualities of Diesel oil vapors these are of approximately the same order as those of gasoline. The reason that Diesel oil is safer to handle than gasoline is that it is not as volatile. Consequently the liquid does not evaporate as readily, and, therefore, at any given temperature gasoline will evolve a greater quantity of fumes than Diesel oil. When, however, due to heat or other circumstances, Diesel oil has evaporated, its vapors are as dangerous as those of gasoline and have only to be mixed with the correct proportion of air to form a combination merely awaiting a source of ignition to explode.

In the case referred to above an uninspected fishing vessel, powered with Diesel motors, developed a leak in one of its fuel tanks. A welder was sent for to repair the leak. As preparation for his operations, the tank was emptied of all fuel, but no attempt was made to gas-free it. The welder, who was equipped with a gasoline torch for welding the tank, seated himself on a stool at the end of the tank and prepared to weld the defective seam. A crew member was on deck close enough to maintain conversation while the welder was preparing to work. Shortly after the work was begun an explosion occurred which knocked the crew member down without injuring him to any extent and threw the welder against a column in the vessel, fracturing his skull. A fire ensued and due to the heat, gas, and smoke, the compartment containing the tanks could not be entered until the arrival of the town fire department approximately 10 or 15 minutes later, at which time firemen with gas masks extricated the welder from the tank room, placed him in an ambulance, and rushed him to the local hospital where he died approximately 10 hours later.

The lesson from this casualty is obvious—no tank which has contained oil fuel, even bunker C, should be worked on with a welding torch until it has been gas-freed. Sometime ago an accident similar to this caused the total loss of a large river steamer. In this latter case a licensed chief engineer attempted to weld a loose rivet in the top of a half empty fuel tank containing bunker C oil. An explosion ensued followed by a fire, which, as stated above, completely destroyed the vessel and caused the death of 19 people. The moral is that hydrocarbon vapors are highly inflammable, no matter from what type of oil they come.

A fool isn't a man who makes mistakes but rather a man who, once he realizes his mistakes, continues to make them.

APPENDIX

Amendments to Regulations

TITLE 46—SHIPPING

Chapter I—Coast Guard, Department of the Treasury

[CGFR 50-12]

MISCELLANEOUS AMENDMENTS TO CHAPTER

Notices regarding proposed changes in the inspection and navigation regulations were published in the FEDERAL REGISTER dated February 17 and March 17, 1950, 15 F. R. 871, 1515, and a public hearing was held by the Merchant Marine Council on March 28, 1950, in Washington, D. C.

The purpose of the miscellaneous amendments to the regulations is to clarify their intent, effect editorial changes, and establish additional safety requirements, as well as to change certain marine engineering requirements in accordance with recommendations included in the Interim Guide of the American Bureau of Shipping. The changes in the marine engineering regulations are in line with the recommendations made by an Advisory Panel of Metallurgists and Engineers to the American Bureau of Shipping. This document establishes new specifications for gas masks, self-contained breathing apparatus and supplied-air respirators, flame safety lamps, first-aid kits, life raft skids, and jackknife (with can opener). The specifications for first-aid kits and jackknives (with can opener) are prescribed at this time in order to give manufacturers an opportunity to have such items of equipment available when the 1948 International Convention for Safety of Life at Sea may become effective. All the written and oral comments, data, and suggestions submitted were considered by the Merchant Marine Council and where practicable were incorporated into the miscellaneous amendments to the regulations.

By virtue of the authority vested in me as Commandant, United States Coast Guard, by R. S. 4405, as amended, and section 101 of Reorganization Plan No. 3 of 1946, 46 U. S. C. 1, 375, as well as the statutes cited with the regulations below, the following amendments to the regulations are prescribed which shall become effective ninety (90) days after the date of publication of this document in the FEDERAL REGISTER, except for the amendment to 46 CFR 136.11–10 (b) which shall become effective on the date of publication in the FEDERAL REGISTER:

Subchapter F—Marine Engineering

PART 52—CONSTRUCTION

SUBPART 52.05—CYLINDRICAL SHELLS

1. Section 52.05–10 (b) is amended to read as follows:

§ 52.05–10 *Computations and factors of safety.* * * *

(b) The efficiency factor *E* for riveted joints and for ligaments between tube holes or other openings shall be calculated as set forth in § 52.10–10 (c). For other than riveted joints, the applicable values of *E* listed below shall be used in the above formulas:

1.0 for seamless shells.
0.95 for class I arc or gas welded shells where weld reinforcing is removed (§ 56.01–25).
0.9 for class I arc or gas welded shells where weld reinforcing is not removed (§ 56.01–25) and for brazed unfired pressure vessels (subpart 56.10).
0.8 for class II arc or gas welded shells (§ 56.01–30).
0.7 for shells of electric-resistance butt welded pipe.

0.65 for class III arc or gas welded shells (§ 56.01–35) not less than ¼ inch thick where the longitudinal joint is of the double welded butt type.

0.55 for class III arc or gas welded shells where the longitudinal joint is of the single welded butt or double welded lap type.

SUBPART 52.55—BOILER AND SUPERHEATER TUBES

2. Section 52.55–10 is amended by changing table 52.55–10 (a1) to read as follows:

§ 52.55–10 *Computations.* * * *

TABLE 52.55-10 (a1)—VALUES OF *S*—MAXIMUM ALLOWABLE STRESSES FOR TUBING

[Pounds per square inch]

Specification subpart	Grade	Minimum tensile strength, p. s. i.	Maximum mean wall temperature, °F.								
			650	700	750	800	850	900	950	1,000	1,050
Seamless carbon steel:											
51.25	A	48,000	9,400	9,000	8,100						
51.31	T192		9,400	9,000	8,600	7,900					
51.31	T210	60,000	12,000	11,400	10,400	9,100					
Seamless alloy steel:											
51.31	T1	55,000	11,000	11,000	11,000	10,700	10,500	10,000			
51.31	T1a	60,000	12,000	12,000	12,000	11,500	11,000	10,000			
51.31	T1b	53,000	10,600	10,600	10,600	10,400	10,200	10,000			
51.31	T3	60,000	12,000	12,000	12,000	11,800	11,200	10,000	8,000	5,800	3,800
51.31	T5	60,000	12,000	12,000	12,000	11,800	11,200	10,000	8,000	5,800	
51.31	T11	60,000	12,000	12,000	12,000	11,800	11,200	10,000	8,000	5,800	
51.31	T12	60,000	12,000	12,000	12,000	11,800	11,200	10,000	8,000	5,800	
51.31	T14	60,000	12,000	12,000	12,000	11,800	11,200	10,000	8,000	5,800	
51.31	T16	60,000	11,000	11,000	11,000	11,000	10,800	10,000	8,000	5,800	
51.31	T17	60,000	12,000	11,400	10,400	9,100	7,400	5,600			
51.31	T21	60,000	12,000	12,000	12,000	11,800	11,200	10,000	8,200	6,200	4,800
51.31	T22	60,000	12,000	12,000	12,000	11,800	11,200	10,000	8,200	6,200	4,800
Welded carbon steel:											
51.28	A		8,000	7,600	6,900	6,100					
51.28	C	60,000	10,200	9,700	8,400	7,000					
51.28	D	47,000	8,000	7,600	7,300	6,700					

PART 55—PIPING SYSTEMS, PUMPS, REFRIGERATION MACHINERY, AND FUEL TANKS

SUBPART 55.07—DETAIL REQUIREMENTS

1. Section 55.07–1 is amended by changing table 55.07–1 (b) and paragraph (c) to read as follows:

§ 55.07–1 *Material.* * * *

(b) * * *

TABLE 55.07-1 (b)—PIPING MATERIALS [1]

Material	Specification subpart	Grade	Maximum design		Limitation
			Pressures p. s. i.	Temperatures ° F.	
Steel pipe:					
Seamless-Carbon	51.34	A and B	None	800	
	51.37	A and B	None	750	
	51.34	P1 (C–Mo)	None	900	
	51.34	P280 (Cr–Mo)	None	950	
Seamless Alloy	51.34	P3a and P3b	None	1,050	
	51.34	P5a, P5b, and P5c	None	1,000	
	51.34	P11	None	1,050	
	51.34	P15	None	900	
Electric-resistance welded	51.37 51.40	A and B	350	650	
Furnace-Welded	51.37	Lap-welded	350	450	
	51.37	Butt-welded	150	450	
Wrought iron pipe: Furnace-Welded	51.43	Lap-welded	350	450	
	51.43	Butt-welded	150	450	
Brass pipe: Seamless	51.70	Red brass	None	406	
Copper pipe:					
Seamless	51.73		None	406	(2)
Brazed			75	320	(3)
Plates: Carbon Steel	51.04	A, B, C, D	150	650	(4) (5)
	51.22	C	150	650	(4) (5)

[1] The carbon content of material listed in table 55.07-1 (b) shall not exceed 0.35 percent if welded fabrication is to be employed.

[2] Copper pipe shall not be used for hot oil service other than short flexible connections at the burners. Copper pipe shall be annealed prior to installation for class I piping.

[3] Copper pipe fabricated with brazed longitudinal joints is permitted for water or saturated steam service for pressures not exceeding 75 p. s. i.

[4] Not permitted for hubbed flanges. Ring type flanges may be machined from plate.

[5] For temperatures exceeding 500° F. the pressure shall not exceed that permitted by table 55.07-15 (e12).

(c) Forged steel or cast steel, conforming to the requirements of subparts 51.46 and 51.58, may be used for the construction of valves and fittings for any system and for all pressures and temperatures covered by the regulations in this subchapter. Casting and forging material of carbon steel may be used in connection with design temperatures not exceeding 800° F. and carbon molybdenum alloy steel at design temperatures not exceeding 900° F. Special consideration will be given by the Commandant for the use of alloy steel castings and forgings at design temperatures exceeding 900° F. Grades C and D carbon steel forgings, subpart 51.46, may be used in the construction of valves and fittings for pressures and temperatures not exceeding those allowed for 300-pound service pressure rating for steel pipe flanges and flanged fittings.

(R. S. 4417a, 4418, 4426, 4427, 4429–4434, 4453, 4491; 29 Stat. 690, 41 Stat. 305, 49 Stat. 1544, 54 Stat. 346, 55 Stat. 244, as amended; 46 U. S. C. 1, 363, 366, 367, 391a, 392, 404, 405, 407–412, 435, 1333, 50 U. S. C. 1275)

2. Section 55.07–5 is amended by changing paragraphs (a) and (c) to read as follows:

§ 55.07–5 *Design pressures and thickness of pipes.* (a) (1) The maximum allowable pressure and minimum thickness of pipes shall be calculated by the following formulas:

$$P = \frac{2S\ (T-A)}{D-M\ (T-A)} \qquad (1)$$

$$T = \frac{PD}{2S+MP} + A \qquad (2)$$

Where:

P = maximum allowable pressure, p. s. i.[1]

T = minimum wall thickness of pipe, inches.[2]

D = external diameter of pipe, inches.

S = allowable fiber stress, p. s. i. (for pipe stresses see table 55.07-5 (a). When alloy steel tubing material is employed, the allowable fiber stresses shall comply with table 52.55–10 (a1)).

M = multiplier as given in table 55.07–5 (a).

A = allowance for threading or grooving.
= 0.05 inch for threaded pipe ⅜ inch and below.
= depth of thread h for threaded pipe ½ inch and above.
= depth of groove for grooved pipe.

[1] When computing the allowable pressure for a pipe, the pipe wall thickness used in formula (1) shall not be more than the minimum thickness resulting from the application of mill tolerances prescribed in the applicable pipe specifications for the material to be employed, including tubing material when used for piping. For bent sections of pipe, the reduction in wall thickness due to fabrication, in addition to the mill tolerance, shall be subtracted from the nominal pipe wall thickness to obtain the minimum pipe wall thickness.

Footnote [2] on p. 84.

TABLE 55.07-5 (a)—MAXIMUM FIBER STRESSES FOR PIPING

[Pounds per square inch]

FERROUS MATERIALS

Specification subpart	Grade	Minimum tensile strength p. s. i.	For temperatures not exceeding °F.[1]								
			650	700	750	800	850	900	950	1,000	1,050
			Multiplier "M"[1]								
			0.8	0.8	0.8	0.8	1.1	1.7	2.0	2.0	2.0
Seamless carbon steel:											
51.34	A	48,000	9,600	9,250	8,700	8,000					
51.34	B	60,000	12,000	11,400	10,400	9,100					
51.37	A	48,000	9,600	9,100	8,250						
51.37	B	60,000	12,000	11,400	9,950						
Seamless alloy steel:											
51.34	P1	55,000	11,000	11,000	11,000	10,750	10,500	10,000			
51.34	P280	55,000	11,000	11,000	11,000	10,750	10,500	10,000	8,000		
51.34	P3a	60,000	12,000	12,000	12,000	11,800	11,200	10,000	8,000	5,850	3,850
51.34	P3b	60,000	12,000	12,000	12,000	11,800	11,200	10,000	8,000	5,850	3,850
51.34	P5a	60,000	12,000	12,000	12,000	11,800	11,200	10,000	8,000	5,850	
51.34	P5b	60,000	12,000	12,000	12,000	11,800	11,000	8,800	6,000	4,200	
51.34	P5c	60,000	11,000	11,000	11,000	11,000	10,850	10,000	8,000	5,850	
51.34	P11	60,000	12,000	12,000	12,000	11,800	11,200	10,000	8,000	5,850	3,850
51.34	P15	60,000	12,000	12,000	12,000	11,500	11,000	10,000			
Electric-resistance-welded carbon steel:											
51.37	A	48,000	8,100								
Or											
51.40	B	60,000	10,200								
Furnace-welded:											
51.37	Steel	45,000	[2] 4,800								
51.43	Wrought iron	40,000	[2] 4,400								

NONFERROUS MATERIALS

Specification subpart	Grade	Minimum tensile strength p. s. i.	For temperatures not exceeding °F.[1]			
			250	300	350	[4] 400
Seamless pipe:						
51.70	Red brass	40,000	8,000	7,000	6,000	3,000
51.73	Copper	30,000	5,000	4,750	4,500	3,000
Brazed pipe	Copper		3,000	[3] 2,000		

[1] Intermediate values of S and M may be obtained by interpolation.
[2] Stress permitted for temperatures not to exceed 450° F.
[3] The same stress may be employed for 406° F.
[4] The same stress may be employed for 320° F.

