

PROCEEDINGS OF THE
MERCHANT MARINE COUNCIL
UNITED STATES  COAST GUARD

Vol. 5

September 1948

No. 9



MERCHANT MARINE COUNCIL

Published monthly at Coast Guard Headquarters, Washington 25, D. C., under the auspices of the Merchant Marine Council, in the interest of safety at sea. There are no restrictions on the republication of material appearing in this issue.

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For each meeting two District Commanders and three Marine Inspection Officers are designated as members by the Commandant.

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FIRE PROTECTION IN ACCOMMODATION SPACES—THE 1948 CONVENTION ON SAFETY OF LIFE AT SEA

Meeting in London from April 23 to June 10, 1948, delegations from 30 nations agreed on an extensive revision of the 1929 Convention on Safety of Life at Sea, which, when ratified, will establish improved international safety standards.

The protection against fire in accommodation spaces on passenger vessels is among the subjects covered in the new Convention and the regulations developed in this regard represent a long step forward from the 1929 standards. In addition to the usual hydrants, hose, portable extinguishers, etc., the 1929 Convention calls for the installation above the bulkhead deck of main fire-resisting bulkheads capable of preventing the spread of fire for 1 hour. The spacing of such bulkheads is limited to 131 feet. Other than this no structural fire protection is required.

The inadequacy of the main zone bulkheads by themselves for preventing a major conflagration on a large passenger ship was demonstrated in the years that followed the signing of the 1929 Convention by a series of disastrous fires with the result that by 1933 studies were under way in several maritime countries in efforts to determine more effective methods of controlling shipboard fires. The delegations at the 1948 Conference brought with them the knowledge gained from the numerous tests which have been conducted and also had available experience based on actual shipboard application of the principles involved.

Research on the subject of passenger ship fire protection has been led in this country by Mr. George G. Sharp, well known naval architect. He conducted a series of early tests in 1933 and after the Morro Castle fire in 1934 he was made chairman of the subcommittee on fire proofing and fire prevention of the Technical Committee appointed by the Senate to develop rules to insure the safety of United States merchant ships.

Mr. Sharp's subcommittee proceeded with a series of fire tests aboard an actual ship, the *Nantasket*, and from the results developed a type of construction which compares favorably, both as to weight and cost, with the ordinary wood construction used up to that time in passenger and crew accommodations, but which has the advantage of making a conflagration in these spaces practically impossible. The principles underlying this new type of construction can be summarized as follows:

1. The subdivision of the ship into main zones by properly insulated steel bulkheads.

2. The provision of properly enclosed escape stairways from each deck in each zone.

3. The construction of all state-room and other divisions within each main zone with incombustible panels which will withstand any fire that could occur in the space enclosed.

These principles were published in Senate Report 184 and were later incorporated in the Coast Guard's regulations for the construction of pas-

senger vessels. All large passenger ships built in this country since 1936 embody this type of construction.

When work was started in preparation for the 1948 International Convention Mr. Sharp was again selected both as chairman of the preparatory committee and as a member of the delegation which represented the United States at the conference.

At the same time that these developments were under way in this country similar studies were progressing in several foreign countries. The British shipbuilders adopted a system of fire protection based primarily upon the use of an automatic sprinkling system throughout the accommodation spaces. The French developed a system combining a network of fire-retarding divisions with the use of a fire-detecting system. Similar work was done in other countries and many of the improved methods of protection were tried in actual service on new passenger ships which were built.

Definite proposals for consideration of an increased standard of fire protection were submitted to the 1948 Convention by eight countries, and among these were quite detailed proposals by the United Kingdom, France, Italy, and the United States. Each country's proposal was based on the practice in that country.

It became evident in the early meetings of the Panel which handled this subject that the details of the various proposals were not thoroughly understood by all of the delegates. Accordingly, several meetings were devoted to the presentation of explanations and discussion of the methods submitted for consideration.

As a result of these preliminary discussions it became apparent to the Panel that all of the proposals could be summarized in the proposals of the United States, the United Kingdom, and France; and further, while each of these three methods was based on a different assumption as to how an incipient fire could be controlled, it seemed probable that each method could be developed and all three presented for adoption in the final Convention. This course of action was soon recognized as being essential since for various reasons no one of the three methods could be agreed upon to the exclusion of the other two. The United States was not in a position to press for the exclusive adoption of its proposal if only in view of the fact that the types of incombustible materials necessary are not readily available in many foreign countries.

The Panel thus proceeded with the detailed development of the three methods of fire protection. An important feature of such international

discussions lies in the fact that to the original proposals underlying each method were added some items which the experience and research of the other countries indicated would increase the effectiveness of the protection.

In the regulations as finally adopted Chapter II, Part D, Regulation 25 contains the following general requirement applicable to all three methods of protection:

"(b) The main structure, including decks and deck houses, shall be of steel except where the Administration may sanction the use of other suitable material in special cases. It shall be divided into main vertical zones by 'A' class bulkheads (as defined later) and further divided by similar bulkheads forming the boundaries protecting spaces which provide vertical access, and the boundaries separating the accommodation spaces from the machinery, cargo, and service spaces and others."

The "A" class bulkheads referred to must be constructed of steel or other equivalent material and must provide 1-hour integrity when exposed to a standard fire test.

The regulation continues as follows:

"In addition, and supplementary to the patrol systems, alarm systems, and fire-extinguishing apparatus required by Part E of this chapter, either of the following methods of protection, or a combination of these methods to the satisfaction of the Administration, shall be adopted in accommodation and service spaces with a view to preventing the spread of incipient fires from the spaces of their origin:

"Method I.—The construction of internal divisional bulkheading of 'B' class divisions (as defined later) generally without the installation of a detection or sprinkler system in the accommodation and services spaces; or

"Method II.—The fitting of an automatic sprinkler and fire alarm system for the detection and extinction of fire in all spaces in which a fire might be expected to originate generally with no restriction on the type of internal divisional bulkheading in spaces so protected; or

"Method III.—A system of subdivision within each main vertical zone using 'A' and 'B' class divisions distributed according to the importance, size, and nature of the various compartments, with an automatic fire detection system in all spaces in which a fire might be expected to originate, and with restricted use of combustible and highly inflammable materials and furnishings; but generally without the installation of a sprinkler system."

The "B" class divisions must provide one-half hour integrity when exposed

to a standard fire test. Detailed requirements applicable to the three methods are set forth in subsequent regulations.

The key to the improvement in these regulations over those of the 1929 Convention lies in the fact that these requirements are developed "with a view to preventing the spread of incipient fires from the space of their origin." The 1929 Convention was based on the hope that a conflagration could be held behind transverse bulkheads spaced a maximum of 131 feet apart, but subsequent fires indicated this to be a futile hope. Under the 1948 Convention the effort is to restrict the fire to the stateroom, locker, or other compartment in which it might start.

FILING OF CREW DEFICIENCY REPORTS SINCE 15 JULY 1948 NOT PROPER

A considerable number of Crew Deficiency Reports dated subsequent to 15 July 1948 have been received at Coast Guard Headquarters. These Crew Deficiency Reports were filed by masters of vessels to report the substitution of crew members in ratings for which they are not licensed or certificated in order to relieve their vessels of the penalties provided by the various governing manning statutes. In the July issue of the Proceedings, page 115 through 118, the complete text of Navigation and Vessel Inspection Circular No. 3-48 was published. The requirements of this Circular became effective on and after 15 July 1948. In Part I of this Circular it was pointed out that the substitutions of persons certificated or licensed in lower ratings to fill higher ratings could be made only by individual waiver with the following exceptions:

(1) On cargo and tank vessels other than those navigating the Great Lakes one-half the number of AB's required by the vessel's certificate of inspection may be holders of "12 months—any waters" AB certificates, if fully qualified AB's are not available, and;

(2) On Great Lakes cargo and tank vessels only those persons with 8 months or more service on deck may be substituted for up to one-half the number of AB's required, and persons with 3 months or more service in the fire room of coal-burning vessels may be substituted for QMED's in the rating of fireman.

The substitutions as indicated in (1) and (2) above require no reports from the masters, owners or operators of the vessels concerned.

The filing of Crew Deficiency Reports to indicate substitutions of crew members in ratings for which they are

not licensed or certificated has not been authorized since 15 July 1948. Further, the filing of such reports since this date does not relieve the master, owner, or operator of the penalties prescribed by law for employing improperly licensed or certificated persons in the crew of their vessels.

When it is necessary to substitute persons licensed in lower ratings to fill higher ratings, other than those indicated in (1) and (2) above, the procedure outlined in Part II of Navigation and Vessel Inspection Circular No. 3-48 should be followed. In other words, an individual waiver applied for by the master, owner, operator, or agent and approved by the Coast Guard District Commander or his authorized representative is required in every case of a substitution in the crew other than those allowed by general waiver and stated in (1) and (2) above.

The Crew Deficiency Reports and the individual waivers as discussed herein should not be confused with crew shortages occurring during a voyage or during the period for which a full crew is signed on and the reports of such shortages made in accordance with Part VI of Circular 3-48.

It is restated here that it is the policy of the Coast Guard to further the orderly reconversion of the merchant marine from wartime to peacetime operations by simplifying the procedures involved in the manning of vessels and at the same time to bring about a proper balance between the factors of safety at sea and this orderly reconversion. While it is not the policy of the Coast Guard to countenance willful violations of the laws and regulations or negligence in meeting the requirements thereof, neither is it contemplated that masters who exercise reasonable efforts to comply with the requirements in effect be cited for violations on technical grounds.