(2) The value of P in the formula shall not be taken at less than 150 p. s. i. for class I piping nor less than 50 p. s. i. for nonferrous class II piping; however, copper piping shall be of not less than 0.065 inch in thickness except for lines below 1 inch in diameter, nor shall ferrous material to be fabricated by welding be of a thickness less than 0.120 inch.

* * * * *

(c) Carbon steel or wrought iron pipe shall have a wall thickness of not less than standard weight pipe. Where the installation of light wall pipe is deemed satisfactory, the use of pipe having a wall thickness less than standard weight will be given special consideration by the Commandant.

(R. S. 4417a, 4418, 4426, 4427, 4429–4434, 4453, 4491; 29 Stat. 690, 41 Stat. 305, 49 Stat. 1544, 54 Stat. 346, 55 Stat. 244, as amended; 46 U. S. C. 1, 363, 366, 367, 391a, 392, 404, 405, 407–412, 435, 1333, 50 U. S. C. 1275)

3. Section 55.07–15 is amended by changing paragraph (e) (2) and Table 55.07–15 (e12) to read as follows:

§ 55.07–15 *Joints and flanged connections.* * * *

(e) * * *

(2) The service pressure ratings for carbon steel pipe flanges and flanged fittings at design temperatures of 800° F. and below and for low alloy ferritic steel pipe flanges and flanged fittings at design temperatures of 1,000° F. and below shall conform to Tables 55.07–15 (e12) and (e13). Service pressure ratings for high alloy ferritic and austenitic steel pipe flanges and flanged fittings for use in connection with design temperatures exceeding 1,000° F. will be given special consideration by the Commandant.

SUBPART 55.10—PUMPING ARRANGEMENTS AND PIPING SYSTEMS

5. Section 55.10–10 is amended by changing paragraphs (e) and (f) to read as follows:

§ 55.10–10 *Boiler feed and condensate piping.* * * *

(e) (1) Stop valves and stop check valves shall be attached as close as possible to the feedwater inlet nozzles on boilers not fitted with integral economizers. Boilers fitted with integral economizers shall have a stop check valve fitted to the economizer inlet nozzle or alternatively stop and check valve(s) may be fitted. Where the installation will not permit of direct attachment, a distance piece may be installed between the inlet nozzle and the stop valve. A feed water regulator may be interposed between the stop and check valves.

(2) Under conditions where space limitations will not permit the attachment of feed valves near the feed water inlet nozzles, the location of the feed valves shall be subject to special consideration by the Commandant. However, the distance from the feed water inlet connections to the stop valves shall be kept as short as possible and the piping between the stop valves and the boiler drum or economizer shall be installed without flange connections and all butt-welded joints 4 inches and above in diameter shall be radiographed the full circumference of the welds, as required by § 56.05–5.

(f) Auxiliary feed lines shall be fitted with stop and stop check valves. The valves shall be fitted as close as possible to the junction with the main feed line where independent feed lines are not installed. Boilers not having an auxiliary feed water nozzle shall have the auxiliary feed line to the drum or economizer connected to the main feed line as close as possible to the feed inlet nozzle.

(R. S. 4417a, 4418, 4426, 4427, 4429–4434, 4453, 4491; 29 Stat. 690, 41 Stat. 305, 49 Stat. 1544, 54 Stat. 346, 55 Stat. 244, as amended; 46 U. S. C. 1, 363, 366, 367, 391a, 392, 404, 405, 407–412, 435, 1333, 50 U. S. C. 1275)

6. Section 55.10–70 is amended by changing paragraphs (e) and (f) to read as follows:

[2] The wall thickness to which the pipe or tubing is ordered shall not be less than the sum of the minimum wall thickness determined by formula (2), plus the mill tolerance, and the reduction in wall thickness due to bending.

NOTE: The depth of thread h may be determined by the formula $h=0.8/n$; where, n=the number of threads per inch, or from the following values: $h=0.100$ inch, 0.0696 inch, and 0.0571 inch, for 8, 11½, and 14 threads per inch, respectively.

TABLE 55.07-15 (e12)—SERVICE PRESSURE RATINGS FOR CARBON STEEL PIPE FLANGES AND FLANGED FITTINGS[1]

	Carbon steel flanges and flanged fittings at temperatures 800° F. and below with standard facings (other than ring joints)							Carbon steel flanges and flanged fittings at temperatures 800° F. and below with ring-joint facings						
Primary service pressure ratings	150	300	400	600	900	1,500	2,500	150	300	400	600	900	1,500	2,500
Maximum hydrostatic shell test pressures[2]	350	750	1,000	1,500	2,000	3,500	6,000	350	750	1,000	1,500	2,000	3,500	6,000
Service temperatures (° F.)	Maximum, nonshock, service pressure ratings							Maximum, nonshock, service pressure ratings						
100	230	500	670	1,000	1,500	2,500	4,170	275	600	800	1,200	1,800	3,000	5,000
150	220	480	640	960	1,440	2,400	4,000	255	575	765	1,150	1,725	2,875	4,790
200	210	465	620	930	1,395	2,325	3,875	240	550	730	1,100	1,650	2,750	4,580
Fluid 250	200	450	600	900	1,350	2,250	3,750	225	525	700	1,050	1,575	2,625	4,375
300	190	435	580	870	1,305	2,175	3,625	210	500	670	1,000	1,500	2,500	4,170
350	180	420	560	840	1,260	2,100	3,500	195	475	635	950	1,425	2,375	3,960
400	170	405	540	810	1,215	2,025	3,375	180	450	600	900	1,350	2,250	3,750
Water 450	160	390	520	780	1,170	1,950	3,250	165	425	565	850	1,275	2,125	3,540
500	[3] 150	375	500	750	1,125	1,875	3,125	[3] 150	400	530	800	1,200	2,000	3,330
550	140	360	480	720	1,080	1,800	3,000	140	380	505	760	1,140	1,900	3,165
600	130	345	460	690	1,035	1,725	2,875	130	360	480	720	1,080	1,800	3,000
Steam 650	120	330	440	660	990	1,650	2,750	120	340	450	680	1,020	1,700	2,830
700	110	315	420	630	945	1,575	2,625	110	320	425	640	960	1,600	2,665
750	100	[3] 300	[3] 400	[3] 600	[3] 900	[3] 1,500	[3] 2,500	100	[3] 300	[3] 400	[3] 600	[3] 900	[3] 1,500	[3] 2,500
800	85	250	335	500	750	1,250	2,085	85	250	335	500	750	1,250	2,085

[1] All pressures are in pounds per square inch, gauge.
[2] All tests shall be made with water at a temperature not to exceed 125° F.
[3] Primary service pressure rating.

(R. S. 4417a, 4418, 4426, 4427, 4429–4434, 4453, 4491; 29 Stat. 690, 41 Stat. 305, 49 Stat. 1544, 54 Stat. 346, 55 Stat. 244, as amended; 46 U. S. C. 1, 363, 366, 367, 391a, 392, 404, 405, 407–412, 435, 1333, 50 U. S. C. 1275)

4. Section 55.07–20 *Bolting* is amended by changing table 55.07–20 (c2) to read as follows:

TABLE 55.07-20 (c2)—MAXIMUM ALLOWABLE STRESSES[1]

Specification subpart	Grade	For metal temperature not exceeding °F.								
		−20 to 650	700	750	800	850	900	950	1000	1050
51.49	BA	16,200	14,900	13,600						
51.49	BB	18,700	17,200	15,600						
51.49	BC	20,000	18,300	16,700						
51.49	B4	20,000	20,000	20,000	20,000	16,200	12,500			
51.49	B5	20,000	20,000	20,000	20,000	17,200	13,700	10,300	7,300	
51.49	B6	20,000	18,400	16,700	14,300	11,800	8,400			
51.49	B7	20,000	20,000	20,000	20,000	16,200	12,500			
51.49	B7a	20,000	20,000	20,000	20,000	17,200	13,700	10,300	7,300	
51.49	B8	18,700	18,700	18,200	17,800	17,500	16,700	15,300	12,500	10,000
51.49	B8f	18,700	18,700	18,200						
51.49	B11	20,000	20,000	20,000	20,000	17,200	13,700	10,300	7,300	
51.49	B12	20,000	18,400	16,700						
51.49	B13	20,000	20,000	20,000	20,000	17,200	13,700	10,300	7,300	
51.49	B14	20,000	20,000	20,000	20,000	18,700	16,600	14,200	11,000	6,200
51.49	B15	20,000	20,000	20,000	20,000	17,200	13,700	10,300	7,300	
51.52		[2] 6,800								

[1] Material not permitted for temperatures exceeding 450° F.

§ 55.10–70 *Overboard discharges and shell connections.* * * *

(e) The inboard openings of ash and rubbish-chute discharges shall be fitted with efficient covers. If the inboard opening is located below the freeboard deck, the cover shall be watertight, and in addition, an automatic nonreturn valve shall be fitted in the chute in an easily accessible position above the deepest load line. Means shall be provided for securing both the cover and the valve when the chute is not in use. When ash ejectors or similar expelling devices located in the boiler room have the inboard openings below the deepest load line, they shall be fitted with efficient means for preventing the accidental admission of water. The thickness of pipe for ash-ejector discharge shall be not less than that of extra strong pipe.

(f) Pump connections led through the vessel's sides below the freeboard deck shall be fitted with shut-off valves located as near the shell plating as practicable. The thickness of pipe for pump connections shall be not less than that of extra strong pipe.

(R. S. 4417a, 4418, 4426, 4427, 4429–4434, 4453, 4491; 29 Stat. 690, 41 Stat. 305, 49 Stat. 1544, 54 Stat. 346, 55 Stat. 244, as amended; 46 U. S. C. 1, 363, 366, 367, 391a, 392, 404, 405, 407–412, 435, 1333, 50 U. S. C. 1275)

SUBPART 55.16—INDEPENDENT INTERNAL COMBUSTION ENGINE FUEL TANKS

7. Section 55.16–20 (a) is amended to read as follows:

§ 55.16–20 *Independent heavy oil tanks; cargo vessels.* (a) The construction of independent tanks for heavy fuel oil service on cargo vessels shall comply with § 55.16–10 (a).

(R. S. 4417a, 4418, 4426, 4427, 4429–4434, 4453, 4491; 29 Stat. 690, 41 Stat. 305, 49 Stat. 1544, 54 Stat. 346, 55 Stat. 244, as amended; 46 U. S. C. 1, 363, 366, 367, 391a, 392, 404, 405, 407–412, 435, 1333, 50 U. S. C. 1275)

PART 56—ARC WELDING, GAS WELDING, AND BRAZING

SUBPART 56.01—ARC WELDING AND GAS WELDING

1. Section 56.01–25 (c) is amended to read as follows:

§56.01–25 *Class I welding.* * * *

(c) The joint efficiency *E* for this class may be taken as 0.95 provided the weld reinforcement is removed so that the longitudinal weld(s) on both sides of the joint is substantially flush with the surface of the plate(s), and on all intersecting butt-welded circumferential joints the reinforcement is similarly removed five times the plate thickness (or 6 inches whichever is the less) on each side adjacent to any longitudinal joint. For butt-welded joints where the reinforcement is not removed the joint efficiency *E* shall be taken as 0.90.

(R. S. 4417a, 4418, 4426, 4427, 4429–4434, 4453, 4491; 29 Stat. 690, 41 Stat. 305, 49 Stat. 1544, 54 Stat. 346, 55 Stat. 244, as amended; 46 U. S. C. 1, 363, 366, 367, 391a, 392, 404, 405, 407–412, 435, 1333, 50 U. S. C. 1275)

2. Section 56.01–70 (f) (4) is amended to read as follows:

§ 56.01–70 *Preheating and stress relieving.* * * *

(f) * * *

(4) Pipe shall be stress-relieved by heating a circumferential band having a width of at least 3 times the width of the widest part of the welding groove but not less than 6 times the maximum wall thickness at the weld with the weld at the center of the band. Where pipe is welded to a valve the heated zone may be decreased on the valve side of the joint to a minimum of one times the width

of the weld reinforcement measured from the edge of the reinforcement toward the valve.

(R. S. 4417a, 4418, 4426, 4427, 4429–4434, 4453, 4491; 29 Stat. 690, 41 Stat. 305, 49 Stat. 1544, 54 Stat. 346, 55 Stat. 244, as amended; 46 U. S. C. 1, 363, 366, 367, 391a, 392, 404, 405, 407–412, 435, 1333, 50 U. S. C. 1275)

SUBPART 56.05—TESTS AND INSPECTION

3. Section 56.05–1 (n) is amended to read as follows:

§ 56.05–1 *Test plates.* * * *

(n) (1) The tension-test specimen of the joint shall be transverse to the welded joint and shall be of the full thickness of the plate after the weld reinforcement has been machined flush. The form and dimensions shall be as shown in figure 56.05–1 (n1). When the capacity of the available testing machine does not permit testing a specimen of the full thickness of the welded plate, the specimen may be cut with a thin saw into as many portions of the thickness as necessary, as shown in figure 56.05–1 (n2), each of which shall meet the requirements. The tensile strength of the joint specimen when it breaks in the weld shall not be less than the minimum of the specified tensile range of the plate used. If the specimen breaks in the plate at not less than 95 percent of the minimum specified tensile range of the plate and the weld shows no sign of weakness, the test is considered acceptable.

(2) Boiler drums fabricated of plate of thicknesses of ⅝-inch or greater shall have a tension-test specimen of the weld metal machined to form as shown in figure 56.05–1 (n3) taken entirely from the deposited metal. The all-weld tension test specimen shall have a tensile strength of not less than the minimum of the range of the plate which is welded and shall have a minimum elongation in 2 inches of not less than 20 percent.

(R. S. 4417a, 4418, 4426, 4427, 4429–4434, 4453, 4491; 29 Stat. 690, 41 Stat. 305, 49 Stat. 1544, 54 Stat. 346, 55 Stat. 244, as amended; 46 U. S. C. 1, 363, 366, 367, 391a, 392, 404, 405, 407–412, 435, 1333, 50 U. S. C. 1275)

Subchapter G—Ocean and Coastwise: General Rules and Regulations

PART 59—BOATS, RAFTS, BULKHEADS, AND LIFESAVING APPLIANCES (OCEAN)

1. Section 59.6 is amended to read as follows:

§ 59.6 *Lifeboats required on vessels of class* (c). (a) Cargo vessels shall carry a sufficient number of lifeboats on each side to accommodate all persons on board.

(b) Towing, fishing, and wrecking vessels, and vessels in special service not carrying passengers or cargo, shall carry sufficient lifeboats to accommodate all persons on board, and the following types of boats may be used in lieu of the standard lifeboats:

(1) Vessels engaged exclusively in the business of purse seining may use their seine boats.

(2) Vessels engaged exclusively in the business of wrecking may use their surf boats.

(3) Vessels engaged exclusively in the business of hook-and-line fishing from dories may use their dories when such dories are fitted with air tanks of sufficient capacity to meet the rule for necessary air-tank equipment.

(4) Vessels engaged exclusively in the business of furnishing pilots to vessels may use their launches and/or yawls when the total capacity of such launches and/or yawls is sufficient to accommodate all persons on board.

(R. S. 4488, 4491; 49 Stat. 1544, 54 Stat. 346, 55 Stat. 244, as amended; 46 U. S. C. 367, 481, 489, 1333, 50 U. S. C. 1275)

2. Section 59.14 *Inspection of lifeboats when built* is deleted.

3. Section 59.43 *Inspection of life rafts when built* is deleted.

4. Section 59.44 is amended to read as follows:

§ 59.44 *Construction and stowage of life rafts.* Life rafts shall be of an approved type. For new vessels and replacements on existing vessels, life rafts shall be of the Type A, constructed in accordance with subpart 160.018 of Subchapter Q of this chapter, and shall be stowed on standard life raft skids constructed in accordance with subpart 160.042 of Subchapter Q of this chapter. Where the use of standard life raft skids is not practicable, other means of stowage will be given special consideration.

(R. S. 4481, 4488, 4492, 35 Stat. 428, 49 Stat. 1544, 54 Stat. 346, 55 Stat. 244, as amended; 46 U. S. C. 367, 396, 474, 481, 490, 1333, 50 U. S. C. 1275)

PART 60—BOATS, RAFTS, BULKHEADS, AND LIFESAVING APPLIANCES (COASTWISE)

1. Section 60.4 is amended to read as follows:

§ 60.4 *Lifeboats required on vessels of class* (c). (See § 59.6 of this chapter, as amended, which is identical with this section.)

2. Section 60.11 *Inspection of lifeboats when built* is deleted.

3. Section 60.30 *Inspection of life rafts when built* is deleted.

4. Section 60.31 is amended to read as follows:

§ 60.31 *Construction and stowage of life rafts.* (See § 59.44 of this chapter, as amended, which is identical with this section.)

PART 62—SPECIAL OPERATING REQUIREMENTS

Part 62 is amended by adding a new § 62.40 reading as follows:

§ 62.40 *Marking of fire and emergency equipment, etc.* Marking of fire and emergency apparatus, watertight doors, lifeboat embarkation stations and direction signs, stateroom notices, instructions for changing steering gears, etc., shall be carried out as set forth in the succeeding paragraphs:

(a) *General alarm bell switch.* The general alarm bell switch in the pilothouse or fire control station shall be clearly marked with lettering on a brass plate or with a sign in red letters on suitable background: "GENERAL ALARM."

(b) *General alarm bells.* General alarm bells shall be marked in not less than ½-inch red letters: "GENERAL ALARM—WHEN BELL RINGS GO TO YOUR STATION."

(c) *Manual alarm boxes.* If not clearly marked "FIRE ALARM—BREAK GLASS" or "IN CASE OF FIRE BREAK GLASS," manual alarm boxes shall be marked in ½-inch letters "IN CASE OF FIRE BREAK GLASS." Each box shall be numbered in red using not less than 1-inch figures.

(d) *Manual alarm bells.* The manual alarm bells on bridge, in engine room, and in fire control station and crew quarters shall be marked "MANUAL FIRE ALARM" in not less than 1-inch red letters.

(e) *Sprinkler alarm bells.* The sprinkler alarm bells on bridge, in engine room and fire control station shall be marked "SPRINKLER ALARM ZONE NO. 1," 2, 3, etc.

(f) *Sprinkler zone valves.* Each sprinkler zone valve shall be numbered in not less than 2-inch red letters and figures or marked with a legible brass plate.

(g) *Steam, foam or CO_2 fire smothering apparatus.* Steam, foam or CO_2 fire smothering apparatus shall be marked "STEAM FIRE APPARATUS" or "FOAM FIRE APPARATUS" or "CO_2 FIRE APPARATUS" as appropriate in not less than 2-inch red letters. The valves of all branch piping leading to the several compartments shall be distinctly marked to indicate the compartments or parts of the vessel to which they lead.

(h) *Fire hose stations.* At each fire hose valve there shall be marked in not less than 2-inch red letters and figures "FIRE STATION 1," 2, 3, etc.

(i) *Watchman detex clock key station.* Each watchman detex clock key station shall be numbered in not less than 1-inch red figures.

(j) *Emergency squad equipment.* Lockers or spaces containing equipment for use of the emergency squad shall be marked "EMERGENCY SQUAD EQUIPMENT." Lockers or spaces where oxygen or fresh air breathing apparatus is stowed shall be marked "OXYGEN BREATHING APPARATUS" or "FRESH AIR BREATHING APPARATUS" as appropriate.

(k) *Fire extinguishers.* Each fire extinguisher shall be marked with a number, and the location where stowed shall be marked in corresponding numbers in not less than 1-inch figures.

(l) *Exit signs on passenger vessels.* An illuminated sign bearing the word "EXIT" shall be displayed at the exit from any main compartment occupied by passengers or crew and shall be illuminated by an emergency light. The signs shall be so arranged in corridors that they can be seen from a distance.

(m) *Emergency lights on passenger vessels.* The emergency lights shall be marked with a red letter "E" of at least 1 inch in height.

(n) *Fire screen door on passenger vessels.* Each fire screen door shall be numbered in not less than 2-inch letters and figures, viz: "F. S. D. 1," 2, 3, etc. The color of the letters and figures shall be in contrast to the background.

(o) *Fire screen doors emergency exits on passenger vessels.* Fire screen door emergency exits shall be marked "EMERGENCY EXIT" in 2-inch letters as follows:

(1) On compartment side of fire screen doors;

(2) On corridor side of stair well doors; and,

(3) On inside of stair well doors leading to embarkation deck.

The signs shall be so located as to insure that passengers and crew may be properly directed to embarkation stations in emergencies under the premise that the doors have been closed. Color of marking should be most legible in contrast to the background.

(p) *Watertight doors on passenger vessels.* Each watertight door shall be numbered in at least 2-inch letters and figures "W. T. D. 1," 2, 3, etc. The color of the marking shall be in contrast to the background. All watertight door remote hand closing stations shall be marked in at least 2-inch letters and figures "W. T. D. 1," 2, 3, etc. The direction of operation of the lever or wheel provided to close or open the door at all watertight door remote hand closing stations shall be marked. The color of the sign shall contrast with the background.

(q) *Lifeboat stations on passenger vessels.* There shall be placed on deck beams or suspended from overhead at each lifeboat station on embarkation deck a sign in 3-inch letters "LIFEBOAT STATION NO. 1," 2, etc. If there is no overhead structure at a boat station, a similar sign shall be placed in a position where it will readily be seen.

(r) *Embarkation direction signs to lifeboats on passenger vessels.* (1) Embarkation direction signs shall be located in alleyways, corridors and stair wells. They shall be of 1-inch letters with arrows indicating the shortest route to follow to reach lifeboats. The arrow shall be of appropriate dimensions, viz:

TO BOATS →

TO BOATS ←

(2) The signs near the exits to the embarkation deck shall be marked with the numbers of the boat stations nearest to such exits, viz:

TO BOAT STATIONS NOS.
1, 3, 5
(or 2, 4, 6, etc.) →

(3) Any combination of arrows and 1-inch lettering which will clearly indicate the direction to be followed will be acceptable.

(s) *Stateroom notices.* (1) Framed notices shall be conspicuously posted in the passenger staterooms indicating the following:

EMERGENCY SIGNALS

"FIRE AND EMERGENCY—CONTINUOUS RAPID RINGING OF THE SHIP'S BELL AND OF THE GENERAL ALARM BELLS FOR A PERIOD OF NOT LESS THAN TEN SECONDS.

"ABANDON SHIP (OR BOAT STATIONS)—MORE THAN SIX SHORT BLASTS AND ONE LONG BLAST OF THE WHISTLE SUPPLEMENTED BY THE SAME SIGNAL ON THE GENERAL ALARM BELLS.

"THE OCCUPANTS OF THIS ROOM ARE ASSIGNED TO LIFEBOAT NO. ____. ALL PASSENGERS ARE REQUIRED TO PUT ON LIFE PRESERVERS AND GO TO THEIR LIFEBOAT STATIONS WHENEVER GENERAL ALARM BELLS RING.

"THE ROOM STEWARD WILL PROVIDE LIFE PRESERVERS FOR CHILDREN AT THE START OF THE VOYAGE."

(2) Location of life preservers together with instructions and pictures showing how they are to be worn shall be indicated on the notice.

(t) *Children's life preservers.* The lockers or boxes in which children's life preservers are stowed and also the number contained therein shall be marked in not less than 2-inch letters and figures, viz:

"20"
"CHILDREN'S LIFE PRESERVERS"

(u) *Instructions for changing steering gear.* Instructions in at least 1-inch letters and figures shall be posted at each emergency steering station and in the steering engine room, relating in order, the different steps to be taken in changing to the emergency steering gear. Each clutch, gear, wheel, lever, valve, or switch which is used during the changeover shall be numbered or lettered on a brass plate or painted so that the markings can be recognized at a reasonable distance. The instructions shall indicate each clutch or pin to be "in" or "out" and each valve or switch which is to be "opened" or "closed" in shifting to any means of steering for which the vessel is equipped. Instructions shall be included to line up all steering wheels and rudder amidship before changing gears.

(v) *Rudder orders.* At all steering stations, there shall be installed a suitable notice on the wheel or device or in such other position as to be directly in the helmsman's line of vision, to indicate the direction in which the wheel or device must be turned for "right rudder" and for "left rudder."

(w) *Vessel's name on equipment.* All lifeboats, rafts, floats, buoyant apparatus, including equipment, also life preservers, ring buoys, fire hose, and axes shall be painted or branded with the name of the vessel.

(R. S. 4405, 4426, 4488; 49 Stat. 1544, 54 Stat. 346, 1028, 55 Stat. 244, as amended; 46 U. S. C. 367, 375, 404, 463a, 481, 1333, 50 U. S. C. 1275)

PART 65—STEAM YACHTS

Section 65.12 *Inspection of lifeboats when built* is deleted.

Subchapter H—Great Lakes: General Rules and Regulations

PART 76—BOATS, RAFTS, BULKHEADS, AND LIFESAVING APPLIANCES

1. Section 76.17 *Inspection of lifeboats when built* is deleted.

2. Section 76.33 *Inspection of life rafts when built* is deleted.

PART 78—SPECIAL OPERATING REQUIREMENTS

1. Part 78 is amended by adding a new § 78.15 reading as follows:

§ 78.15 *Posting placard containing instructions for use of breeches buoy.* A placard containing instructions for use of breeches buoy gear, Form CG

811, shall be posted in the pilothouse, engine room, and in the seamen's, firemen's, and stewards' departments of every vessel of 150 gross tons or over subject to inspection by the Coast Guard.

(R. S. 4405, 4426, 4488; 55 Stat. 244, as amended; 46 U. S. C. 375, 404, 481, and 50 U. S. C. 1275)

2. Part 78 is amended by adding a new § 78.40 reading as follows:

§ 78.40 *Marking of fire and emergency equipment, etc.* Marking of fire and emergency apparatus, watertight doors, lifeboat embarkation stations and direction signs, stateroom notices, instructions for changing steering gears, etc., shall be carried out as set forth in the succeeding paragraphs:

(a) *General alarm bell switch.* The general alarm bell switch in the pilothouse or fire control station shall be clearly marked with lettering on a brass plate or with a sign in red letters on suitable background: "GENERAL ALARM."

(b) *General alarm bells.* General alarm bells shall be marked in not less than ½-inch red letters: "GENERAL ALARM—WHEN BELL RINGS GO TO YOUR STATION."

(c) *Manual alarm boxes.* If not clearly marked "FIRE ALARM—BREAK GLASS" or "IN CASE OF FIRE BREAK GLASS," manual alarm boxes shall be marked in ½-inch letters "IN CASE OF FIRE BREAK GLASS." Each box shall be numbered in red using not less than 1-inch figures.

(d) *Manual alarm bells.* The manual alarm bells on bridge, in engine room, and in fire control station and crew quarters shall be marked "MANUAL FIRE ALARM" in not less than 1-inch red letters.

(e) *Sprinkler alarm bells.* The sprinkler alarm bells on bridge, in engine room and fire control station shall be marked "SPRINKLER ALARM ZONE NO. 1," 2, 3, etc.

(f) *Sprinkler zone valves.* Each sprinkler zone valve shall be numbered in not less than 2-inch red letters and figures or marked with a legible brass plate.

(g) *Steam, foam or CO_2 fire smothering apparatus.* Steam, foam or CO_2 fire smothering apparatus shall be marked "STEAM FIRE APPARATUS" or "FOAM FIRE APPARATUS" or "CO_2 FIRE APPARATUS" as appropriate in not less than 2-inch red letters. The valves of all branch piping leading to the several compartments shall be distinctly marked to indicate the compartments or parts of the vessel to which they lead.

(h) *Fire hose stations.* At each fire hose valve there shall be marked in not less than 2-inch red letters and figures "FIRE STATION 1," 2, 3, etc.

(i) *Watchman detex clock key station.* Each watchman detex clock key station shall be numbered in not less than 1-inch red figures.

(j) *Emergency squad equipment.* Lockers or spaces containing equipment for use of the emergency squad shall be marked "EMERGENCY SQUAD EQUIPMENT." Lockers or spaces where oxygen or fresh air breathing apparatus is stowed shall be marked "OXYGEN BREATHING APPARATUS" or "FRESH AIR BREATHING APPARATUS" as appropriate.

(k) *Fire extinguishers.* Each fire extinguisher shall be marked with a number and the location where stowed shall be marked in corresponding numbers in not less than 1-inch figures.

(l) *Exit signs on passenger vessels.* An illuminated sign bearing the word "EXIT" shall be displayed at the exit from any main compartment occupied by passengers or crew and shall be illuminated by an emergency light. The signs shall be so arranged in corridors that they can be seen from a distance.

(m) *Emergency lights on passenger vessels.* The emergency lights shall be marked with a red letter "E" of at least 1 inch in height.