Bell System Coast Harbor Stations

Station	Call letters	Frequency (kc.)	Present schedule
Astoria, Ore.	KFX	2598	1130-1800
Boston, Mass.	WOU	2506	1120-2320
Charleston, S. C.	WJO	2566	1100-2300
Eureka, Calif.	KOE	2506	0900-2100
Galveston, Tex.	KQP	2530	0030-1900
Miami, Fla.	WDR	2514	1200-2400
New Orleans, La.	WAK	2598	1100-2300
New York, N. Y.	WOX	2522	1050-2250
New York, N. Y.	WAQ	2558	1050-2250
Norfolk, Va.	WGB	2538	2400-1200
Portland, Ore.	KQX	2598	1040-1810
San Francisco, Calif.	KLH	2506	0830-2030
San Pedro, Calif.	KOU	2566	0800-2000
Seattle, Wash.	KOW	2522	1130-1800
Tampa, Fla.	WFA	2550	1100-2300
Wilmington, Del.	WEH	2558	0030-1230

NOTE.—All schedules are local standard time.

Marine Information Broadcasts

The schedule of marine information broadcasts has been revised effective September 1, 1947, and appears

in table form for ready reference. This information replaces that published in the June 1948 PROCEEDINGS.

STATIONS BROADCASTING MARINE INFORMATION

Station and call letters	Time (G. C. T.)	Frequency	Emission	Nature of broadcast
Boston, Mass. (NMF)....	0350, 1550	425	A-1	Regular.
	0420, 1620	2698	A-3	Do.
	Upon receipt and on even hour intervals	425	A-1	Emergency.
New York, N. Y. (NMY)...	Upon receipt and on odd hour intervals	2698	A-3	Do.
	0420, 1620	480	A-1	Regular.
	0450, 1650	2698	A-3	Do.
Philadelphia, Pa. (NMF)....	Upon receipt and on odd hour intervals	480	A-1	Emergency.
	Upon receipt and on even hour intervals	2698	A-3	Do.
	0550, 1750	2698	A-3	Regular.
Baltimore, Md. (NMN-7)....	Upon receipt and on even hour intervals	2698	A-3	Emergency.
	1630	2698	A-3	Regular.
	Upon receipt and on odd hour intervals	2698	A-3	Emergency.
Norfolk, Va. (NMN).....	0450, 1650	410	A-1	Regular.
	0520, 1720	2698	A-3	Do.
	Upon receipt and on even hour intervals	410	A-1	Emergency.
Fort Macon, N. C. (NMN-37)....	Upon receipt and on odd hour intervals	2698	A-3	Do.
	1700	2698	A-3	Regular.
	Upon receipt and on even hour intervals	2698	A-3	Emergency.
Charleston, S. C. (NMB)...	0420, 1620	2698	A-3	Regular.
	Upon receipt and on even hour intervals	2698	A-3	Emergency.
	0550, 1750	404	A-1	Regular.
Jacksonville Beach, Fla. (NMV)....	0620, 1820	2698	A-3	Do.
	Upon receipt and on even hour intervals	404	A-1	Emergency.
	Upon receipt and on odd hour intervals	2698	A-3	Do.
Miami, Fla. (NMA).....	0420, 1620	425	A-1	Regular.
	0450, 1650	2698	A-3	Do.
	Upon receipt and on odd hour intervals	425	A-1	Emergency.
Key West, Fla. (NOK).....	Upon receipt and on even hour intervals	2698	A-3	Do.
	0430, 1630	2698	A-3	Regular.
	Upon receipt and on odd hour intervals	2698	A-3	Emergency.
St. Petersburg, Fla. (NOF)....	0420, 1620	2698	A-3	Regular.
	Upon receipt and on odd hour intervals	2698	A-3	Emergency.
Mobile, Ala. (NOQ).....	0550, 1750	2698	A-3	Regular.
	Upon receipt and on even hour intervals	2698	A-3	Emergency.
	Upon receipt and on odd hour intervals	404	A-1	Do.
New Orleans, La. (NMG)....	0520, 1720	425	A-1	Regular.
	Upon receipt and on even hour intervals	425	A-1	Emergency.
	0520, 1720	2698	A-3	Regular.
Galveston, Tex. (NOY).....	Upon receipt and on even hour intervals	2698	A-3	Emergency.
	Upon receipt and on odd hour intervals	425	A-1	Do.
	0300, 1500	2698	A-3	Regular.
San Juan, P. R. (NMR)....	0330, 1530	127, 4795	A-1	Do.
	Upon receipt and on odd hour intervals	2698	A-3	Emergency.
	Upon receipt and on even hour intervals	127, 4795	A-1	Do.
Long Beach, Calif. (NMQ)....	0430, 1630	425	A-1	Regular.
	0500, 1700	2698	A-3	Do.
	Upon receipt and on odd hour intervals	425	A-1	Emergency.
San Francisco, Calif. (NMC)....	Upon receipt and on even hour intervals	2698	A-3	Do.
	0400, 1600	425	A-1	Regular.
	0430, 1630	2698	A-3	Do.
Seattle, Wash. (NMW).....	Upon receipt and on even hour intervals	425	A-1	Emergency.
	Upon receipt and on odd hour intervals	2698	A-3	Do.
	0500, 1700	425	A-1	Regular.
Ketchikan, Alaska (NOL)....	0530, 1730	2698	A-3	Do.
	Upon receipt and on odd hour intervals	425	A-1	Emergency.
	Upon receipt and on even hour intervals	2698	A-3	Do.
Ketchikan, Alaska (NOL)....	0530, 1730	410	A-1	Regular.
	0600, 1800	2698	A-3	Do.
	Upon receipt and on even hour intervals	410	A-1	Emergency.
Honolulu, T. H. (NMO)....	Upon receipt and on odd hour intervals	2698	A-3	Do.
	0900, 2100	425	A-1	Regular.
	0930, 2130	2698	A-3	Do.
	Upon receipt and on local odd hour intervals	425	A-1	Emergency.
	Do.	2698	A-3	Do.

UNSAFE PRACTICES

Lifting with your back instead of your legs.
Working under a swinging load.
Tossing waste material toward a container instead of walking to it and placing the waste inside.
Using slings of wrong size or length for the job at hand.
Welding or burning on EMPTY drums.
Wearing loose clothing around moving machinery.

Smoking in prohibited areas.
Attempting to FIX machinery with which you are unfamiliar.
Running down ladders or leaving tools or other objects on a ladder or stairs.
Wearing rubber soles in contact with oily surfaces.
Working on electrical connections when the current is on.

ROUND ISLAND PASSAGE LIGHT STATION

On April 15, 1948, 12 years after the inception of the project for the erection of a lighthouse to be located on a marine site, to guide traffic through Round Island Passage, Lake Huron, the new and modern unattended remote controlled Round Island Passage Light Station was officially placed in commission.

The light apparatus is a solid bank of sealed beam lamps, of 3,000 CP, 71 feet above low water, and produces a characteristic of occulting green every 10 seconds, visible 11 miles. The fog signal consists of 2 air operated diaphragm horns oriented for best directional effect and sounding simultaneous with characteristic 3 seconds blast, and 27 seconds silence. The radiobeacon is class B and transmits

on 302 kc. Distance finding is also provided.

The Round Island Passage Light Station is located in approximately 24 feet of water. The lake bottom is rock overlaid with 1 to 3 feet of sand, gravel, and boulders. This bottom was cleared of loose material and was then leveled off with 4-inch stone.

The substructure, 56 feet square to 1 foot below M. L. W., is a timber crib with cells at perimeter filled with concrete and internal cells filled with 5-inch to 14-inch rock. Riprap was placed to elevation minus 15 on all sides of the crib structure.

From top of timber crib to 20 feet above M. L. W. the structure is concrete with reinforced concrete deck. This concrete structure is 56 feet square on the base, has 4 vertical and 4 sloping sides to form a 41-foot square top surface. The machinery is located in a room within this structure.

On the concrete deck is mounted a structural steel and steel plate enclosure 20 feet square and 11 feet 3 inches high, on which is mounted an octagonal structural steel and steel plate tower 41 feet 6 inches high, in the top section of which the light is located. Topping this tower is a skeleton steel antenna tower 47 feet 6 inches high, giving an over-all height from M. L. W. of 120 feet 3 inches.

The structure houses modern aids to navigation machinery, which is remote controlled by cable from a watch house on shore nearby.

The plaques seen on the tower are bronze Indian Heads in relief, and are commemorative of the historical fact that this was Indian country long before the white man came, and that Mackinaw Island was a sacred spot to him and a central meeting place of the tribes of the Great Lakes region.

LESSONS FROM CASUALTIES

BEWARE OF EXPOSED CONDUCTORS OF ELECTRICITY

Two men were killed recently and a third seriously injured while working around live bus bars and cable lugs in the engine rooms of T-2 tankers.

The incidents occurred on two Pacific Coast vessels at sea. On the first vessel, a faulty evaporator was in need of repairs and the Junior Third Assistant Engineer volunteered to take down and examine a short section of one-half-inch pipe line, located close to the forward engine room bulkhead at a point directly behind the evaporator. About 10 minutes later the First Assistant Engineer noticed the Junior Third stagger around the after end of the evaporator with his head badly bruised and swollen. He told the "First" that he had gotten overheated and had fallen on a hot pipe. An examination of the "Junior's" head by the First Assistant revealed three rather deep wounds on the left side, with the surrounding flesh burned. Being in serious condition, he was put to bed and later was sent ashore to a naval hospital, where he eventually recovered completely from his injury.

On the same vessel the next morning, the Third Assistant Engineer, off watch, reported to the "First" that he was ready to work overtime to locate the trouble and make the necessary repairs to the evaporator. He then started to take down the one-half-inch pipe line that the Junior Third had been working on. This pipe line was connected to the top of the dia-

phragm regulator located between the forward engine room bulkhead and the forward head of the evaporator about 6 feet above the 'tween deck compressor flat. In order to remove the last section of pipe, the Third Assistant climbed on top of the evaporator shell and maneuvered on his stomach directly over the diaphragm regulator. This position placed his body very close to a large number of high voltage cable lugs. After having worked in this manner for about 20 minutes, he climbed down from evaporator to rest and cool off a bit.