(n) *Fire screen doors on passenger vessels.* Each fire screen door shall be numbered in not less than 2-inch letters and figures, viz: "F. S. D. 1," 2, 3, etc. The color of the letters and figures shall be in contrast to the background.

(o) *Fire screen door emergency exits on passenger vessels.* Fire screen door emergency exits shall be marked "EMERGENCY EXIT" in 2-inch letters as follows:

(1) On compartment side of fire screen doors,

(2) On corridor side of stair well doors,

(3) On inside of stair well doors leading to embarkation deck.

The signs shall be so located as to insure that passengers and crew may be properly directed to embarkation stations in emergencies under the premise that the doors have been closed. Color of marking should be most legible in contrast to the background.

(p) *Watertight doors in passenger vessels.* Each watertight door shall be numbered in at least 2-inch letters and figures "W. T. D. 1," 2, 3, etc. The color of the marking shall be in contrast to the background. All watertight door remote hand closing stations shall be marked in at least 2-inch letters and figures "W. T. D. 1," 2, 3, etc. The direction of operation of the lever or wheel provided to close or open the door at all watertight door remote hand closing stations shall be marked. The color of the sign shall contrast with the background.

(q) *Lifeboat stations on passenger vessels.* There shall be placed on deck beams or suspended from overhead at each lifeboat station on embarkation deck a sign in 3-inch letters "LIFEBOAT STATION NO. 1," 2, etc. If there is no overhead structure at a boat station, a similar sign shall be placed in a position where it will readily be seen.

(r) *Embarkation direction signs to lifeboats on passenger vessels.* (1) Embarkation direction signs shall be located in alleyways, corridors, and stair wells, they shall be of 1-inch letters with arrows indicating the shortest route to follow to reach lifeboats. The arrow shall be of appropriate dimensions, viz:

TO BOATS →
TO BOATS ←

(2) The signs near the exits to the embarkation deck shall be marked with the numbers of the boat stations nearest to such exits, viz:

TO BOAT STATIONS NOS.
1, 3, 5
(or 2, 4, 6, etc.) →

(3) Any combination of arrows and 1-inch lettering which will clearly indicate the direction to be followed will be acceptable.

(s) *Stateroom notices.* (1) Framed notices shall be conspicuously posted in the passenger staterooms indicating the following:

EMERGENCY SIGNALS

"FIRE AND EMERGENCY—CONTINUOUS RAPID RINGING OF THE SHIP'S BELL AND OF THE GENERAL ALARM BELLS FOR A PERIOD OF NOT LESS THAN TEN SECONDS.

"ABANDON SHIP (OR BOAT STATIONS)—MORE THAN SIX SHORT BLASTS AND ONE LONG BLAST OF THE WHISTLE SUPPLEMENTED BY THE SAME SIGNAL ON THE GENERAL ALARM BELLS.

"THE OCCUPANTS OF THIS ROOM ARE ASSIGNED TO BOAT STATION NO. _____. ALL PASSENGERS ARE REQUIRED TO PUT ON LIFE PRESERVERS AND GO TO THEIR BOAT STATIONS WHENEVER GENERAL ALARM BELLS RING.

"THE ROOM STEWARD WILL PROVIDE LIFE PRESERVERS FOR CHILDREN AT THE START OF THE VOYAGE."

(2) Location of life preservers together with instructions and pictures showing how they are to be worn shall be indicated on the notice.

(t) *Children's life preservers.* The lockers or boxes in which children's life preservers are stowed and also the number contained therein shall be marked in not less than 2-inch letters and figures, viz:

"20"
"CHILDREN'S LIFE PRESERVERS"

(u) *Instructions for changing steering gear.* Instructions in at least 1-inch letters and figures shall be posted at each emergency steering station and in the steering engine room, relating in order, the different steps to be taken in changing to the emergency steering gear. Each clutch, gear, wheel, lever, valve or switch which is used during the changeover shall be numbered or lettered on a brass plate or painted so that the markings can be recognized at a reasonable distance. The instructions shall indicate each clutch or pin to be "in" or "out" and each valve or switch which is to be "opened" or "closed" in shifting to any means of steering for which the vessel is equipped. Instructions shall be included to line up all steering wheels and rudder amidship before changing gears.

(v) *Rudder orders.* At all steering stations, there shall be installed a suitable notice on the wheel or device or in such other position as to be directly in the helmsman's line of vision, to indicate the direction in which the vessel or device must be turned for "right rudder" and for "left rudder."

(w) *Vessel's name on equipment.* All lifeboats, rafts, floats, including equipment, also life preservers, ring buoys, fire hose and axes, shall be painted or branded with the name of the vessel.

(R. S. 4405, 4426, 4488; 54 Stat. 346, 1028, 55 Stat. 244, as amended; 46 U. S. C. 375, 404, 463a, 481, 1333, 50 U. S. C. 1275)

PART 79—INSPECTION OF VESSELS

Section 79.17 *Posting of instructions for using gun apparatus* is deleted. (The requirements in this section have been transferred to § 78.15.)

Subchapter I—Bays, Sounds, and Lakes Other Than the Great Lakes: General Rules and Regulations

PART 94—BOATS, RAFTS, BULKHEADS, AND LIFESAVING APPLIANCES

1. Part 94 is amended by adding a new § 94.9a reading as follows:

§ 94.9a *Launches and yawls.* Vessels engaged exclusively in the business of furnishing pilots to vessels may substitute their launches and/or yawls for the lifeboats required by § 94.3: *Provided*, That the total capacity of such launches and/or yawls is sufficient to accommodate all persons on board.

(R. S. 4405, 4426, 4488, 4491; 55 Stat. 244, as amended; 46 U. S. C. 375, 404, 481, 489, 50 U. S. C. 1275)

2. Section 94.16 *Inspection of lifeboats when built* is deleted.

3. Section 94.33 *Inspection of life rafts when built* is deleted.

PART 96—SPECIAL OPERATING REQUIREMENTS

Part 96 is amended by adding a new § 96.40 reading as follows:

§ 96.40 *Marking of fire and emergency equipment, etc.* Marking of fire and emergency apparatus, watertight doors, lifeboat embarkation stations and direction signs, stateroom notices, instructions for changing steering gears, etc., shall be carried out as set forth in the succeeding paragraphs:

(a) *General alarm bell switch.* The general alarm bell switch in the pilothouse or fire control station shall be clearly marked with lettering on a brass plate or with a sign in red letters on suitable background: "GENERAL ALARM."

(b) *General alarm bells.* General alarm bells shall be marked in not less than ½-inch red letters: "GENERAL ALARM—WHEN BELL RINGS GO TO YOUR STATION."

(c) *Manual alarm boxes.* If not clearly marked "FIRE ALARM—BREAK GLASS" or "IN CASE OF FIRE BREAK GLASS," manual alarm boxes shall be marked in ½-inch letters "IN CASE OF FIRE BREAK GLASS." Each box shall be numbered in red using not less than 1-inch figures.

(d) *Manual alarm bells.* The manual alarm bells on bridge, in engine room, and in fire control station and crew quarters shall be marked "MANUAL FIRE ALARM" in not less than 1-inch red letters.

(e) *Sprinkler alarm bells.* The sprinkler alarm bells on bridge, in engine room and fire control station shall be marked "SPRINKLER ALARM ZONE NO. 1," 2, 3, etc.

(f) *Springler zone valves.* Each sprinkler zone valve shall be numbered in not less than 2-inch red letters and figures or marked with a legible brass plate.

(g) *Steam, foam or CO_2 fire smothering apparatus.* Steam, foam or CO_2 fire smothering apparatus shall be marked "STEAM FIRE APPARATUS" or "FOAM FIRE APPARATUS" or "CO_2 FIRE APPARATUS" as appropriate in not less than 2-inch red letters. The valves of all branch piping leading to the several compartments shall be distinctly marked to indicate the compartments or parts of the vessel to which they lead.

(h) *Fire hose stations.* At each fire hose valve there shall be marked in not less than 2-inch red letters and figures "FIRE STATION 1," 2, 3, etc.

(i) *Watchman detex clock key station.* Each watchman detex clock key station shall be numbered in not less than 1-inch red figures.

(j) *Emergency squad equipment.* Lockers or spaces containing equipment for use of the emergency squad shall be marked "EMERGENCY SQUAD EQUIPMENT." Lockers or spaces where oxygen or fresh air breathing apparatus is stowed shall be marked "OXYGEN BREATHING APPARATUS" or "FRESH AIR BREATHING APPARATUS" as appropriate.

(k) *Fire extinguishers.* Each fire extinguisher shall be marked with a number and the location where stowed shall be marked in corresponding numbers in not less than 1-inch figures.

(l) *Exit signs on passenger vessels.* An illuminated sign bearing the word "EXIT" shall be displayed at the exit from any main compartment occupied by passengers or crew and shall be illuminated by an emergency light. The signs shall be so arranged in corridors that they can be seen from a distance.

(m) *Emergency lights on passenger vessels.* The emergency lights shall be marked with a red letter "E" of at least 1 inch in height.

(n) *Fire screen doors on passenger vessels.* Each fire screen door shall be numbered in not less than 2-inch letters and figures, viz: "F. S. D. 1," 2, 3, etc. The color of the letters and figures shall be in contrast to the background.

(o) *Fire screen door emergency exits on passenger vessels.* Fire screen door emergency exits shall be marked

"EMERGENCY EXIT" in 2-inch letters as follows:

(1) On compartment side of fire screen doors;

(2) On corridor side of stair well doors; and,

(3) On inside of stair well doors leading to embarkation deck.

The signs shall be so located as to insure that passengers and crew may be properly directed to embarkation stations in emergencies under the premise that the doors have been closed. Color or marking should be most legible in contrast to the background.

(p) *Watertight doors on passenger vessels.* Each watertight door shall be numbered in at least 2-inch letters and figures "W. T. D. 1," 2, 3, etc. The color of the marking shall be in contrast to the background. All watertight door remote hand closing stations shall be marked in at least 2-inch letters and figures "W. T. D. 1," 2, 3, etc. The direction of operation of the lever or wheel provided to close or open the door at all watertight door remote hand closing stations shall be marked. The color of the sign shall contrast with the background.

(q) *Lifeboat stations on passenger vessels.* There shall be placed on deck beams or suspended from overhead at each lifeboat station on embarkation deck a sign in 3-inch letters "LIFEBOAT STATION NO. 1," 2, etc. If there is no overhead structure at a boat station, a similar sign shall be placed in a position where it will readily be seen.

(r) *Embarkation direction signs to lifeboats on passenger vessels.* (1) Embarkation direction signs shall be located in alleyways, corridors, and stair wells, they shall be of 1 inch letters with arrows indicating the shortest route to follow to reach lifeboats. The arrow shall be of appropriate dimensions, viz:

TO BOATS →

TO BOATS ←

(2) The signs near the exits to the embarkation deck shall be marked with the numbers of the boat stations nearest to such exits, viz:

TO BOAT STATIONS NOS.
1, 3, 5
(or 2, 4, 6, etc.) →

(3) Any combination of arrows and 1-inch lettering which will clearly indicate the direction to be followed will be acceptable.

(s) *Stateroom notices.* (1) Framed notices shall be conspicuously posted in the passenger staterooms indicating the following:

EMERGENCY SIGNALS

"FIRE AND EMERGENCY—CONTINUOUS RAPID RINGING OF THE SHIP'S BELL AND OF THE GENERAL ALARM BELLS FOR A PERIOD OF NOT LESS THAN TEN SECONDS.

"ABANDON SHIP (OR BOAT STATIONS)—MORE THAN SIX SHORT BLASTS AND ONE LONG BLAST OF THE WHISTLE SUPPLEMENTED BY THE SAME SIGNAL ON THE GENERAL ALARM BELLS.

"THE OCCUPANTS OF THIS ROOM ARE ASSIGNED TO BOAT STATION NO. ___. ALL PASSENGERS ARE REQUIRED TO PUT ON LIFE PRESERVERS AND GO TO THEIR BOAT STATIONS WHENEVER GENERAL ALARM BELLS RING.

"THE ROOM STEWARD WILL PROVIDE LIFE PRESERVERS FOR CHILDREN AT THE START OF THE VOYAGE."

(2) Location of life preservers together with instructions and pictures showing how they are to be worn shall be indicated on the notice.

(t) *Children's life preservers.* The lockers or boxes in which children's life preservers are stowed and also the number contained therein shall be marked in not less than 2-inch letters and figures, viz:

"20"
"CHILDREN'S LIFE PRESERVERS"

(u) *Instructions for changing steering gear.* Instructions in at least 1-inch letters and figures shall be posted at each emergency steering station and in the steering engine room, relating in order, the different steps to be taken in changing to the emergency steering gear. Each clutch, gear, wheel, lever, valve or switch which is used during the changeover shall be numbered or lettered on a brass plate or painted so that the markings can be recognized at a reasonable distance. The instructions shall indicate each clutch or pin to be "in" or "out" and each valve or switch which is to be "opened" or "closed" in shifting to any means of steering for which the vessel is equipped. Instructions shall be included to line up all steering wheels and rudder amidship before changing gears.

(v) *Rudder orders.* At all steering stations, there shall be installed a suitable notice on the wheel or device or in such other position as to be directly in the helmsman's line of vision, to indicate the direction in which the vessel or device must be turned for "right rudder" and for "left rudder."

(w) *Vessel's name on equipment.* All lifeboats, rafts, floats, including equipment, also life preservers, ring buoys, fire hose and axes, shall be painted or branded with the name of the vessel.

(R. S. 4405, 4426, 4488; 54 Stat. 346, 1028; 55 Stat. 244, as amended; 46 U. S. C. 375, 404, 463a, 481, 1333, 50 U. S. C. 1275)

PART 102—BAY, SOUND AND LAKE STEAM YACHTS

Section 102.7 *Inspection of lifeboats when built* is deleted.

Subchapter J—Rivers: General Rules and Regulations

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

1. Section 113.11 *Inspection of lifeboats when built* is deleted.

2. Section 113.30 *Inspection of life rafts when built* is deleted.

PART 115—SPECIAL OPERATING REQUIREMENTS

Part 115 is amended by adding a new § 115.40 reading as follows:

§ 115.40 *Marking of fire and emergency equipment, etc.* Marking of fire and emergency apparatus, watertight doors, lifeboat embarkation stations and direction signs, stateroom notices, instructions for changing steering gears, etc., shall be carried out as set forth in the succeeding paragraphs:

(a) *General alarm bell switch.* The general alarm bell switch in the pilothouse or fire control station shall be clearly marked with lettering on a brass plate or with a sign in red letters on suitable background: "GENERAL ALARM."