He again climbed to the top of the evaporator shell and was in the act of turning his body when, without glancing upwards, he raised his hand over his head and struck a bar cable lug. A flash of blue flame resulted. The Third Assistant slumped over and fell partly off the evaporator with his leg caught between the shell and some pipe line. Simultaneously, the turbine driving the propulsion generator tripped out thus idling that unit. When lowered down from the evaporator by the First Assistant and watertender, it was observed that the "Third" was not breathing and that his face had a bluish pallor. Immediate efforts were made to revive him by artificial respiration which was continued for several hours until his body began to stiffen and it became apparent that further effort would be useless.

On the second vessel, certain painting of the air compressor flat was indicated. The First Assistant Engineer called together three men, two wipers and one oiler, and instructed

them to begin in the air compressor flat and work downward. He cautioned them to "keep away from bare electrical wires and hot steam pipes." The painting was carried out the first day without mishap.

The following day, the painting was resumed by the same three men. The First Assistant gave them no further instructions and did not inspect the area to see what had been accomplished. One of the wipers, while painting the overhead of the air compressor flat under the switchboard, within a few inches of three bus bars, was seen falling from the stepladder on which he was working, and at the same time the main motor was cut off the line. The victim, breathing weakly, was removed to the ship's hospital where it was noticed that three fingers of the right hand were badly burned at the tips. Purple splotches appeared on his body and artificial respiration was begun. It was continued for over 17 hours until he was pronounced dead by a medical officer from a passing Army transport vessel.

In the investigation of these two fatalities it was quite evident that the bus bars and cable lugs were uninsulated, unprotected, and unposted. While it is obvious to everyone that all necessarily exposed parts of high voltage conductors (2,300 volts on each of the vessels) involved herein should be guarded with wire meshing, metal covers, warning signs and tags, etc., it is not always practicable to do so. An analysis of the circumstances of these two cases reveals that the exposed sections were in ordinarily in-

accessible locations. It is simply not intended that protective devices be a substitute for common sense and human precaution. The human being must sometimes guard himself.

On the first vessel, the Third Assistant Engineer crawled on top of the evaporator shell and was apparently aware of the proximity of the cable lugs. His death was merely a matter of momentary disregard or forgetfulness—a very ordinary human trait—as he adjusted his body leverage while in an unnatural position. His work could have been performed in comparative safety, as was demonstrated by the First Assistant Engineer who completed the job after the Third Assistant was killed.

On the second vessel, the wiper was killed while working from a ladder, apparently holding on with one hand and painting around bus bars with the other. His misfortune was a matter of insufficient instructions from his superior officer, the First Assistant Engineer. In this case, the First Assistant should not have limited his precautionary instructions to "keep away from bare electrical wires * * *" but should have taken the three men to the scene of the exposed parts and instructed them what to avoid while working in the vicinity.

As a general guide towards preventing the recurrence of incidents similar to the above, it is highly desirable that while working around exposed electrical parts, such parts should be de-energized, even stopping the vessel, if necessary. Or if the work can be postponed until arrival in port, this should be done. If not, then every precautionary effort must be taken to avoid a human circuit between live conductors and metal parts of the vessel. There are various schemes by which an individual can insulate himself against electrical shock.

It will be observed that one of these cases involved a repair job which might have been necessary. However, the painting of the overhead was a matter of maintenance which could readily have been deferred until the vessel was in port, where the current could have been cut off.

Reverting to the protection of hazardous places, in Section 32.9-8 of the Tank Vessel Regulations and also in the regulations for other classes of vessels, we find that, "It shall be the duty of the inspectors when inspecting a vessel to see that all exposed and dangerous places, * * *, are properly protected with covers, guards, or rails, in order that the danger of accidents may be minimized * * *." It is apparent that the exposed lugs and bus bars carrying a heavy current were not protected.

For those with mathematical minds, the following figures may prove convincing. The resistance of a human body is roughly 500 ohms, more or less, arm to arm, or head to foot. Placed across a potential of 2,300 volts, a current of 4.6 amperes would pass through the body. This represents a power of 10.5 kilowatts, or approximately 13 horses. This is quite a wallop for any man to experience, and survive. The sensible thing to do, of course, is to avoid that unlucky 13.

SPECTACLE FLANGE CAUSES SPECTACLE

Several weeks ago a merchant seaman serving as wiper was injured to the extent of a severed third finger of the left hand while engaged in routine work aboard a T-2 tanker at sea.

About 1440 (E. S. T.), the wiper and two other crew members, under the direction of the first assistant engineer, were placing the blank end of a spectacle flange between the flanges of the 8-inch athwartship connecting line between the two main cargo lines, starboard side just aft of the 'midship house. The pipe flanges had been jacked apart and the blank was being fitted into place manually. For some reason, it was necessary to use force to get the blank into position. In order to line it up, the wiper inserted his finger through a bolt hole in the customary manner. While in the process of forcing the blank, it suddenly came free and fell to the deck below; the wiper's finger fell with it.

The wiper was taken to the ship's hospital for first aid and treatment, and later sent to the Marine Hospital upon next arrival in port.

Inasmuch as the fitting of the flange was performed in the usual manner as a routine task, it is open to question as to whether this is a safe practice. Instead of using human fingers, a driftpin or spike could have been used with equal facility and still accomplish the intended objective. Fingers cannot be readily replaced or reshaped, but metal tools can.

BOILER EXPLOSIONS

A boiler explosion occurred recently on a small tugboat and resulted in a total loss of the vessel and the death of a crew member. The boiler on the tug was a Scotch marine type having three furnaces connected to a common combustion chamber. The boiler was built in 1919 in Manitowoc, Wis., and was constructed in accordance with the rules in existence at that time.

The cause of the explosion appears to be due to a reduction in the thickness of the metal forming the com-

bustion chamber, which resulted in a pulling away of the bottom part of the wrapper sheet from the staybolts, followed by a fracture of the flame sheet at the knuckle in the lower edge. The flange of the flame sheet remained riveted to the wrapper sheet.

An examination of the boiler after the accident occurred indicated pitting on the water side of the wrapper sheet and considerable thinning of the metal in both the wrapper and the flame sheets.

The records show that this boiler was regularly inspected 5 months prior to the explosion. At this inspection a hydrostatic pressure of 1½ times the working pressure was applied and the usual hammer tests were made to all accessible parts on both the fireside and the water side of the boiler. From the facts developed during the investigation it is possible that a weakened condition of the flanged plate forming part of the combustion chamber escaped detection during the annual inspection. Obviously hydrostatic and hammer tests alone are not sufficient to establish the integrity of a boiler for continued service.

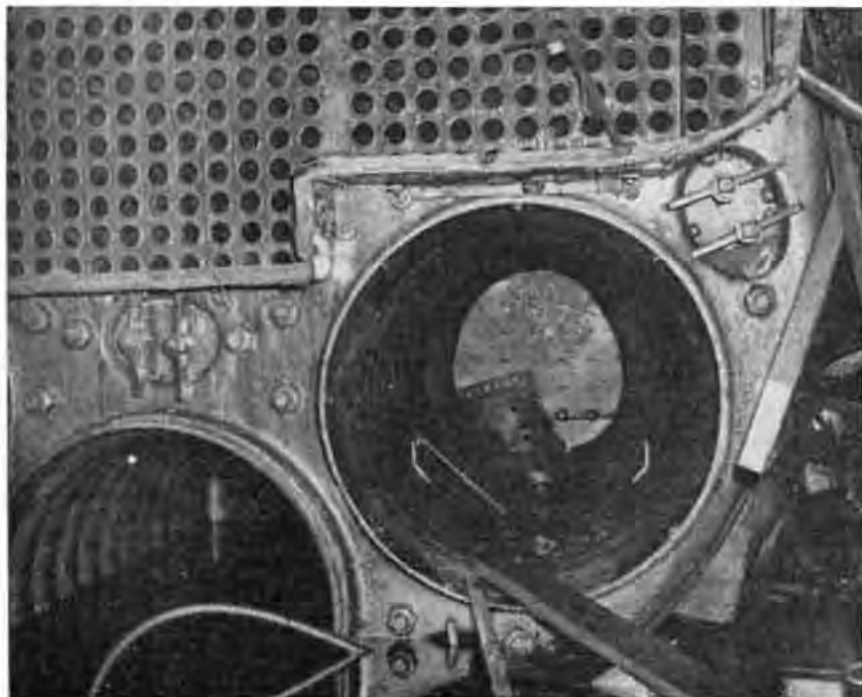
The defects which show up under hydrostatic tests can easily be observed from the outside or fireside of conventional type boilers. Defects which often are the most serious, however, are indicated only by the surface condition of the plates or other parts seen from the water or steam side. Some of these interior defects can be described as follows:

(1) Grooving. Usually found along the edge of lapped plates.

(2) Fatigue cracking which occurs on the knuckles of flanged plates and on the underside of the first corrugation forming the horse collar of Morrison type furnaces.

(3) General deterioration of plates and stays caused by corrosion which is often concealed by a layer of scale having considerable thickness. The extent to which these defects have advanced can be determined only by a most careful examination after the boiler has been thoroughly scaled and cleaned.

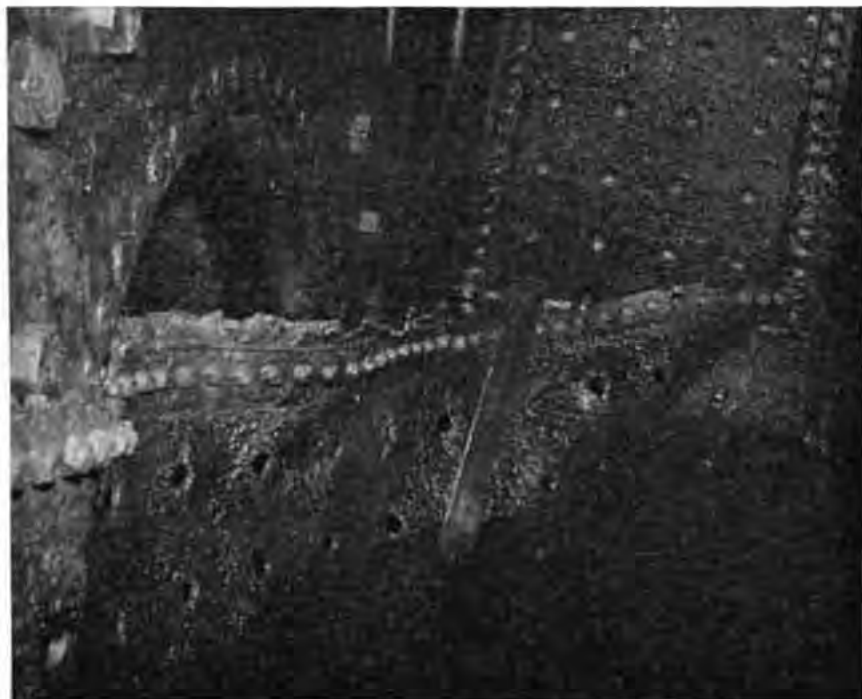
The photographs accompanying this article graphically illustrate the seriousness of a boiler explosion and the damage which can be caused as a result. While boilers are inspected annually by the Coast Guard to determine their condition, the operators, owners, and officers of steam vessels should also maintain regular examinations in order to detect any defects which may develop during operation. When defects are observed they should be reported immediately to the nearest Officer in Charge, Marine Inspection, in order that an examina-



Looking through furnace toward wrapper sheet.

tion can be made to ascertain the extent and character of the repairs. Negligence in this respect will create a hazard which may involve the life of

one or more crew members as well as innocent passengers or other persons nearby and, as in this case, cause the total loss of the vessel.



Lower section of wrapper sheet covering after end of furnace.

CASUALTIES TO SEAMEN FROM HAND CRANKS OF LIFEBOAT WINCHES

A review of casualty reports discloses that there have been nine instances where seamen have suffered injuries by being struck with the hand cranks of lifeboat winches which had inadvertently been left attached during operation by power. Two of these cases proved fatal to the victims.

Power-operated lifeboat winches are necessary parts of lifeboat equipment on modern ocean-going passenger ships. They are the means by which the larger and heavier lifeboats may be safely launched from a ship's deck while carrying a full complement of passengers. They are powered with electric motors ranging from 10 to 20 horsepower in order to lift the lifeboats from the water to their respective positions on the ships' decks. Each of these winches is supplied with one or more detachable hand cranks for the purpose of operating the gear manually in the event of a power failure or for placing the boats in position after the limit switches have been tripped. It is the failure of some member of the crew to remove the hand crank before power is applied that leads to these casualties. A fast turning hand crank on a power-driven winch in the midst of a group of men can have only one result—somebody is going to be injured.

Reports indicate that the injuries suffered in these cases are quite severe. It is apparent, of course, that the way to prevent such injuries is to see that the hand cranks are detached before power is applied. It would seem, therefore, that the responsibility of preventing the occurrence of this type of accident rests entirely with the ships' officers who supervise the operation of these lifeboat winches. Teamwork and the exercise of a reasonable degree of judgment should pay off in these cases.

WHEN YOU NEED SMALL HAND TOOLS—REMEMBER

1. Use the right tool.
 2. Use a tool in good condition.
 3. Use the tool in the right way.
 4. Keep tools in a safe place.
- Remember your luck can run out in an unguarded moment.

Gasoline packs a wallop!

When gasoline is close by:

No smoking.

No open flame.

Create no sparks.

Gasoline vapors collect in low places and travel for long distances.

They are flammable even at 50° F.

APPENDIX

Amendments to Regulations

TITLE 46—SHIPPING

Chapter I—Coast Guard: Inspection and Navigation

SUBCHAPTER F—MARINE ENGINEERING

[CGFR 48-23]

PART 53—LOW PRESSURE HEATING BOILERS

SUBPART 53.03—STEEL PLATE HEATING BOILERS

By virtue of the authority vested in me, as Commandant, United States Coast Guard, by R. S. 4405, 4417a, 4418, 4426, 4427, 4429, 4430, 4431, 4432, 4433, 4434, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 367, 375, 391a, 392, 404, 405, 407-412, 1333, 50 U. S. C. 1275; and section 101 of Reorganization Plan No. 3 of 1946 (11 F. R. 7875), the following correction shall be made in Coast Guard document CGFR 48-23, Federal Register document 48-5789, filed June 25, 1948, and published in the Federal Register dated June 25, 1948, 13 F. R. 3521 et seq.:

Section 53.03-10 *Materials* (13 F. R. 3524) is corrected by deleting paragraph (c).

Dated: July 28, 1948.

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

[F. R. Doc. 48-7033; Filed, Aug. 3, 1948;
9:02 a. m.; 13 F. R. 4482, Aug. 4, 1948.]

PART 55—PIPING SYSTEMS

SUBPART 55.07—DETAILED REQUIREMENTS

By virtue of the authority vested in me as Commandant, United States Coast Guard, by R. S. 4405, 4417a, 4418, 4426, 4427, 4429, 4430, 4431, 4432, 4433, 4434, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 367, 375, 391a, 392, 404, 405, 407-412, 1333, 50 U. S. C. 1275; and section 101 of Reorganization Plan No. 3 of 1946 (11 F. R. 7875), the following omissions shall be inserted in Coast Guard Document CGFR 48-23, Federal Register Document 48-5789, filed June 25, 1948, and published in the Federal Register dated June 26, 1948, 13 F. R. 3521 et seq.

The revised descriptions of Figures 55.07-15 (f3) and 55.07-15 (f4) were inadvertently omitted when publish-

ing the revised requirements for Class I and Class II piping, and in order that the descriptions of figures will be in agreement with the other regulations published, § 55.07-15 is amended by changing the descriptions for Figures 55.07-15 (f3) and 55.07-15 (f4) to read as follows:

§ 55.07-15 *Joints and flange connections.* * * *

(f) * * *

FIGURE 55.07-15 (f3). Slip-on flanges may be used for Class I piping of nominal pipe size not exceeding 2 inches and for Class II piping without diameter limitation. The face of the flange shall extend beyond the end of the pipe at least equal to the thickness of the pipe wall.

FIGURE 55.07-15 (f4). Socket welding flanges may be used for Class I piping of nominal pipe size not exceeding 2 inches. For Class II piping, socket welding flanges may be used without diameter limitation.

Dated: August 12, 1948.

[SEAL] J. F. FARLEY,
Admiral, U. S. Coast Guard,
[F. R. Doc. 48-7504; Filed, Aug. 19, 1948;
8:51 a. m.; 13 F. R. 4820, August 20, 1948.]

[CGFR 48-5]

MARINE ENGINEERING AND MATERIAL SPECIFICATIONS FOR MERCHANT VESSELS

By virtue of the authority vested in me by R. S. 4405, 4417a, 4418, 4426, 4427, 4429, 4430, 4431, 4432, 4433, 4434, 4453, 4491, sec. 14, 29 Stat. 690, 41 Stat. 305, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended (46 U. S. C. 363, 366, 367, 375, 391a, 392, 404, 405, 407, 408, 409, 410, 411, 412, 435, 1333, 50 U. S. C. 1275), and sec. 101 of Reorganization Plan No. 3 of 1946 (11 F. R. 7875), the following corrections shall be made and the following omissions shall be inserted in Coast Guard document CGFR 48-5, Federal Register document 48-2817, filed March 30, 1948, and published in the Federal Register dated March 31, 1948, 13 F. R. 1668, et seq.:

SUBCHAPTER F—MARINE ENGINEERING

PART 55—PIPING SYSTEMS

SUBPART 55.07—DETAILED REQUIREMENTS

Section 55.07-15 is corrected by changing the description for Figure

55.07-15 (f7) (13 F. R. 1736) to read as follows:

§ 55.07-15 *Joints and flange connections.* * * *

(f) * * *

Figure 55.07-15 (f7). Pipe may be attached to high hub flanges with screwed threads where the end of the pipe and the bore of the flange are machined to a snug fit and the hub screwed and welded to the pipe as shown by Figure 55.07-15 (f7).

PART 56—ARC WELDING, GAS WELDING, AND BRAZING

SUBPART 56.01—ARC WELDING AND GAS WELDING

The text of the regulations in 46 CFR 56.20-10 (g) was inadvertently omitted from the material published in Part 56 on March 31, 1948, and, therefore, Part 56 is amended by adding § 56.01-57 to follow § 56.01-55, reading as follows:

§ 56.01-57 *Unreinforced holes in welded joints.* (a) Unreinforced holes may be machine-cut through welded seams which have been stress-relieved and radiographed. The joint efficiency as well as the ligament efficiency shall be considered in calculating the required thickness.

(b) Tubes may be rolled and expanded in such unreinforced holes, or such holes may be threaded: *Provided*, That in the portion of the welded joint in which the holes are cut the following additional requirements are fulfilled:

(1) The welds shall be examined by the paramagnetic powder method on both sides and found to be satisfactory.

(2) The weld shall contain no slag inclusion or defect longer than 0.15T (where T is the thickness of the weld), but in no case greater than 3/8 inch.

(c) If either or both paragraphs (b) (1) and (b) (2) of this section are not complied with, the unreinforced holes for threaded connections or for rolled or expanded tubes may not be placed closer than 1/4 inch to the edge of the fused metal, and no deduction need be made in the maximum allowable pressure computed for the same tube layout without a circumferential weld.

(R. S. 4405, 4417a, 4418, 4426, 4427, 4429-4434, 4453, 4491, sec. 14, 29 Stat. 690, 41 Stat. 305, 49 Stat. 1544, 54 Stat. 346, sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 363, 366, 367, 375, 391a, 392, 404, 405, 407-412, 435, 1333,

Dated: June 15, 1948.