(b) *General alarm bells.* General alarm bells shall be marked in not less than ½-inch red letters: "GENERAL ALARM—WHEN BELL RINGS GO TO YOUR STATION."

(c) *Manual alarm boxes.* If not clearly marked "FIRE ALARM—BREAK GLASS" or "IN CASE OF FIRE BREAK GLASS," manual alarm boxes shall be marked in ½-inch letters "IN CASE OF FIRE BREAK GLASS." Each box shall be numbered in red using not less than 1-inch figures.

(d) *Manual alarm bells.* The manual alarm bells on bridge, in engine room, and in fire control station and crew quarters shall be marked "MANUAL FIRE ALARM" in not less than 1-inch red letters.

(e) *Sprinkler alarm bells.* The sprinkler alarm bells on bridge, in engine room and fire control station shall be marked "SPRINKLER ALARM ZONE NO. 1," 2, 3, etc.

(f) *Sprinkler zone valves.* Each sprinkler zone valve shall be numbered in not less than 2-inch red letters and figures or marked with a legible brass plate.

(g) *Steam, foam or CO_2 fire smothering apparatus.* Steam, foam or CO_2 fire smothering apparatus shall be marked "STEAM FIRE APPARATUS" or "FOAM FIRE APPARATUS" or "CO_2 FIRE APPARATUS" as appropriate in not less than 2-inch

red letters. The valves of all branch piping leading to the several compartments shall be distinctly marked to indicate the compartments or parts of the vessel to which they lead.

(h) *Fire hose stations.* At each fire hose valve there shall be marked in not less than 2-inch red letters and figures "FIRE STATION 1," 2, 3, etc.

(i) *Watchman detex clock key station.* Each watchman detex clock key station shall be numbered in not less than 1-inch red figures.

(j) *Emergency squad equipment.* Lockers or spaces containing equipment for use of the emergency squad shall be marked "EMERGENCY SQUAD EQUIPMENT." Lockers or spaces where oxygen or fresh air breathing apparatus is stowed shall be marked "OXYGEN BREATHING APPARATUS" or "FRESH AIR BREATHING APPARATUS" as appropriate.

(k) *Fire extinguishers.* Each fire extinguisher shall be marked with a number and the location where stowed shall be marked in corresponding numbers in not less than 1-inch figures.

(l) *Exit signs on passenger vessels.* An illuminated sign bearing the word "EXIT" shall be displayed at the exit from any main compartment occupied by passengers or crew and shall be illuminated by an emergency light. The signs shall be so arranged in corridors that they can be seen from a distance.

(m) *Emergency lights on passenger vessels.* The emergency lights shall be marked with a red letter "E" of at least 1 inch in height.

(n) *Fire screen doors on passenger vessels.* Each fire screen door shall be numbered in not less than 2-inch letters and figures, viz: "F. S. D. 1," 2, 3, etc. The color of the letters and figures shall be in contrast to the background.

(o) *Fire screen door emergency exits on passenger vessels.* Fire screen door emergency exits shall be marked "EMERGENCY EXIT" in 2-inch letters as follows:

(1) On compartment side of fire screen doors;

(2) On corridor side of stair well doors; and,

(3) On inside of stair well doors leading to embarkation deck.

The signs shall be so located as to insure that passengers and crew may be properly directed to embarkation stations in emergencies under the premise that the doors have been closed. Color or marking should be most legible in contrast to the background.

(p) *Watertight doors on passenger vessels.* Each watertight door shall be numbered in at least 2-inch letters and figures "W. T. D. 1," 2, 3, etc. The color of the marking shall be in contrast to the background. All watertight door remote hand closing stations shall be marked in at least 2-inch letters and figures "W. T. D. 1," 2, 3, etc. The direction of operation of the lever or wheel provided to close or open the door at all watertight door remote hand closing stations shall be marked. The color of the sign shall contrast with the background.

(q) *Lifeboat stations on passenger vessels.* There shall be placed on deck beams or suspended from overhead at each lifeboat station on embarkation deck a sign in 3-inch letters "LIFEBOAT STATION NO. 1," 2, etc. If there is no overhead structure at a boat station, a similar sign shall be placed in a position where it will readily be seen.

(r) *Embarkation direction signs to lifeboats on passenger vessels.* (1) Embarkation direction signs shall be located in alleyways, corridors, and stair wells, they shall be of 1-inch letters with arrows indicating the shortest route to follow to reach lifeboats. The arrow shall be of appropriate dimensions, viz:

TO BOATS →

TO BOATS ←

(2) The signs near the exits to the embarkation deck shall be marked with the numbers of the boat stations nearest to such exits, viz:

TO BOAT STATIONS NOS.
1, 3, 5
(or 2, 4, 6, etc.)
→

(3) Any combination of arrows and 1-inch lettering which will clearly indicate the direction to be followed will be acceptable.

(s) *Stateroom notices.* (1) Framed notices shall be conspicuously posted in the staterooms indicating the following:

EMERGENCY SIGNALS

"FIRE AND EMERGENCY—CONTINUOUS RAPID RINGING OF THE SHIP'S BELL AND OF THE GENERAL ALARM BELLS FOR A PERIOD OF NOT LESS THAN TEN SECONDS.

"ABANDON SHIP (OR BOAT STATIONS)—MORE THAN SIX SHORT BLASTS AND ONE LONG BLAST OF THE WHISTLE SUPPLEMENTED BY THE SAME SIGNAL ON THE GENERAL ALARM BELLS.

"THE OCCUPANTS OF THIS ROOM ARE ASSIGNED TO BOAT STATION NO. —. ALL PASSENGERS ARE REQUIRED TO PUT ON LIFE PRESERVERS AND GO TO THEIR BOAT STATIONS WHENEVER GENERAL ALARM BELLS RING."

(2) Location of life preservers together with instructions and pictures showing how they are worn shall be indicated on the notice.

(t) *Instructions for changing steering gear.* Instructions in at least 1-inch letters and figures shall be posted at each emergency steering station and in the steering engine room, relating in order, the different steps to be taken in changing to the emergency steering gear. Each clutch, gear, wheel, lever, valve or switch which is used during the changeover shall be numbered or lettered on a brass plate or painted so that the markings can be recognized at a reasonable distance. The instructions shall indicate each clutch or pin to be "in" or "out" and each valve or switch which is to be "opened" or "closed" in shifting to any means of steering for which the vessel is equipped. Instructions shall be included to line up all steering wheels and rudder amidship before changing gears.

(u) *Rudder orders.* At all steering stations, there shall be installed a suitable notice on the wheel or device or in such other position as to be directly in the helmsman's line of vision, to indicate the direction in which the wheel or device must be turned for "right rudder" and for "left rudder."

(R. S. 4405, 4426; 54 Stat. 346, 1028, 55 Stat. 244, as amended; 46 U. S. C. 375, 404, 463a, 1333, 50 U. S. C. 1275)

Subchapter K—Seamen

PART 136—MARINE INVESTIGATION REGULATIONS

SUBPART 136.11—WITNESSES AND WITNESS FEES

Section 136.11–10 (b) is amended to read as follows:

§ 136.11–10 *Witness fees, subsistence, and mileage.* * * *

(b) Upon receipt of such claim with supporting statement, the authorized Coast Guard certifying officer may certify the voucher (Standard Form No. 1034) according to the following scale and submit it to the appropriate Coast Guard Assistant Disbursing Officer for payment:

(1) A fee of $4 for each day or fraction thereof, of actual attendance.

(2) A subsistence allowance of $5 for each day or fraction thereof if the witness resides at a distance so far removed from the place at which the investigation, hearing or other proceeding was held as to prohibit his returning to his place of residence each day: *Provided*, That the witness was required to remain at the place at which the investigation, hearing or other proceeding was held for more than one day: *Provided further*, That in the case of employed merchant

marine personnel their place of residence will be construed to be the vessel upon which they are employed, and in the case of unemployed merchant marine personnel their place of residence will be construed to be their actual place of residence when ashore, rather than the residence of their next of kin. In cases where subsistence allowance is payable, additional subsistence allowance of $5 per day may be paid for each day necessarily occupied in traveling from the place of residence to attend the investigation, hearing or other proceeding hereunder and return to such residence or place. No subsistence allowance for travel time shall be paid if witness is already present at place of investigation, hearing or other proceeding hereunder. In computing the subsistence allowance due a witness the day shall be regarded as beginning on the hour at which it was necessary for the witness to leave his home in order to arrive at the appointed time at the place where the investigation, hearing or other proceeding is held. The witness is to leave the place of investigation, hearing or other proceeding by the first available transportation after his dismissal.

(3) In computing the witness fee or the subsistence allowance, a fraction of a day will be considered as a whole day.

(4) Travel money at the rate of 7 cents per mile, not to exceed 100 miles, for actual travel from place of residence or place where subpoena was served to place at which the investigation, hearing or other proceeding was held. Travel money at the rate of 7 cents per mile, not to exceed 100 miles, is also allowed for the actual travel involved in return of witness to his place of residence, or if the subpoena was served at a place other than the witness's place of residence, to the place where said subpoena was served. All payments of travel money shall be computed on the basis of mileage by the shortest route. If a witness is unable to furnish funds for transportation charges, Government transportation requests may be issued for his transportation, at the lowest first class rate available, to and from the place of investigation, hearing or other proceeding, in which case the mileage allowance is not authorized.

(5) The fees provided in this section shall not apply in Alaska. In Alaska such witnesses are entitled to the witness fees and mileage prescribed for witnesses before the United States District Court in the judicial division in which the investigation, hearing or other proceeding is held, as set forth in 28 CFR 21.3.

(R. S. 4450; 49 Stat. 1544, 55 Stat. 244, as amended; 46 U. S. C. 239, 367, 50 U. S. C. 1275)

PART 137—SUSPENSION AND REVOCATION PROCEEDINGS

SUBPART 137.05—INVESTIGATING OFFICERS AND INVESTIGATIONS

1. Section 137.05–5 (a) (4) is amended to read as follows:

§ 137.05–5 *Investigating procedures.* (a) * * *

(4) If the investigating officer finds evidence of physical or mental incompetence he may accept surrender of a license or certificate until such time as the person produces a certificate from the U. S. Public Health Service setting forth what if any, mental or physical deficiencies are found to exist, from which it can be determined whether or not such surrendered license or certificate shall be restored. In an action in which the physical or mental condition of a person is in controversy, an order on application may be issued by an examiner requiring such person to submit to a physical or mental examination by a physician. The order may be made only on motion for good cause shown and upon notice to the party to be examined and shall specify the time, place, manner, conditions and scope of the examination and the person by whom it is to be made. If the person fails or refuses to submit to such duly ordered examination, the claim shall be taken to be established for the purposes of the action.

(R. S. 4450; 49 Stat. 1544, 55 Stat. 244, as amended; 46 U. S. C. 239, 367, 50 U. S. C. 1275)

SUBPART 137.09—HEARINGS

2. Part 137 is amended by adding two new §§ 137.09–27 and 137.09–28 reading as follows:

§ 137.09–27 *Preliminary motions.* After appearances have been entered and prior to the arraignment of the person charged for the taking of any testimony, preliminary motions or objections to the charges and specifications shall be heard and disposed of by the examiner.

(R. S. 4450; 49 Stat. 1544, 55 Stat. 244, as amended; 46 U. S. C. 239, 367, 50 U. S. C. 1275)

§ 137.09–28 *Correction of charges and/or specifications.* (a) It shall be the examiner's responsibility to examine the charges and specifications after appearances and prior to the arraignment of the person charged to determine their correctness as to form and legal sufficiency.

(b) The examiner may, on his own motion or on motion of investigating officer or person charged, permit the amendment of charges and specifications to correct harmless errors by deletion or substitution of words or figures: *Provided*, That a legal specification is left remaining. Broad and liberal discretion shall be exercised by examiners in permitting such amendments.

(c) When errors of substance are found in charges and specifications, the examiner shall propose that the defective charge or specification be withdrawn and suggest that the investigating officer prepare and serve on the person charged a new charge and specification. In order that the right of the person charged to due process shall be preserved, the examiner on motion may adjourn the proceedings or hearing to permit an adequate defense to the new charges and specifications. Errors of substance are those of such a nature which would either result in substantial prejudice to the rights of the person charged or in dismissal of the charges and specifications during the hearing or on appeal.

(R. S. 4450; 49 Stat. 1544, 55 Stat. 244, as amended; 46 U. S. C. 239, 367, 50 U. S. C. 1275)

Subchapter Q—Specifications

PART 160—LIFESAVING EQUIPMENT

Part 160 is amended by adding new subparts 160.011, 160.016, 160.041, 160.042, and 160.043, which read as follows:

SUBPART 160.011—GAS MASKS, SELF-CONTAINED BREATHING APPARATUS, AND SUPPLIED-AIR RESPIRATORS, FOR MERCHANT VESSELS

Sec.

SUBPART 160.016—LAMPS, SAFETY, FLAME, FOR MERCHANT VESSELS

SUBPART 160.041—KITS, FIRST-AID, FOR MERCHANT VESSELS

SUBPART 160.042—SKIDS, LIFE RAFT, FOR MERCHANT VESSELS

SUBPART 160.043—JACKKNIFE (WITH CAN OPENER) FOR MERCHANT VESSELS

160.043–1 Applicable specification and plan.
160.043–2 Type.
160.043–3 Materials.
160.043–4 Construction and workmanship.
160.043–5 Inspections and tests.
160.043–6 Marking and packing.
160.043–7 Procedure for approval.

AUTHORITY: §§ 160.011–1 to 160.043–7 issued under R. S. 4405, 4488, and 4491; 49 Stat. 1544, 54 Stat. 346, 55 Stat. 244, as amended; 46 U. S. C. 367, 375, 481, 489, 1333, 50 U. S. C. 1275.

SUBPART 160.011—GAS MASKS, SELF-CONTAINED BREATHING APPARATUS, AND SUPPLIED-AIR RESPIRATORS, FOR MERCHANT VESSELS

§ 160.011–1 *Applicable schedules.* (a) The following schedules, of the issue in effect on the date respiratory protective devices are manufactured, form a part of this subpart:

(1) U. S. Bureau of Mines:

Schedule 13C, Procedure for Testing Self-Contained Breathing Apparatus for Permissibility.
Schedule 14E, Procedure for Testing Gas Masks for Permissibility.
Schedule 19A, Procedure for Testing Supplied-Air Respirators for Permissibility.