[SEAL] **MERLIN O'NEILL,**
Rear Admiral, U. S. C. G.,
Acting Commandant.

[F. R. Doc. 48-5538; Filed, June 21, 1948;
8:49 a. m.; 13 F. R. 3341, June 22, 1948]

Miscellaneous amendments in Parts 28, 30, 31, 32, 33, 34, 35, 37, 52, 53, and 55 which preceded the amendments below were printed in the July 1948 Proceedings on pages 107 to 115, inclusive, and pages 125 to 137, inclusive, in the August 1948 issue.

[CGFR 48-23]

MISCELLANEOUS AMENDMENTS

A notice regarding proposed changes in the inspection and navigation regulations was published in the Federal Register dated March 6, 1948 (13 F. R. 1237), and public hearings were held by the Merchant Marine Council on March 30 and 31, 1948, at Washington, D. C.

The purpose of the miscellaneous amendments to the regulations is to clarify their intent, effect editorial changes, establish additional safety requirements on the basis of experience obtained, and to permit certain practices to be employed by the industry in the construction, repair, and operation of merchant vessels, as well as to bring certain marine engineering requirements into closer agreement with the rules of the American Bureau of Shipping, heating boiler code of the American Society of Mechanical Engineers, and the rules for fusion welding piping of the American Welding Society. 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.

The Department of the Army, as well as various shipyards and contractors indicated that it is very difficult to obtain wire inserted glass with deliveries being up to 18 months from the time the orders are given. Accordingly, in order not to hinder the construction and delivery of passenger vessels, the use of plain glass as an alternate for the wire inserted glass will be permitted until July 1, 1949. This amendment to the regulations, 46 CFR 144.29, is published without prior general notice of its proposed issuance for the reason that notice and public rule making procedure in connection therewith are hereby found to

be impracticable, and contrary to the public interest.

By virtue of the authority vested in me by R. S. 4405, as amended, 46 U. S. C. 375, and sec. 101 of Reorganization Plan No. 3 of 1946, 11 F. R. 7875, as well as the statutes cited with the regulations below, the following amendments to the regulations are prescribed, which shall become effective 90 days after date of publication of this document in the Federal Register:

SUBCHAPTER Q—SPECIFICATIONS

PART 160—LIFESAVING EQUIPMENT

8. Part 160 is amended by adding a new subpart 160.024 reading as follows:

SUBPART 160.024—SIGNALS, DISTRESS, PISTOL-PROJECTED PARACHUTE RED FLARE (AND SIGNAL PISTOL) FOR MERCHANT VESSELS

Sec.	
160.024-1	Applicable specifications and plans.
160.024-2	Type.
160.024-3	Materials, workmanship, construction and performance requirements.
160.024-4	Sampling, inspections, conditioning and tests.
160.024-5	Marking.
160.024-6	Container.
160.024-7	Procedure for approval.

AUTHORITY: §§ 160.024-1 to 160.024-7, inclusive, issued under R. S. 4405, 4417a, 4488, 4491, 49 Stat. 1544, 54 Stat. 348, and sec. 5 (c), 55 Stat. 244, as amended; 46 U. S. C. 367, 375, 391a, 481, 489, 1333, 50 U. S. C. 1275; and sec. 101, Reorganization Plan No. 3 of 1946, 11 F. R. 7875.

§ 160.024-1 *Applicable specifications and plans*—(a) *Specifications*. There are no other specifications applicable to this subpart.

(b) *Plans*. The following plans, of the issue in effect on the date pistol-projected parachute red flare distress signals or signal pistols are manufactured, form a part of this specification:

- (1) Drawing No. 160.024-2 (a)—Signal pistol, chamber and bore dimensions.¹
- (2) Drawing No. 160.024-6 (a)—Container for signal pistol and pistol-projected parachute red flare distress signals.¹

§ 160.024-2 *Type*. (a) Pistol-projected parachute red flare distress signals specified by this subpart shall be of one type which shall consist essentially of a cartridge having centered primer, propelling charge, and projectile consisting of a case,

¹ A copy of this drawing has been filed with this document in the Division of the Federal Register, The National Archives, Washington, D. C. Copies are also on file with the various Coast Guard District Commanders for reference purposes.

delay element, expelling charge, and pyrotechnic candle attached to a parachute by shroud lines; which when fired from a signal pistol provides a parachute red flare distress signal. Signal pistols specified by this subpart shall be center firing type and have chamber and bore dimensions as shown on Drawing No. 160.024-2 (a).

§ 160.024-3 *Materials, workmanship, construction and performance requirements*—(a) *Materials*. The materials used in signal pistols and pistol-projected parachute red flare distress signals shall conform strictly to the specifications and drawings submitted by the manufacturer and approved by the Commandant. In general, all exposed parts shall be corrosion-resistant or properly protected against corrosion.

(b) *Workmanship*. Signal pistols and pistol-projected parachute red flare distress signals shall be of first-class workmanship and shall be free from imperfections of manufacture affecting their appearance or that may affect their serviceability.

(c) *Construction*. The exterior case of the cartridge shall be made of a suitable metal and shall protect against the entrance of moisture. The projectile case and delay element shall be so constructed as to prevent any possibility of the propelling charge blowing by and causing premature ejection of the projectile contents. The signal pistol shall be center firing with dimensions of chamber and bore shown by Drawing No. 160.024-2 (a) and shall be substantially constructed of good quality material properly protected against corrosion.

(d) *Firing and operating characteristics*. Cartridges shall fire and operate satisfactorily when shot from a pistol of the type described herein. The pyrotechnic candle shall not ignite explosively or burn in such a manner that might damage the parachute. The pyrotechnic candle shall ignite and burn satisfactorily with uniform intensity.

(e) *Water resistance*. Cartridges shall function properly after having been subjected to the conditioning described in § 160.024-4 (e).

(f) *Altitude*. The signal projectile when discharged vertically upward shall attain an altitude of not less than 150 feet, and be so constructed that the parachute and pyrotechnic candle will be expelled at approximately the maximum altitude reached.

(g) *Rate of descent*. The pyrotechnic candle and parachute, during the period of burning, shall descend at an average rate not to exceed 6 feet per second in reasonably still air.

(h) *Chemical stability.* The pyrotechnic candle shall function properly after having been subjected to the elevated temperature conditioning experiment described in § 160.024-4 (e). No ignition shall occur during the conditioning experiment.

(i) *Temperature of ignition of signal materials.* When tested as described by § 160.024-4 (f), the temperature of ignition of the signal materials shall be not less than 338° F. (170° C.).

(j) *Burning time.* The pyrotechnic candle shall burn in air not less than 30 seconds, as determined by § 160.024-4 (g).

(k) *Candlepower.* The average luminous intensity for any pyrotechnic candle shall be not less than 20,000 candlepower, as determined by § 160.024-4 (h). The minimum for a single specimen shall be not less than 14,000 candlepower for more than 5 seconds.

(l) *Chromaticity.* The color of the burning flare shall be vivid red as determined by § 160.024-4 (i).

§ 160.024-4 *Sampling, inspections, conditioning and tests—(a) Classification of tests of cartridges.* The methods of sampling inspections, and tests conducted upon signals shall be considered as falling within one of the following general classifications:

(1) Qualification (type or brand approval) tests;

(2) Production check tests (at place of manufacture); or,

(3) Production check tests (at a government laboratory).

(b) *Qualification (type or brand approval) tests of cartridges.* Pre-approval samples, selected in accordance with paragraph 160.024-7 (c), shall be tested in accordance with the following testing schedule to determine qualification for type or brand approval:

(1) Test 12 cartridges for water resistance characteristics, § 160.024-3 (e), following which test same 12 specimens for firing and operating characteristics. The magnitude of the failures shall be determined as follows (in the case of concurrent or simultaneous defects, penalties will not be applied cumulatively, but only for the greatest defect):

	Percentage of failure
(i) Misfire (when attributable to the primer and not to the malfunction of the pistol).....	100
(ii) Failure to eject projectile contents.....	100
(iii) Failure to ignite prime of candle.....	100
(iv) Ignites, but burns less than 25% of specified time before reaching ground.....	75
(v) Burns at least 25% but less than 50% of specified time before reaching ground.....	50

	Percentage of failure
(vi) Burns at least 50% but less than 75% of specified time before reaching ground.....	25
(vii) Complete carrying away or destruction of parachute before 25% of specified burning time has elapsed.....	75
(viii) Complete failure of parachute to open.....	50
(ix) Failure of parachute to open completely, with illuminant reaching ground before 75% of burning time has elapsed.....	25
(x) Reaches 50% but less than 100% of specified altitude.....	25
(xi) Reaches less than 50% of specified altitude.....	50

(2) Disassemble 6 cartridges and test the pyrotechnic candles for burning time, candlepower, and chromaticity, § 160.024-3 (f), (k), and (l).

(3) Disassemble 3 cartridges and test for temperature of ignition, § 160.024-3 (i).

(4) Test 3 cartridges for chemical stability, § 160.024-3 (h), following which test them for firing and operating characteristics, § 160.024-3 (d).

(c) *Sampling, inspections, and tests of cartridges from production lots.* The production of pistol-projected parachute red flare distress signals produced under an official type or brand approval shall be checked for compliance with this specification in the manner set forth below:

(1) *Lot size and sampling procedure.* For purposes of sampling the production of pistol-projected parachute red flare distress signals, a lot shall consist of not more than 3,000 signals. A new lot shall be started with any change or modification in raw materials or manufacturing methods. Lots shall be numbered serially by the manufacturer, and the lot number shall be plainly and indelibly marked on the cartridge case of each signal in the lot. A marine inspector shall select at random from each lot the number of specimen signals indicated in the following table for inspection, conditioning, and testing:

Lot size:	Minimum number of specimens of sample
Not more than 1,000.....	15
1,001 to 3,000.....	24

(2) *Inspections (at place of manufacture).* The marine inspector shall be admitted to the place of manufacture and shall familiarize himself with the various operations involved in the manufacturing process and, from observation during manufacture, satisfy himself that pistol-projected parachute red flare distress signals are being made in general accordance with this subpart and of materials and parts conforming strictly with the specifications and drawings submitted

by the manufacturer and approved by the Commandant. Specimens or samplings of materials entering into construction may be taken at random, either in the raw material state or during manufacture, by the inspector and tests made for compliance with applicable requirements. The test specimens comprising the sample, selected in accordance with subparagraph (1) of this paragraph shall be examined by the inspector for surface defects.

(3) *Production check tests (at place of manufacture).* (i) The manufacturer shall provide a suitable place and the necessary apparatus for the use of the inspector in conducting such production check tests as are done at the place of manufacture. Samples from production lots selected in accordance with subparagraph (1) of this paragraph shall, except when tested at a government laboratory as prescribed below, be tested at the place of manufacture in accordance with the following testing schedule:

1st day: Place all specimens in water-resistance conditioning, § 160.024-4 (d).
2d day: Remove all specimens from water-resistance conditioning. Test all but three specimens for firing and operating characteristics, § 160.024-3 (d). Performance shall be rated as in § 160.024-4 (b) (1). Disassemble 3 cartridges and test pyrotechnic candle for burning time and candlepower, § 160.024-4 (g) and (h). The visual color shall be vivid red, but measurements for chromaticity will not be made.

(ii) Report of inspection and test shall be forwarded to the Commandant.

(4) *Production check tests (at a government laboratory).* Tests at a government laboratory shall be made on not less than one sample from each ten production lots of pistol-projected parachute red flare distress signals, or not less than once in each year, whichever occurs more frequently. Sampling and inspection shall be made at the place of manufacture as provided in subparagraphs (1) and (2) of this paragraph, except that for these tests the sample shall consist of 24 specimens. The sample will be forwarded prepaid by the manufacturer to the Commandant. Tests at the government laboratory shall be conducted in accordance with the schedule given in paragraph (b) of this section.

(d) *Conditioning of test specimens; water resistance.* Immerse specimen horizontally in water at not more than 30° C. with uppermost portion of the signal approximately one inch below the surface of the water for a period of 24 hours.

(e) *Conditioning; elevated temperature, humidity, and storage.* Place specimen in a thermostatically controlled even-temperature oven held

at 90° C. with not less than 90 percent relative humidity for 72 hours. Remove specimens and store at room temperature (20° to 25° C.) with approximately 65 percent relative humidity for ten days.

(f) *Test method; temperature of ignition of signal materials.* The test shall be conducted in a uniformly heated gas or electric oven with a chamber of at least 6 inches by 6 inches by 9 inches inside measurement. If gas heated, the oven should be of jacketed type with the products of combustion of the heating gas excluded from the inner chamber. The oven should be provided with an opening or openings at the top of at least $\frac{3}{4}$ square inch in area to give air circulation within. A suitable 600° F. 3-inch immersion thermometer or thermocouple shall be inserted through a sleeve in the top of the oven. A shelf of perforated sheet metal shall be provided at the mid-height of the oven. A wire screen cup $\frac{1}{2}$ inch in diameter by $\frac{3}{4}$ inch high shall be provided. The materials to be tested shall be placed to a depth of $\frac{1}{2}$ inch in the wire screen cup. Ordinarily, materials adjacent to each other in the assembled signal will be blended together for the test; materials nonadjacent ordinarily will not be blended together for the test. The cup then shall be placed on the shelf so as to be within $\frac{1}{2}$ inch to $\frac{3}{4}$ inch from the bulb of the thermometer or the junction of the thermocouple. The temperature of the oven is to be raised to about 284° F. (140° C.) at a convenient rate, after which the temperature is to be raised at a rate not to exceed 2° F. per minute until ignition occurs or 338° F. (170° C.) has been reached. Time and temperature readings at 30 second intervals and also time at which ignition, if such occurs, are to be recorded. If ignition occurs, the approximate ignition temperature, to be reported, can be obtained by extrapolation from the time-temperature data. Alternate test methods will be given special consideration by the Coast Guard.

(g) *Test method; burning time.* The burning time of the pyrotechnic candle shall be obtained by stop watch measurements from the time positive flame is emitted until it ceases. The burning time for a sample (i. e. all the test specimens from a single lot) shall be the arithmetical average for all specimens in the sample.

(h) *Test method; candlepower.* The candlepower of each pyrotechnic candle tested shall be measured by a visual photometer or equivalent photometric device, while the specimen is supported in a horizontal position and the photometer is at right angles to the axis of the specimen. Visual

candlepower readings shall be observed and recorded at approximately 20-second intervals during the burning of the specimen. The minimum photometric distance shall be 10 feet. Recording photometers shall have a chart speed of at least one inch per minute. The candlepower of the specimen shall be computed as the arithmetical average of the readings recorded. The range for a specimen shall be the difference between the greatest and least candlepower reading. The candlepower for the sample (i. e., all test specimens from a single lot) shall be the arithmetical average of the candlepower values computed for each of the specimens making up the sample. The range for the sample shall be the difference between the computed greatest candlepower of a specimen and the computed least candlepower of another specimen in the sample. Signals failing to ignite shall be disregarded in computing the range of a sample.

(i) *Test method; chromaticity.* In order to determine that light from the specimen may be termed "vivid red" (ISCC-NBS method of designating colors, RP1239), two identical test plates of white cardboard 12" x 24" are used. Except for a negligible amount of stray daylight, the first test plate is illuminated by light from the specimen placed at a distance of about 5 feet. The second test plate is illuminated only by light from an incandescent lamp operated at a color temperature close to 2,448° K. at a distance of about one foot. The first test plate is viewed directly, the second through combinations of Lovibond red, yellow, and blue glasses selected so as to approximate a chromaticity match. By separating the test plates by a wide unilluminated area (subtending at the observer about 45°), it is possible to make determinations of chromaticity in terms of the standard I. C. I. diagram (Mixture Diagram According to the 1931 International Commission on Illumination Standard Observer and Coordinate System) with an uncertainty in x or y not greater than 0.005, in spite of fluctuations in candlepower of the specimen by factors as high as 2 or 3. The light from burning red flare distress signals shall show values in terms of the I. C. I. Standard Observer and Coordinate System of not less than 0.61 for the x-coordinate and not more than 0.34 for the y-coordinate for any of the determinations made during the positive flame emitting period.

(j) *Lot acceptance or rejection.* When the marine inspector has satisfied himself that the pistol-projected parachute red flare distress signals in the lot are of a type officially approved

in the name of the manufacturer and meet the requirements set forth in this subpart, each of the smallest packing cartons or boxes (usually containing one dozen signals) in which the cartridges are sealed prior to shipment, shall be plainly marked with the words: "Inspected and Passed, (Date), (Port), Inspector's Initials." A lot shall be rejected: (1) when, of that portion of the lot tested for firing and operating characteristics, the failures, as computed by the table shown in paragraph (b) (1) of this section, exceeds 15%; or, (2) when, of the signals tested for the other required characteristics, there is any failure to meet the requirements herein. Signals from rejected lots may, when permitted by the inspector, be reworked by the manufacturer to correct the deficiency for which they were rejected and be resubmitted for official inspection. Signals from rejected lots may not, unless subsequently accepted, be sold or offered for sale under representation as being in compliance with this specification or as being approved for use on merchant vessels.

(k) *Tests of pistols.* Prior to approval, the specimen signal pistols submitted in accordance with § 160.024-7 (d) shall be proof-tested in the presence of an inspector by firing a charge double the normal charge and examined by the inspector for surface defects. After approval, each pistol manufactured shall be tested and inspected in the same manner, and, at the successful completion of this proof test and inspection, the pistol shall be stamped with the letters "P. T." Report of test and inspection shall be forwarded to the Commandant showing serial numbers of guns passed and rejected.

§ 160.024-5 *Marking*—(a) *Cartridge.* Each pistol-projected parachute red flare distress signal shall be legibly marked as follows:

(Company brand or style designation)
Pistol-Projected Parachute Red Flare
Distress Signal
20,000 candlepower—30 seconds burning
time. Use Only When Air Craft or Vessel
is Sighted. Directions—Fire upward from
signal pistol
(Month and year manufactured)
(Lot No. _____)
Manufactured by (Name and address of
manufacturer)
U. S. Coast Guard Approval No. _____
for merchant vessels

(b) *Pistol.* Each signal pistol shall be permanently and legibly marked with its serial number, Coast Guard approval number, and the name and address of the manufacturer.

(c) *Other marking.* On each pistol-projected parachute red flare distress signal there shall be die-

stamped, in figures not less than $\frac{1}{8}$ " high, on each integral part of the cartridge, the month and year of manufacture. The pyrotechnic candle shall be legibly marked with the month and year of manufacture. In addition to any other marking placed on the smallest packing carton or box containing cartridges, each carton or box shall be plainly and permanently marked to show the month and year of manufacture and lot number.

§ 160.024-6 *Container*—(a) *General*. Containers for storage of pistols and pistol-projected parachute red flare distress signals in lifeboats and life rafts on merchant vessels are not required to have specific approval or to be of special design, but they shall meet the following test for watertightness when closed, and shall be capable of being opened and re-closed hand-tight to meet the same watertightness test. The materials shall be copper, brass, bronze, or other material equally corrosion-resistant to salt water and spray. The type container illustrated by Drawing Number 160.024-6 (a) is recommended for most purposes.

(b) *Watertightness test for containers*. Whenever question arises as to the watertightness of a container, the following test may be made to determine whether it is satisfactory in this respect. Open the container, remove the contents, insert colored blotting paper as a lining, re-close container as tightly as possible by hand (no wrenches or special tools permitted), submerge container with top about one foot below the surface of the water for two hours, remove container from water, wipe off excess moisture on outside, then open the container and examine the blotting paper and entire interior for evidence of moisture penetration. If any moisture or water is evidenced, the container is not satisfactory.