(b) Copies of the above schedules shall be kept on file by the manufacturer, together with the approved plans and certificate of approval issued by the Coast Guard.

§ 160.011–2 *Types.* (a) Respiratory protective devices specified by this subpart for use on merchant vessels shall be of three types, i. e., self-contained breathing apparatus, gas mask, or Type A supplied-air respirator (hose mask), all in accordance with the applicable schedules of the U. S. Bureau of Mines.

§ 160.011–3 *Requirements.* (a) The materials, construction, workmanship, and performance requirements are that the device shall have met the applicable requirements of, and be approved by, the U. S. Bureau of Mines. Respiratory protective devices are further considered by the Coast Guard relative to their suitability for use on shipboard, particularly with regard to the kind of protection afforded by the device as against the kind of hazards expected aboard ship, and with regard to the bulk and weight of the device as against shipboard conditions of limited space and arrangements of accommodations, ladders, scuttles, hatches, etc.

§ 160.011–4 *Inspections and tests.* (a) Respiratory protective devices are not inspected at regularly scheduled factory inspections by the Coast Guard. A pre-approval sample device is examined and may be tested with respect to its suitability for shipboard use.

§ 160.011–5 *Marking.* (a) No additional marking to that required by the U. S. Bureau of Mines for their approval is required by the Coast Guard.

§ 160.011–6 *Procedure for approval.* (a) *General.* Respiratory protective devices are approved for use on merchant vessels only by the Commandant, United States Coast Guard, Washington 25, D. C. Correspondence relating to the subject matter of this specification shall be addressed to the Commander of the Coast Guard District in which such devices are manufactured.

(b) *Pre-approval sample and plan.* In order to apply for approval of a respiratory protective device for use on merchant vessels, submit one complete sample and one recharge (where used) together with four copies of an arrangement plan (parts drawings are not required) and of the approval label authorized by the U. S. Bureau of Mines, to the Commander of the Coast Guard District in which the device is manufactured, who will forward same to the Commandant for determination as to its suitability for use on merchant vessels.

SUBPART 160.016—LAMPS, SAFETY, FLAME, FOR MERCHANT VESSELS

§ 160.016–1 *Applicable specification.* (a) The following specification of the issue in effect on the date flame safety lamps are manufactured forms a part of this subpart:

(1) Military Specification:

MIL–L–1204, Lamps, Safety, Flame.

(b) A copy of the above specification shall be kept on file by the manufacturer, together with the approved plan and certificate of approval issued by the Coast Guard.

§ 160.016–2 *Requirements.* (a) Flame safety lamps for use on merchant vessels shall comply with the construction requirements of Military Specification MIL–L–1204.

§ 160.016–3 *Inspections and tests.* (a) Flame safety lamps are not inspected at regularly scheduled factory inspections, but the Commander of the Coast Guard District in which the factory is located may detail an inspector at any time to visit any place where approved flame safety lamps are being manufactured to satisfy himself that they are being made in accordance with the requirements of this subpart.

§ 160.016–4 *Marking.* (a) Flame safety lamps shall be permanently and legibly marked with the name and address of the manufacturer and the type or model designation for the lamp.

§ 160.016–5 *Procedure for approval*—(a) *General.* Flame safety lamps are approved for use on merchant vessels only by the Commandant, United States Coast Guard, Washington 25, D. C. Correspondence relating to the subject matter of this specification shall be addressed to the Commander of the Coast Guard District in which such devices are manufactured.

(b) *Pre-approval sample and plan.* In order to apply for approval of a flame safety lamp for use on merchant vessels, submit one complete sample, together with four copies of an arrangement plan (parts drawings are not required), together with a statement that the lamp meets the construction requirements of Military Specification MIL–L–1204, as amended, to the Commander of the Coast Guard District, who will forward same to the Commandant for determination as to its suitability for use on merchant vessels.

SUBPART 160.041—KITS, FIRST-AID, FOR MERCHANT VESSELS

§ 160.041–1 *Applicable specification and publication*—(a) *Specification.* The following specification, of the issue in effect on the date first-aid kits are manufactured, forms a part of this subpart:

(1) Federal specification:

GG–K–391, Kits (Empty), First Aid, Burn Treatment, and Snake Bite; and Kit Contents.

(b) *Publication.* The following publication, of the issue in effect on the date first-aid kits are manufactured, forms a part of this subpart:

(1) National Bureau of Standards Simplified Practice Recommendation:

No. R178–41, Packaging of First-aid Unit Dressings and Treatments.

(c) *Copies on file.* Copies of the above specification and publication shall be kept on file by the manufacturer, together with the approved plans and certificate of approval.

§ 160.041–2 *Type and size*—(a) *Type.* First-aid kits covered by this specification shall be of the watertight cabinet carrying type designated as Type II, Grade A, class B by Federal Specification GG–K–391. Alternate arrangements of materials meeting the performance requirements of this specification will be given special consideration.

(b) *Size.* First-aid kits shall be of a size (approximately 9" x 9" x 2½" inside) adequate for packing 24 standard single cartons (defined by National Bureau of Standards Simplified Practice Recommendations for

Packaging of First-aid Unit Dressings and Treatments), or equivalent combinations of single, double, or triple cartons, the arrangement of the cartons to be such as to permit ready access to each item contained in the kit.

§ 160.041–3 *Construction and workmanship*—(a) *Construction.* The container shall be of substantial and rugged construction, with the body, handle, and all fittings of a corrosion-resistant material or suitably protected against corrosion. All ferrous metal employed shall be protected by hot dip galvanizing, or other equally effective means. The thickness of metal in the container shall be at least equal to 20 USSG and all seams and joints shall be welded or brazed. Either the body or the cover shall contain a gasket of molded rubber or other material which will give a suitable watertight seal, and the mating piece shall be flanged or turned to form an effective bearing surface. The cover shall be fastened to the body by two positive closed type pull-down snap fasteners on one edge, which together with two positive open type pull-down snap fasteners at the opposite edge, and one positive open type pull-down snap fastener at each of the other two edges, shall effectively hold the bearing surfaces together to provide the required watertight closure. The container shall be capable of being opened and reclosed watertight.

(b) *Handle.* A suitable carrying handle, approximately 3" x 1¼", of 0.125" diameter steel wire, shall be securely mounted on the side or end of the body of the container, and be so arranged that when laid flat against the container it will not project beyond either the upper or lower edge, and shall provide ample finger clearance for carrying.

(c) *Cover fasteners.* The cover fasteners shall be of the pull-down, draw bolt type or equivalent and of sufficient size and strength for the purpose. The fasteners shall be so constructed as not to jar loose by vibration, but to permit easy and quick opening with one hand. There may be no sharp edges and all parts shall be adequately protected against corrosion.

§ 160.041–4 *Contents*—(a) *Individual cartons.* Cartons shall be of the standard commercial unit type referred to by Simplified Practice Recommendation R178–41, properly labeled to designate the name, size of contents, and method of use, and shall contain all information required by Federal and State laws. Each package shall be inclosed in a jacket of tough, transparent material, properly sealed, which shall meet the watertight requirements of § 160.041–5 (f). Each carton and the contents therein shall conform to the applicable requirements of Federal Specification GG–K–391. Medicinal products shall conform to the latest revision of the U. S. Pharmacopoeia. Vials for tablets shall not be made of glass.

(b) *Items.* The items contained in first-aid kit shall be as listed in table 160.041–4 (b).

TABLE 160.041–4 (b)—ITEMS FOR FIRST-AID KIT

Item	Number per package	Size of package	Number of packages
Bandage compress—4"	1	Single	5
Bandage compress—2"	4	do	2
Waterproof adhesive compress—1"	16	do	2
Triangular bandage—40"	1	do	3
Eye dressing packet, ¼ ounce Opthalmic ointment, adhesive strips, cotton pads.	3	do	1
Bandage, gauze, compressed, 2 inches by 6 yards	2	do	1
Tourniquet, forceps, scissors, 12 safety pins	1, 1, 1, and 12, respectively.	Double	1
Wire splint	1	Single	1
Ammonia inhalants	10	do	1
Iodine applicators (½ ml swab type)	10	do	1
Aspirin, phenacetin and caffeine compound, 6½ gr. tablets, vials of 20.	5	Double	1
Sterile petrolatum gauze, 3" x 18"	4	Single	3

(c) *Instructions.* Instructions for the use of the contents of the first-aid kit shall be printed in legible type on a durable surface and shall be securely attached to the inside of the cover. The instructions for the use of the contents are as follows:

DIRECTIONS FOR THE USE OF THE FIRST-AID KIT

Item title	*Remarks*
Ammonia inhalants	Break one and inhale for faintness, fainting, or collapse.
Aspirin, phenacetin, caffeine tablets	Chew up and swallow 2 tablets every three hours for headache, colds, minor aches, pains, and fever. Maximum of 8 in twenty-four hours.
Bandage compress, 4" and 2"	Apply as a dressing over wound. DON'T touch part that comes in contact with wound.
Bandage, gauze, compressed, 2"	For securing splints, dressings, etc.
Bandage, triangular, compressed	Use as arm sling, tourniquet, or for retaining splints or dressings in place.
Burn dressing	The petrolatum gauze bandage is applied in at least two layers over the burned surface and an area extending 2" beyond it. The first dressing should be allowed to remain in place, changing only the outer, dry bandage as needed, for at least 10 days unless signs of infection develop after several days, in which case the dressing should be removed and the burn treated as an infected wound. Watch for blueness or coldness of the skin beyond the dressing and loosen the dressing if they appear.
Compress, adhesive, 1"	Apply as dressing over small wounds. DON'T touch part that comes in contact with wound.
Eye patch	Apply as dressing over inflamed or injured eye.
Forceps	Use to remove splinters or foreign bodies. Don't dig.
Ophthalmic ointment	Apply in space formed by pulling lower eyelid down, once daily for inflamed or injured eyes. Don't touch eyeball with tube.
Splint, wire	Pad with gauze and mold to member to immobilize broken bones. Hold in place with bandage. Do not attempt to set the bone.
Tincture of iodine, mild	Remove protective sleeve, crush tube and apply swab end. DON'T use in or around eyes.
Tourniquet	For control of hemorrhage. Loosen for a few seconds every 15 minutes.

§ 160.041–5 *Inspections and tests*—(a) *General.* First-aid kits specified by this subpart are not inspected at regularly scheduled factory inspections of production lots, but the Commander of the Coast Guard District in which the kits are manufactured may detail an inspector at any time to visit any place where approved kits are manufactured to check materials and construction methods and to conduct such examinations and tests as may be required to satisfy himself that the first-aid kits are being manufactured in accordance with the requirements of this subpart and in accordance with the manufacturer's plans and specifications approved by the Commandant.

(b) *Accelerated weathering.* The container without contents shall be exposed to ultraviolet light and subjected to a spray of water for about 30 seconds every 20 minutes for 100 hours at 120° F. As an alternate to this test the container may be exposed to an ultraviolet light for 100 hours at 130° F. without the water spray. There shall be no evidence of warping or deterioration as a result of this test.

(c) *Salt spray.* The container shall be exposed to a spray of 20% by weight of reagent grade sodium chloride at about 95° F. for 100 hours. There shall be no evidence of corrosion or disintegration of the material as a result of this test.

(d) *Temperature change.* The container shall be exposed to a temperature of 150° F. for one hour and then to a temperature of 30° F. below zero for one hour. There shall be no warping or deterioration of the gasket material as a result of this test.

(e) *Container watertightness.* After the completion of all other container tests, a closed empty container, lined with colored blotting paper, with the cover in a horizontal position and uppermost shall be submerged under a head of one foot of water for a period of two hours. At the end of this period the container shall be removed, opened, and examined for the presence of moisture. No seepage shall be allowed.

(f) *Carton watertightness.* Four cartons from each container tested shall be submerged under a head of one foot of water for a period of two hours. Upon opening the sealed wrappers there shall be no evidence of leakage of water.

§ 160.041–6 *Marking.* (a) Each approved first-aid kit shall be permanently marked with the following information: name of manufacturer, trade name, symbol, model number, or other identification used by the manufacturer, the Coast Guard Approval Number, and the words "FIRST-AID KIT." This information may be embossed on the container or may be applied by silk screen process, using a suitable paint and protected as necessary to withstand the required tests, or by other means shown to be acceptable.

§ 160.041–7 *Procedure for approval—(a) General.* First-aid kits for use in conjunction with lifesaving equipment on board merchant vessels are approved only by the Commandant, United States Coast Guard, Washington, D. C. Correspondence pertaining to the subject matter of this specification shall be addressed to the Commander of the Coast Guard District in which the kits are manufactured.

(b) *Manufacturer's plans.* In order to obtain approval, submit detailed plans showing fully the construction, material specification, arrangement, and list of contents to the Commander of the Coast Guard District in which the factory is located. Each drawing shall have an identifying number, and date, and shall indicate the manufacturer's symbol, trade name, or other identification for the first-aid kit. At the time of selection of the pre-approval sample, the manufacturer shall furnish the inspector 4 copies of all plans and specifications, corrected as may be required, for forwarding to the Commandant.

(c) *Pre-approval sample.* After the first drawings have been examined and found to appear satisfactory, a marine inspector will be detailed to the factory to observe the manufacturing facilities and methods and to obtain two samples, complete with contents, which will be forwarded, prepaid by the manufacturer, to the Commandant for the necessary conditioning and tests in accordance with § 160.041–5 to determine the suitability of the first-aid kit for use in conjunction with lifesaving equipment on board merchant vessels. The cost of the tests shall be borne by the manufacturer.

SUBPART 160.042—SKIDS, LIFE RAFT, FOR MERCHANT VESSELS

§ 160.042–1 *Applicable specification.* (a) The following specification, of the issue in effect on the date life raft skids are manufactured, forms a part of this subpart:

(1) Coast Guard Specification:

160.018, Life Rafts.

§ 160.042–2. *General requirements.* (a) The requirements of this subpart provide for a standard life raft skid for use on ocean and coastwise vessels in conjunction with the stowage of Type A rafts which may be used on such vessels.

(b) Life raft skids shall be constructed and arranged so as to properly support a Type A life raft in the stowed position and permit the launching of the life raft directly into the water without the application of any force other than that necessary to release the griping arrangement and operate the release mechanism.

(c) Arrangements other than those specified by this subpart will be given special consideration.