(c) *Marking of container*. Containers shall be embossed or bear a brass or equivalent corrosion-resistant name plate, or otherwise be suitably and permanently marked, to plainly show in letters not less than $\frac{1}{2}$ " high the following wording: "SIGNAL PISTOL AND PISTOL-PROJECTED PARACHUTE RED FLARE DISTRESS SIGNALS." No additional marking which might cause confusion as to the contents shall be permitted.

NOTE: The vessel's name is required to be painted or branded on equipment such as this container by other regulations, and nothing in this subpart shall be construed as prohibiting same.

§ 160.024-7 *Procedure for approval*—(a) *General*. Signal pistols and pistol-projected parachute red flare distress signals for merchant

vessels are approved only by the Commandant, U. S. 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 factory is located.

(b) *Manufacturer's plans and specifications*. In order to obtain approval of signal pistol or pistol-projected parachute red flare distress signal, submit detailed plans and specifications including a complete bill of material, assembly drawing, and parts drawings descriptive of the arrangement and construction of the device, to the Commander of the Coast Guard District in which the factory is located. Each drawing shall have an identifying drawing number, date, and an identification of the device; and the general arrangement or assembly drawing shall include a list of all drawings applicable, together with drawing numbers and alteration numbers. The alterations shall be noted with the date of alteration or new drawing numbers and dates shall be assigned. At the time of selection of the preapproval sample the manufacturer shall furnish to the inspector four copies of all plans and specifications, corrected as may be required, for forwarding to the Commandant.

(c) *Preapproval sample of signals*. After the first drawings and specifications have been examined and found to appear satisfactory, a marine inspector will be detailed to the factory to observe the production facilities and manufacturing methods and to select at random, from not less than 50 signals already manufactured, a sample of not less than 24 specimens which will be forwarded prepaid by the manufacturer to the Commandant for the necessary conditioning and tests in accordance with § 160.024-4 (b) to determine compliance with this subpart for qualification for type or brand approval for use on merchant vessels.

(d) *Preapproval sample of pistol*. After the first drawings and specifications have been examined and found to appear satisfactory, a marine inspector will be detailed to the factory to observe the production facilities and manufacturing methods; each of three pistols shall be fired twice in the presence of the marine inspector; once with a test charge double the normal charge and once with a cartridge conforming to the requirements of this subpart; one of the pistols so tested, together with a report of the serial numbers of the pistols tested, shall be forwarded to the Commandant.

9. Part 160 is amended by adding a new subpart 160.036 reading as follows:

SUBPART 160.036—SIGNALS, DISTRESS, HAND-HELD ROCKET-PROPELLED PARACHUTE RED FLARE FOR MERCHANT VESSELS

Sec.	
160.036-1	Applicable specifications.
160.036-2	Type.
160.036-3	Materials, workmanship, construction, and performance requirements.
160.036-4	Sampling, inspections, conditioning, and tests.
160.036-5	Marking.
160.036-6	Container.
160.036-7	Procedure for approval.

AUTHORITY: §§ 160.036-1 to 160.036-7, inclusive, issued under R. S. 4405, 4417a, 4488, 4491, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 367, 375, 391a, 481, 489, 1333, 50 U. S. C. 1275; and sec. 101, Reorganization Plan No. 3 of 1940, 11 F. R. 7875.

§ 160.036-1 *Applicable specifications*. (a) There are no other specifications applicable to this subpart.

§ 160.036-2 *Type*. (a) *Hand-held rocket-propelled parachute red flare distress signals* specified by this subpart shall be of one type which shall consist essentially of a completely self-contained device which can be fired from the hand to provide a rocket-propelled parachute red flare distress signal.

§ 160.036-3 *Materials, workmanship, construction and performance requirements*—(a) *Materials*. The materials used in hand-held rocket-propelled parachute red flare distress signals shall conform strictly to the specifications and drawings submitted by the manufacturer and approved by the Commandant. In general, all exposed parts shall be corrosion-resistant or properly protected against corrosion.

(b) *Workmanship*. Hand-held rocket-propelled parachute red flare distress signals shall be of first-class workmanship and shall be free from imperfections of manufacture affecting their appearance or that may affect their serviceability.

(c) *Construction*. The exterior case of the cartridge shall be made of a suitable metal and shall protect against the entrance of moisture. The construction shall be such that the parachute and pyrotechnic candle will be expelled at approximately the maximum altitude reached.

(d) *Firing and operating characteristics*. Cartridges shall fire and operate satisfactorily without danger to the user or persons close by when the manufacturer's directions are followed. The pyrotechnic candle shall not ignite explosively, or burn in such a manner that might damage the parachute. It shall burn satisfactorily with uniform intensity when subjected to either of the testing schedules prescribed in § 160.036-4 (b) or (c).

(e) *Water resistance*. Cartridges shall function properly after having

been subjected to the conditioning described in § 160.036-4 (d).

(f) *Altitude.* The signal projectile when discharged vertically upwards shall attain an altitude of not less than 500 feet.

(g) *Rate of descent.* The pyrotechnic candle and parachute shall, during the period of burning, descend at an average rate not to exceed 15 feet per second in reasonably still air.

(h) *Chemical stability.* The pyrotechnic candle shall function properly after having been subjected to the elevated temperature conditioning experiment described in § 160.036-4 (e). No ignition shall occur during the conditioning experiment.

(i) *Temperature of ignition of signal materials.* When tested as described by § 160.036-4 (f), the temperature of ignition of the signal materials shall be not less than 338° F. (170° C.).

(j) *Burning time.* The pyrotechnic candle shall burn in air not less than 30 seconds.

(k) *Candlepower.* The average luminous intensity for any pyrotechnic candle shall be not less than 20,000 candlepower as determined by § 160.036-4 (h). The minimum for a single specimen shall be not less than 14,000 candlepower for more than 5 seconds.

(l) *Chromaticity.* The color of the burning flare shall be vivid red as determined by § 160.036-4 (i).

§ 160.036-4 *Sampling, inspections, conditioning and tests—(a) Classification of tests.* The methods of sampling, inspections, and tests conducted upon signals shall be considered as falling within one of the following general classifications:

- (1) Qualification (type or brand approval) tests;
- (2) Production check tests (at place of manufacture); or,
- (3) Production check tests (at a government laboratory).

(b) *Qualification (type or brand approval) tests.* Preapproval samples, selected in accordance with § 160.036-7 (c) shall be tested in accordance with the following testing schedule to determine qualification for type or brand approval:

(1) Test 12 cartridges for water resistance characteristics, § 160.036-3 (e), following which test same 12 specimens for firing and operating characteristics, § 160.036-3 (d). The magnitude of the failures shall be determined as follows (in the case of concurrent or simultaneous defects, penalties will not be applied cumulatively, but only for the greatest defect):

Percentage
of failure

- | | |
|---|-----|
| (i) Misfire | 100 |
| (ii) Failure to eject projectile contents | 100 |

Percentage
of failure

- | | |
|--|-----|
| (iii) Failure to ignite prime of candle | 100 |
| (iv) Ignites, but burns less than 25% of specified time before reaching ground | 75 |
| (v) Burns at least 25% but less than 50% of specified time before reaching ground | 50 |
| (vi) Burns at least 50% but less than 75% of specified time before reaching ground | 25 |
| (vii) Complete carrying away or destruction of parachute before 25% of specified burning time has elapsed | 75 |
| (viii) Complete failure of parachute to open | 50 |
| (ix) Failure of parachute to open completely, with illuminant reaching ground before 75% of burning time has elapsed | 25 |
| (x) Reaches 50% but less than 100% of specified altitude | 25 |
| (xi) Reaches less than 50% of specified altitude | 50 |

(2) Disassemble 6 cartridges and test the pyrotechnic candles for burning time, candlepower, and chromaticity, § 160.036-3 (j), (k), and (l).

(3) Disassemble 3 cartridges and test for temperature of ignition, § 160.036-3 (i).

(4) Test 3 cartridges for chemical stability, § 160.036-3 (h), following which test them for firing and operating characteristics, § 160.036-3 (d).

(c) *Sampling, inspections, and tests from production lots.* The production of hand-held rocket-propelled parachute red flare distress signals produced under an official type or brand approval shall be checked for compliance with this specification in the manner set forth below:

(1) *Lot size and sampling procedure.* For purposes of sampling the production of hand-held rocket-propelled parachute red flare distress signals, a lot shall consist of not more than 3,000 signals. A new lot shall be started with any change or modification in raw materials or manufacturing methods. Lots shall be numbered serially by the manufacturer, and the lot number shall be plainly and indelibly marked on the cartridge case of each signal in the lot. A marine inspector shall select at random from each lot the number of specimen signals indicated in the following table for inspection, conditioning, and testing:

Minimum number
of specimens
of sample

- | | |
|---------------------|----|
| Not more than 1,000 | 15 |
| 1,001 to 3,000 | 24 |

(2) *Inspections (at place of manufacture).* The marine inspector shall be admitted to the place of manufacture and shall familiarize himself with the various operations involved in the manufacturing process and, from ob-

servation during manufacture, satisfy himself that hand-held rocket-propelled parachute red flare distress signals are being made in general accordance with this subpart and of materials and parts conforming strictly with the specifications and drawings submitted by the manufacturer and approved by the Commandant. Specimens or samplings of materials entering into construction may be taken at random, either in the raw material state or during manufacture, by the inspector and tests made for compliance with applicable requirements. The test specimens comprising the sample, selected in accordance with subparagraph (1) of this paragraph shall be examined by the inspector for surface defects.