§ 160.042–3 *Construction.* (a) The trackways of the skids shall be constructed of 6" x 3½" x ½" structural angles, or of material of approved shape and equivalent strength, inclined approximately 60 degrees from the horizontal. The trackways shall be spaced 8'–4" from the inside of the 3½" vertical leg of one trackway angle to the inside of the 3½" vertical leg of the other trackway angle. The inside of the 6" leg of the trackway angles shall form the skid surface for the life raft. The trackways shall be supported by a substantial structure suitable for stowing a Type A life raft at a 60-degree angle without having the raft project over the side of the vessel.

(b) The lower end of the life raft shall be supported by a base plate so arranged as to permit launching of the raft by a quick release assembly.

(c) All bearing surfaces of the quick release mechanism shall be constructed of noncorrosive metal. Alemite fittings shall be provided to insure positive lubrication of all bearing surfaces.

§ 160.042–4 *Inspection.* (a) Life raft skids covered by this subpart are not subject to inspection at the place of manufacture, but are inspected on the basis of this specification during the annual or other inspection of the vessel upon which they are placed.

§ 160.042–5 *Procedure for approval.* (a) Life raft skids are not subject to formal approval by the Commandant, but for each merchant vessel on which Type A life rafts are to be installed, plans showing the construction and arrangement of the life raft stowage and launching device on the vessel are required to be submitted for approval to the Commandant through the Commander of the Coast Guard District prior to the actual installation. Life raft skids should comply with the requirements of this specification in order to be acceptable for use in such installations.

(b) Correspondence pertaining to the subject matter of this specification should be addressed to the Commander of the Coast Guard District in which the skids are to be installed.

SUBPART 160.043—JACKKNIFE (WITH CAN OPENER) FOR MERCHANT VESSELS

§ 160.043–1 *Applicable specification and Plan—(a) Specification.* The following specification, of the issue in effect on the date jackknives are manufactured, forms a part of this subpart:

(1) Federal Specification:

QQ–M–151, Metals; General Specification for Inspection of.

(b) *Plan.* The following plan, of the issue in effect on the date jackknives are manufactured, forms a part of this subpart:

(1) Coast Guard:

Dwg. No. 160.043–1 (b), Jackknife (With Can Opener).

(c) *Copies on file.* A copy of the above specification and reference plan shall be kept on file by the manufacturer, together with the approved plans and certificate of approval.

§ 160.043–2 *Type.* (a) The jackknife specified by this subpart shall be of a type as illustrated by Drawing No. 160.043–1 (b), which consists of a one-bladed knife fitted with a can opener and a shackle to which a lanyard is attached, all made from materials as specified in this subpart. Alternate arrangements will be given special consideration.

§ 160.043–3 *Materials*—(a) *Blade, can opener, and springs.* The blade shall be made of AISI Type 440B stainless steel, heat treated to show a Rockwell hardness of C55 to C59. The can opener shall be made of AISI Type 420 stainless steel, heat treated to show a Rockwell hardness of C50 to C54. The springs shall be made of AISI Type 420 stainless steel, heat treated to show a Rockwell hardness of C44 to C48.

(b) *Linings and center.* The linings and center shall be hard brass.

(c) *Bolsters and shackle.* The bolsters and shackle shall be 18 percent nickel-silver.

(d) *Handles.* The handles shall be good quality, thermosetting, high impact plastic.

(e) *Rivets and pins.* The rivets and pins shall be either hard brass or 18 percent nickel-silver as specified in this subpart.

(f) *Lanyard.* The lanyard shall be cotton rope, ⅛ inch nominal diameter.

§ 160.043–4 *Construction and workmanship*—(a) *Blade.* The blade shall be not less than 0.095 inch thick at the tang. Shall have a triangular section and sheeps foot point. It shall have a cutting edge approximately 3⅛ inches in length and shall be approximately $^{13}/_{16}$ inch in height at the point. The blade shall be uniformly ground and finished on both sides and sharpened to a uniform and keen edge, and it shall have a common nail nick on one side. Before assembling, the sides of the tang shall be uniformly polished.

(b) *Can opener.* The can opener shall be not less than 0.072 inch thick at the tang, and $1^{11}/_{16}$ to $1^{15}/_{16}$ inches long overall. It shall be so designed that the cutting action turns the ragged edge down into the can, and shall be mounted at the same end of the knife as the blade and in such a manner that both rectangular and circular cans may be opened with a minimum of effort when the knife is held in the right hand and operated in a clockwise direction around the can. The cutting edge shall be suitably formed to obtain a smooth cutting action. It shall have a common nail nick on one side, and the extreme distal end shall be pointed. It shall be polished on both sides, and before assembling, the sides of the tang shall be polished.

(c) *Springs.* Each spring shall be of a thickness corresponding to the blade it operates, and the back edge and that section of the front edge coming in contact with the end of the tang of the blade shall be polished.

(d) *Linings and center.* Linings and center shall be not less than 0.022 inch in thickness and shall be polished before assembly.

(e) *Bolsters.* The bolsters shall be approximately $^{9}/_{16}$ inch long by 0.100 inch thick measured at the center line.

(f) *Shackle.* The shackle shall be of conventional design, not less than 0.120 inch in diameter, and shall extend not less than ¾ inch from the end of the knife. The shackle shall be attached to the knife by a solid nickel-silver pin not less than 0.080 inch in diameter which shall pass through the shackle and be securely fastened.

(g) *Handles.* The handles shall be approximately 3¾ inches long. They shall be well fitted at the bolsters and fastened to the linings by two solid rivets countersunk on the inside of the linings and smoothly rounded on the outside.

(h) *Rivets and pins.* Pins holding the handles to the linings shall be of hard brass, not less than 0.048 inch in diameter. Middle and end pins shall be of hard brass not less than 0.095 inch in diameter. The bolster rivet shall be 18 percent nickel-silver not less than 0.095 inch in diameter. All rivets and pins shall have carefully spun heads.

(i) *Lanyard.* A lanyard 6 feet in length shall be secured to the shackle.

(j) *Polishing and oiling.* After assembly all outside surfaces shall be buffed, and the metal parts polished uniformly. The working parts shall be cleaned and oiled with a good grade of joint oil.

(k) *Workmanship.* Workmanship shall be first class in all respects, and jackknives shall be free from defects which may affect their serviceability.

§ 160.043–5 *Inspections and tests*—(a) *General.* Jackknives are not ordinarily subjected to regularly scheduled factory inspections, but the Commander of the Coast Guard District in which they are manufactured may detail an inspector at any time to places where jackknives are manufactured to check materials and construction methods, and to conduct such tests as may be required to satisfy himself that jackknives are being manufactured in compliance with the requirements of this specification and the manufacturer's plans and specifications as approved by the Commandant. The manufacturer shall admit the inspector to his plant and shall provide a suitable place and the necessary apparatus for use of the inspector in conducting tests at the place of manufacture.

(b) *Hardness test.* Hardness of the blade, can opener, and spring metal shall be determined in accordance with the Rockwell method as described in Federal Specification QQ–M–151. Hardness impressions shall be made at locations representing the cutting edges and surfaces subject to wear, and they shall fall within the ranges set forth in § 160.043–3 (a).

(c) *Bending and drop tests.* With all of the blade of the knife except the tang clamped in vertical jaws so that the handle is in a horizontal position, a downward load of 15 pounds shall be suspended from the lanyard and allowed to hang for a period of 5 minutes. The knife shall then be turned over, and the test repeated with the can opener in the jaws. The knife shall then be dropped on its side from a height of 8 feet onto a concrete floor. Both the blade and the can opener shall open and close properly, and the knife shall show no other evidence of failure at the conclusion of these tests.

(d) *Cutting test.* The knife shall be used to cut various nonmetallic objects, including at least 10 shavings from a strip of oak or other hardwood, and to open various rectangular and circular cans, and shall show no noticeable loss in cutting ability.

§ 160.043–6 *Marking and packing*—(a) *General.* Jackknives specified by this subpart shall be stamped or otherwise permanently and legibly marked on the tang of the blade with the manufacturer's name or with a trade mark of such known character that the source of manufacture may be readily determined, and with the manufacturer's type or size designation.

(b) *Instructions for can opener.* With each jackknife the manufacturer shall supply instructions, complete with an illustration, indicating the proper method for using the can opener.

(c) *Packing.* Each jackknife, complete with lanyard attached, shall be packed in a heat-sealed bag of waterproof vinyl resin or polyethylene film not less than 0.004 inch in thickness. The bag shall be marked in a clear and legible manner with the Coast Guard approval number, the name and address of the manufacturer, and in letters not less than ¼ inch in height with the words, "JACKKNIFE

(WITH CAN OPENER)". The instructions for use of the can opener as required by paragraph (b) of this section may also be printed on the bag.

§ 160.043–7 *Procedure for approval*—(a) *General.* Jackknives for use on merchant vessels are approved only by the Commandant, United States Coast Guard. Correspondence relating to the subject matter of this specification shall be addressed to the Commander of the Coast Guard District in which the factory is located.

(b) *Pre-approval samples and plan.* Manufacturers who desire to manufacture approved jackknives shall submit to the Commander of the Coast Guard District in which the factory is located 4 sample jackknives, together with 4 copies of fully-dimensioned descriptive drawings, including an assembly drawing, drawings for each of the component parts, and a bill of materials for the knife.

(c) *Pre-approval tests.* The Commander of the Coast Guard District will forward the sample knives and drawings to the Commandant for examination and tests in accordance with § 160.043–5 (b) through (d) to determine compliance with this subpart and suitability of the jackknife for type or brand approval for use on merchant vessels.

Dated: May 16, 1950.

MERLIN O'NEILL,
Vice Admiral, U. S. Coast Guard, Commandant.

[F. R. Doc. 50–4296; Filed, May 19, 1950; 8:56 a. m.; 15 F. R. 3084, May 20, 1950]

Range Lights

[CGFR 50–14]

NOTICE OF REDUCTION IN HEIGHT

Whereas, section 360, Title 33, U. S. C., provides that any requirement as to the number, position, range of visibility, or arc of visibility of navigation lights, required to be displayed by Coast Guard vessels, under acts of Congress, as enumerated in said section 360, Title 33, U. S. C., shall not apply to any vessel of the Coast Guard where the Secretary of the Treasury shall find or certify that, by reason of special construction, it is not possible with respect to such vessel or class of vessels, to comply with statutory requirements as to the number, position, range of visibility, or arc of visibility of navigation lights; and

Whereas, a study of the arrangement and position of the navigation lights of the Coast Guard vessels "Bering Strait" (WAVP–382), "Half Moon" (WAVP–378), and "Yakutat" (WAVP–380) has been made in the Treasury Department and as a result of such study, it has been determined that because of their special construction it is not possible for these three vessels to comply with the requirements of the statutes enumerated in said section 360, Title 33, U. S. C.;

Now, therefore, as a result of the aforesaid study, it is hereby found that the Coast Guard vessels "Bering Strait," "Half Moon," and "Yakutat" are Coast Guard vessels of special construction and that on such vessels, with respect to the position of the additional white light (commonly termed the range light), it is not possible to comply with the requirements of the statutes enumerated in section 360, Title 33, U. S. C. Further, it is hereby found that it is feasible to locate the said additional white light (commonly termed the range light), if such light is installed, in such position that the said additional white light and the masthead light shall be in line with the keel, the after light shall be 11 feet higher than the forward light and the vertical distance between the two lights shall be less than the horizontal distance. It is hereby directed that the aforesaid additional white light, if such light is installed, shall be located in the manner above described and certification is hereby made that such location constitutes compliance as closely with the applicable statutes as is found to be feasible.

Dated: May 8, 1950.

[SEAL] E. H. FOLEY, JR.,
Acting Secretary of the Treasury.

[F. R. Doc. 50–4044; Filed, May 11, 1950; 8:48 a. m., 15 F. R. 2853—5/12/50]

Navigation and Vessel Inspection Circular No. 2–50

UNITED STATES COAST GUARD,
Washington 25, D. C., April 19, 1950.

SOLIDIFIED CARBON DIOXIDE (DRY ICE); USE AND TRANSPORTATION OF

1. A short time ago three longshoremen lost their lives in the hold of a vessel in which two highway trailer vans filled with perishable goods and solidified carbon dioxide for refrigeration purposes were stowed. This accident, plus several others involving dry ice, has brought out the fact that the use of dry ice has been broadened to the point where there is now a need for regulations on the use and transportation of this material on board vessels.

2. Although dry ice is not presently included in the regulations "Explosives or Other Dangerous Articles on Board Vessels," in view of the recognized hazard involved in shipboard transportation, the Commandant proposes to regulate its transportation and use on board vessels.

3. The principal hazard associated with dry ice is its ability to give off carbon dioxide gas. Due to the great pressure built up by an accumulation of carbon dioxide gas, any ordinary container, truck or railroad vehicle carrying an appreciable amount of dry ice would by necessity release this gas to the surrounding atmosphere.

4. Since the hazard to life involved in the accumulation of carbon dioxide gas in a restricted space or closed compartment is well known, it is felt that all shipping agencies should be apprised of the fact that several deaths by asphyxiation have occurred as a result of the carriage of dry ice below decks. Pending regulatory changes the carriage of dry ice on board vessels as cargo or for refrigeration purposes should be given "On deck in open" or "On deck protected" stowage only.

5. Care should also be taken that ventilators or other openings in the vicinity of dry ice stowage are properly protected to prevent the accumulation of carbon dioxide gas below deck.

[S] A. C. RICHMOND,
Rear Admiral, U. S. Coast Guard, Acting Commandant.

Equipment Approved by the Commandant

[CGFR 50–11]

By virtue of the authority vested in me as Commandant, United States Coast Guard, by R. S. 4405 and 4491, as amended, 46 U. S. C. 375, 489, and section 101 of Reorganization Plan No. 3 of 1946 (11 F. R. 7875, 60 Stat. 1097, 46 U. S. C. 1), as well as the additional authorities cited with specific items below, the following approvals of equipment are prescribed and shall be effective for a period of five years from date of publication in the FEDERAL REGISTER unless sooner canceled or suspended by proper authority:

MECHANICAL DISENGAGING APPARATUS, LIFEBOAT

Approval No. 160.033/39/0, Rottmer Type S–1 releasing gear, approved for maximum working load of 21,300 pounds per set (10,650 pounds per

hook), identified by Hoist Gear Assembly, Dwg. No. M–115–1 dated October 25, 1949, and revised February 15, 1950, manufactured by Marine Safety Equipment Corp., Point Pleasant, N. J.

Approval No. 160.033/40/0, Rottmer Type L–1 releasing gear, approved for maximum working load of 29,600 pounds per set (14,800 pounds per hook), identified by Hoist Gear Assembly, Dwg. No. M–125–1 dated October 14, 1949, and revised January 23, 1950, manufactured by Marine Safety Equipment Corp., Point Pleasant, N. J.

(R. S. 4417a, 4426, 4488, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 367, 391a, 404, 481, 1333, 50 U. S. C. 1275; 46 CFR 37.1–7, 59.68, 76.62, 94.59)

LIFEBOATS

Approval No. 160.035/230/1, 22.0' x 7.5' x 3.17' aluminum oar-propelled lifeboat, 31-person capacity, identified by Construction and Arrangement Dwg. No. 22–2D, dated July 29, 1948, and revised March 1, 1950, manufactured by Marine Safety Equipment Corp., Point Pleasant, N. J. (Supersedes Approval No. 160.035/230/0, published in the FEDERAL REGISTER August 9, 1949.)

Approval No. 160.035/262/0, 26' x 8.33' x 3.54' steel oar-propelled lifeboat, 46-person capacity, identified by Construction and Arrangement Dwg. No. 26–6, dated November 1, 1949, and revised February 20, 1950, manufactured by Marine Safety Equipment Corp., Point Pleasant, N. J.

(R. S. 4417a, 4426, 4481, 4488, 4492, 35 Stat. 428, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 367, 391a, 396, 404, 474, 481, 490, 1333, 50 U. S. C. 1275; 46 CFR 37.1–1, 59.13, 76.16, 94.15, 113.10)

LIGHTS (WATER): ELECTRIC, FLOATING, AUTOMATIC

Approval No. 161.001/4/0, "COSLITE" automatic floating electric water light (with bracket for mounting), Dwg. No. 16, Alt. 1, dated April 4, 1950, manufactured by Coston Supply Co., Inc., 31 Water Street, New York 4, N. Y.

TELEPHONE SYSTEMS, SOUND POWERED

Approval No. 161.005/15/1, sound powered telephone station, selective ringing, common talking, 19 stations maximum, bulkhead mounting, waterproof, with attached 3" or 4" hand generator bell, Dwg. No. 5, Alt. 3, Type A, Model W. T., manufactured by Hose-McCann Telephone Co., Inc., Twenty-fifth Street and Third Avenue, Brooklyn 32, N. Y. (Supersedes Approval No. 161.005/15/0, published in the FEDERAL REGISTER July 31, 1947.)

Approval No. 161.005/16/1, sound powered telephone station, selective ringing, common talking, 19 stations maximum, bulkhead mounting, waterproof, with separately mounted 6" or 8" hand generator bell, Dwg. No. 6, Alt. 3, Type A, Model W. T., manufactured by Hose-McCann Telephone Co., Inc., Twenty-fifth Street and Third Avenue, Brooklyn 32, N. Y. (Supersedes Approval No. 161.005/16/0, published in the FEDERAL REGISTER July 31, 1947.)

Approval No. 161.005/17/1, sound powered telephone station, selective ringing, common talking, 19 stations maximum, pedestal mounting, waterproof, with attached 6" or 8" hand generator bell, Dwg. No. 8, Alt. 3, Type A, Model W. T. P., manufactured by Hose-McCann Telephone Co., Inc., Twenty-fifth Street and Third Avenue, Brooklyn 32, N. Y. (Supersedes Approval No. 161.005/17/0, published in the FEDERAL REGISTER July 31, 1947.)

Approval No. 161.005/19/1, sound powered telephone station, selective ringing, common talking, 19 stations maximum, pedestal mounting, waterproof, with attached 6" or 8" hand generator bell, Dwg. No. 12, Alt. 3, Type A, Model W. T. P.–1, manufactured by Hose-McCann Telephone Co., Inc., Twenty-fifth Street and Third Avenue, Brooklyn 32, N. Y. (Supersedes Approval No. 161.005/19/0, published in the FEDERAL REGISTER July 31, 1947.)

BOILERS, POWER

Approval No. 162.002/77/1, Foster Wheeler Auxiliary Water Tube Boiler, 2 Drum bent tube Type "D", automatic control package unit; boiler arrangement Dwg. No. NY–500–56, Rev. "B", and Todd Shipyards Corp., Combustion Equipment Division, burning unit Model "P" size "G–25" Dwg. No. 50507–2; manufactured by Foster Wheeler Corp., 165 Broadway, New York 6, N. Y. (Supersedes Approval No. 162.002/77/0, published in the FEDERAL REGISTER July 31, 1947.)

FIRE EXTINGUISHERS, PORTABLE, HAND, CARBON-DIOXIDE TYPE

Approval No. 162.005/14/0, Alfite Speedex 5, 5-lb. carbon dioxide type hand portable fire extinguisher, Assembly Dwg. No. 28X–1717, dated August 20, 1946, Alt. I, dated February 3, 1947, Name Plate Dwg. No. 28X–2130, dated August 8, 1946, Alt. M, dated June 29, 1949, manufactured by American-LaFrance-Foamite Corp., Elmira, N. Y.

STRUCTURAL INSULATION

Approval No. 164.007/27/0, "FELTROK Shipfelt," mineral wool type structural insulation identical to that described in National Bureau of Standards Test Report No. TG10210–1686: FP 2905 (Test Folder No. 123814), dated March 24, 1950, and National Bureau of Standards letter dated April 5, 1950, file 10.2/123814; bats or blankets approved for use without other insulating material to meet Class A–60 requirements in a 4-inch thickness and 6 pounds per cubic foot density, and a 3-inch thickness and 8 pounds per cubic foot density; manufactured by Feltrok Insulation Manufacturing Co., 2301 Taylor Way, Tacoma 2, Wash.

BULKHEAD PANELS

Approval No. 164.008/27/1, "KAYLO," inorganic composition board type bulkhead panel with wood, aluminum or equivalent veneer on both sides, identical to that described in National Bureau of Standards Test Report No. TG10230–14: FP 2746, dated June 29, 1949, and Protexol Testing Laboratory Report No. 190, dated January 3, 1950, approved as meeting B–15 requirements in a ⅞ inch thickness, exclusive of combustible veneers, inclusive of aluminum or equivalent veneers, manufactured by Owens-Illinois Glass Co., Toledo 1, Ohio. (Supersedes Approval No. 164.008/27/0, published in the FEDERAL REGISTER August 9, 1949.)

Approval No. 164.008/29/0, "J-M Special Light Weight Marinite," inorganic composition board type bulkhead panel with aluminum or equivalent veneer on both sides, identical to that described in Protexol Testing Laboratory Report No. 193, dated February 24, 1950, approved as meeting B–15 requirements in a ⅞ inch thickness inclusive of veneers, manufactured by Johns-Manville Sales Corp., 22 E. 40th St., New York 16, N. Y.

FIRE INDICATING AND ALARM SYSTEMS

Fire detecting system; Manual fire alarm station for use with 55–100 series fire alarm annunciators; fire alarm thermostat for use with open-circuit type fire indicating and alarm systems identified by Dwg. No. 50–182, Alt. 2, dated March 8, 1950, manufactured by Henschel Corp., Amesbury, Mass. (Supersedes approval by former Steamboat Inspection Service in 1930.)

CHANGE IN MANUFACTURER'S NAME AND ADDRESS

The name and address of "The P. R. Mitchell Co., Spring Grove and Harrison Avenues, Cincinnati 22, Ohio", have been changed to "The Safeguard Corp., Box 22, Station B, Cincinnati

22, Ohio", for all approvals issued to that company under the general headings, "Buoyant Cushions, Kapok, Standard", and "Buoyant Cushions, Non-Standard".

The name and address of "Signal Manufacturing Company, 524 West Pico Boulevard, Los Angeles 15, Calif." have been changed to "Signal Pyrotechnic Company, 4041 Whiteside Street, Los Angeles 33, Calif." for Approval No. 160.024/5/0, published in the FEDERAL REGISTER of Aug. 27, 1947.

Dated: May 2, 1950.

[SEAL] MERLIN O'NEILL,
Vice Admiral, U. S. Coast Guard, Commandant.

[F. R. Doc. 50-3975; Filed, May 9, 1950; 8:48 a. m., 15 F. R. 2784—5/10/50]

WELDING ELECTRODES

The following type of electrodes have been tested in accordance with the requirements of ASTM designation A233-48T for mild steel arc-welding electrodes in the presence of an American Bureau of Shipping Surveyor and the test report indicates that the requirements were met.

Metal and Thermit Corp., 120 Broadway, New York 5, N. Y. *Arcrods Corp. (Manufacturer)*, Murex Type 4216 (2¼ Cr.—1 Mo.), AWS Symbol E9016.

Operating Position and Electrode Sizes

The ⅛" and $\frac{5}{32}$" diameter electrodes will be allowed for all position welding. Special limitations require direct current and reverse polarity. Heat treatment: Stress relieved.

NOTE: This listing supersedes that appearing on page 58 of the April 1950 "Proceedings."

PUBLICATIONS RELEASED

Specimen Examination Questions for Licenses as Master, Mate, and Pilot of Central Western Rivers Vessels (CG-220)

Specimen Examinations for Merchant Marine Deck Officers (CG-101)

Merchant Marine Personnel Statistics

INVESTIGATING UNITS

Coast Guard Merchant Marine Investigating Units and Merchant Marine Details investigated a total of 460 cases during the month of April 1950. From this number, hearings resulted involving 11 officers and 44 unlicensed men. In the case of officers, no licenses were revoked, 5 were suspended, 2 were suspended with probation granted, 1 was voluntarily surrendered, 2 cases were dismissed after hearing and no hearings were closed with an admonition. Of the unlicensed personnel, 7 certificates were revoked, 15 were suspended, 16 were suspended with probation granted, 5 were voluntarily surrendered, none were closed with an admonition, and 1 was dismissed after hearing.

WAIVERS OF MANNING REQUIREMENTS FROM APRIL 1 TO APRIL 30, 1950

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 department	Wipers, coal passers, or cadets substituted for engineer officers	Ordinary seamen or cadets substituted for deck officers	Total
Atlantic coast										
Gulf coast										
Pacific coast										
Great Lakes	1				1					1
Total	1				1					1

NOTE.—In addition, no individual waivers were granted to permit the employment of able seamen holding certificates for "any water—12 months" in excess of the 50 percent authorized by general waiver.

ORIGINAL SEAMEN'S DOCUMENTS ISSUED MONTH OF APRIL 1950

Region	(1) Staff officer	(2) Continuous discharge book	(3) U. S. merchant mariner's documents	(4) AB any waters unlimited	(5) AB any waters 12 months	(6) AB Great Lakes 18 months	(7) AB tugs and towboats any waters	(8) AB bays and sounds [1]	(9) AB seagoing barges	(10) Lifeboatman	(11) Q. M. E. D.	(12) Certificate of service	(13) Tankerman
Atlantic coast	21	1	344	128	38	1	3			131	90	259	16
Gulf coast	4	4	98	30	14	3				16	28	72	19
Pacific coast	7	1	169	64	20	3	1			95	52	139	7
Great Lakes and rivers	1		683	21	67	51				70	81	622	22
Total	33	6	1,294	243	139	58	4	0	0	312	251	1,092	64

[1] 12 months, vessels 500 gross tons or under not carrying passengers.

NOTE.—Columns 4 through 13 indicate endorsements made on U. S. merchant mariner's documents.

MERCHANT MARINE LICENSES ISSUED DURING APRIL 1950

DECK OFFICERS

		Region								Total	
		Atlantic coast		Gulf coast		Great Lakes and rivers		Pacific coast			
		O	R	O	R	O	R	O	R	O	R
Master	Ocean	15	62	3	26	0	2	8	43	26	133
	Coastwise	2	10	1	1	0	0	1	1	4	12
	Great Lakes	0	1	0	0	1	12	0	0	1	13
	B. S. & L.	6	27	0	3	0	1	0	12	6	43
	Rivers	1	5	0	7	0	13	0	0	1	25
Chief mate	Ocean	20	26	4	11	0	4	4	25	28	66
	Coastwise	0	1	0	0	0	0	0	0	0	1
Second mate	Ocean	11	46	8	10	0	3	5	24	24	83
	Coastwise	0	1	0	0	0	0	0	0	0	1
Third mate	Ocean	9	27	3	6	0	7	4	15	16	55
	Coastwise	0	0	0	0	0	0	0	0	0	0
Mate	Great Lakes	0	0	0	0	0	0	0	0	0	0
	B. S. & L.	4	3	1	1	0	0	2	5	7	9
	Rivers	0	1	0	1	6	6	0	1	6	9
Pilots	B. S. L. & R.	75	91	22	31	21	38	13	42	131	202
Master	Uninspected vessels	1	3	0	0	0	0	2	5	3	8
Mate	do.	2	0	0	0	0	0	1	0	3	0
Total		146	304	42	97	28	86	40	173	256	660
Grand total		450		139		114		213		916	

ENGINEER OFFICERS

Steam	Chief engineer:										
	Unlimited	6	84	5	34	0	12	5	45	16	175
	Limited	0	44	0	9	1	24	1	6	2	83
	First assistant engineer:										
	Unlimited	14	34	6	13	1	11	3	34	24	92
	Limited	0	5	0	1	1	7	1	3	2	16
	Second assistant engineer:										
	Unlimited	11	70	1	15	1	12	3	37	16	134
	Limited	0	0	0	0	1	1	0	0	1	1
	Third assistant engineer:										
	Unlimited	7	67	1	20	0	24	2	37	10	148
	Limited	0	0	0	0	1	1	0	0	1	1
Motor	Chief engineer:										
	Unlimited	7	17	1	7	0	4	0	12	8	40
	Limited	18	34	2	7	0	5	1	9	21	55
	First assistant engineer:										
	Unlimited	0	3	0	0	0	0	1	3	1	6
	Limited	6	1	2	0	3	1	2	1	13	3
	Second assistant engineer:										
	Unlimited	3	6	0	0	0	3	0	0	3	9
	Limited	0	0	0	0	0	0	0	0	0	0
	Third assistant engineer:										
	Unlimited	1	71	0	19	0	31	2	48	3	169
	Limited	1	0	0	0	0	0	0	0	1	0
Uninspected vessels	Chief engineer	1	0	0	0	0	0	4	0	5	0
	Assistant engineer	2	0	0	0	0	0	4	0	6	0
Total		77	436	18	125	9	136	29	235	133	932
Grand total		513		140		145		264		1,065	

RADIO OFFICERS

Total*	27

*A grand total of 2,890 radio officer licenses have been issued since the enactment of Public Law 525.

U. S. GOVERNMENT PRINTING OFFICE: 1950