(3) *Production check tests (at place of manufacture).* (i) The manufacturer shall provide a suitable place and the necessary apparatus for the use of the inspector in conducting such production check tests as are done at the place of manufacture. Samples from production lots selected in accordance with subparagraph (1) of this paragraph shall, except when tested at a government laboratory as prescribed below, be tested at the place of manufacture in accordance with the following testing schedule:

1st day: Place all specimens in water-resistance conditioning, § 160.036-3 (e).
2nd day: Remove all specimens from water-resistance conditioning. Test all but three specimens for firing and operating characteristics, § 160.036-3 (d). Performance shall be rated as in § 160.036-4 (b) (1). Disassemble 3 cartridges and test pyrotechnic candle for burning time and candlepower, § 160.036-3 (j) and (k). The visual color shall be vivid red, but measurements for chromaticity will not be made.

(ii) Report of inspection and test shall be forwarded to the Commandant.

(4) *Production check tests (at a government laboratory).* Tests at a government laboratory shall be made on not less than one sample from each ten production lots of hand-held, rocket-propelled parachute red flare distress signals, or not less than one in each year, whichever occurs more frequently. Sampling and inspection shall be made at the place of manufacture as provided in subparagraphs (1) and (2) of this paragraph, except that for these tests the sample shall consist of 24 specimens. The sample will be forwarded prepaid by the manufacturer to the Commandant. Tests at the government laboratory shall be conducted in accordance with the schedule given in paragraph (b) of this section.

(d) *Conditioning of test specimens; water resistance.* Immerse specimen horizontally in water at not more than 30° C. with uppermost portion of the

signal approximately one inch below the surface of the water for a period of 24 hours.

(e) *Conditioning; elevated temperature, humidity, and storage.* Place a specimen in a thermostatically controlled even-temperature oven held at 90° C. with not less than 90% relative humidity for 72 hours. Remove specimens and store at room temperature (20° to 25° C.) with approximately 65% relative humidity for ten days.

(f) *Test method; temperature of ignition of signal materials.* The test shall be conducted in a uniformly heated gas or electric oven with a chamber of at least 6 inches by 6 inches by 9 inches inside measurement. If gas heated, the oven should be of jacketed type with the products of combustion of the heating gas excluded from the inner chamber. The oven should be provided with an opening or openings at the top of at least $\frac{3}{4}$ square inch in area to give air circulation within. A suitable 600° F. 3-inch immersion thermometer or thermocouple shall be inserted through a sleeve in the top of the oven. A shelf of perforated sheet metal shall be provided at the midheight of the oven. A wire screen cup $\frac{1}{2}$ inch in diameter by $\frac{3}{4}$ inch high shall be provided. The materials to be tested shall be placed to a depth of $\frac{1}{2}$ inch in the wire screen cup. (Ordinarily, materials adjacent to each other in the assembled signal will be blended together for the test; materials non-adjacent ordinarily will not be blended together for the test). The cup then shall be placed on the shelf so as to be within $\frac{1}{2}$ inch to $\frac{3}{4}$ inch from the bulb of the thermometer or the junction of the thermocouple. The temperature of the oven is to be raised to about 284° F. (140° C.) at a convenient rate, after which the temperature is to be raised at a rate not to exceed 2° F. per minute until ignition occurs or 338° F. (170° C.) has been reached. Time and temperature readings at 30 second intervals and also time at which ignition, if such occurs, are to be recorded. If ignition occurs, the approximate ignition temperature, to be reported, can be obtained by extrapolation from the time-temperature data. Alternate test methods will be given special consideration by the Coast Guard.

(g) *Test method; burning time.* The burning time of the pyrotechnic candle shall be obtained by stop watch measurements from the time positive flame is emitted until it ceases. The burning time for a sample (i. e. all the test specimens from a single lot) shall be the arithmetical average for all specimens in the sample.

(h) *Test method; candlepower.* The candlepower of each pyrotechnic

candle tested shall be measured by a visual photometer or equivalent photometric device, while the specimen is supported in a horizontal position and the photometer is at right angles to the axis of the specimen. Visual candlepower readings shall be observed and recorded at approximately 20-second intervals during the burning of the specimen. The minimum photometric distance shall be 10 feet. Recording photometers shall have a chart speed of at least one inch per minute. The candlepower of the specimen shall be computed as the arithmetical average of the readings recorded. The range for a specimen shall be the difference between the greatest and least candlepower reading. The candlepower for the sample (i. e., all test specimens from a single lot) shall be the arithmetical average of the candlepower values computed for each of the specimens making up the sample. The range for the sample shall be the difference between the computed greatest candlepower of a specimen and the computed least candlepower of another specimen in the sample. Signals failing to ignite shall be disregarded in computing the range of a sample.

(i) *Test method; chromaticity.* In order to determine that light from the specimen may be termed "vivid red" (ISCC-NBS method of designating colors, RP1239), two identical test plates of white cardboard about 12" x 24" are used. Except for a negligible amount of stray daylight, the first test plate is illuminated by light from the specimen placed at a distance of about 5 feet. The second test plate is illuminated only by light from an incandescent lamp operated at a color temperature close to 2848° K at a distance of about one foot. The first test plate is viewed directly, the second through combinations of Lovibond red, yellow and blue glasses selected so as to approximate a chromaticity match. By separating the test plates by a wide unilluminated area (subtending at the observer about 45°), it is possible to make determinations of chromaticity in terms of the standard I. C. I. diagram (Mixture Diagram According to the 1931 International Commission on Illumination Standard Observer and Coordinate System) with an uncertainty in x or y not greater than 0.005, in spite of fluctuations in candlepower of the specimen by factors as high as 2 or 3. The light from burning red flare distress signals shall show values in terms of the I. C. I. Standard Observer and Coordinate System of not less than 0.61 for the x-coordinate and not more than 0.34 for the y-coordinate for any of the determinations made during the positive flame-emitting period.

(j) *Lot acceptance or rejection.*

When the marine inspector has satisfied himself that the hand-held rocket-propelled parachute red flare distress signals in the lot are of a type officially approved in the name of the manufacturer and meet the requirements set forth in this subpart, each of the smallest packing cartons or boxes (usually containing one dozen signals) in which the cartridges are sealed prior to shipment, shall be plainly marked with the words: "Inspected and Passed, (Date), (Port), Inspector's Initials." A lot shall be rejected: (1) when, of that portion of the lot tested for firing and operating characteristics, the failures, as computed by the table shown in paragraph (b) (1) of this section, exceeds 15%; or, (2), when, of the signals tested for the other required characteristics, there is any failure to meet the requirements herein. Signals from rejected lots may, when permitted by the inspector, be reworked by the manufacturer to correct the deficiency for which they were rejected and be resubmitted for official inspection. Signals from rejected lots may not, unless subsequently accepted, be sold or offered for sale under representation as being in compliance with this specification or as being approved for use on merchant vessels.

§ 160.036-5 *Marking*—(a) *General.* Each hand-held rocket-propelled parachute red flare distress signal shall be legibly marked or labeled as follows:

(Company brand or style designation)
Hand-Held Rocket-Propelled Parachute
Red Flare Distress Signal
time
Use Only When Air Craft or Vessel is
Sighted
Directions—(In numbered paragraphs,
simply worded instructions for firing
the device)
(Month and year manufactured)
(Lot No.)
Manufactured by (Name and address of
manufacturer)
U. S. Coast Guard Approval No. _____
for merchant vessels

§ 160.036-6 *Container*—(a) *General.* Containers for stowage of hand-held, rocket-propelled parachute red flare distress signals in lifeboats and life rafts on merchant vessels are not required to have specific approval or to be of special design, but they shall meet the following test for watertightness when closed, and shall be capable of being opened and reclosed hand-tight to meet the same watertightness test. The materials shall be copper, brass, bronze, or other material equally corrosion-resistant to salt water and spray.

(b) *Watertightness test for containers.* Whenever question arises as to the watertightness of a container, the following test may be made to determine whether it is satisfactory in this respect. Open the container, remove the contents, insert colored blotting paper as a lining, reclose container as tightly as possible by hand (no wrenches or special tools permitted), submerge container with top about one foot below the surface of the water for two hours, remove container from water, wipe off excess moisture on outside, then open the container and examine the blotting paper and entire interior for evidence of moisture penetration. If any moisture or water is evidenced, the container is not satisfactory.

(c) *Marking of container.* Containers shall be embossed or bear a brass or equivalent corrosion-resistant name plate, or otherwise be suitably and permanently marked, to plainly show in letters not less than $\frac{1}{2}$ " high the following wording: "HAND-HELD ROCKET-PROPELLED PARACHUTE RED FLARE DISTRESS SIGNALS." No additional marking which might cause confusion as to the contents shall be permitted.

NOTE: The vessel's name is required to be painted or branded on equipment such as this container by other regulations, and nothing in this subpart shall be construed as prohibiting same.

§ 160.036-7 *Procedure for approval*—(a) *General.* Hand-held rocket-propelled parachute red flare distress signals for merchant vessels are approved only by the Commandant, U. S. 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 factory is located.

(b) *Manufacturer's plans and specifications.* In order to obtain approval of hand-held rocket-propelled parachute red flare distress signals, submit detailed plans and specifications including a complete bill of material, assembly drawing, and parts drawings descriptive of the arrangement and construction of the device, to the Commander of the Coast Guard District in which the factory is located. Each drawing shall have an identifying drawing number, date, and an identification of the device; and the general arrangement or assembly drawing shall include a list of all drawings applicable, together with drawing numbers and alteration numbers. The alterations shall be noted with the date of alteration or new drawing numbers and dates shall be assigned. At the time of selection of the preapproval sample, the man-

ufacturer shall furnish to the inspector four copies of all plans and specifications, corrected as may be required, for forwarding to the Commandant.

(c) *Preapproval sample.* After the first drawings and specifications have been examined and found to appear satisfactory, a marine inspector will be detailed to the factory to observe the production facilities and manufacturing methods and to select at random, from not less than 50 signals already manufactured, a sample of not less than 24 specimens which will be forwarded prepaid by the manufacturer to the Commandant for the necessary conditioning and tests in accordance with § 160.036-4 (b) to determine compliance with this subpart for qualification for type or brand approval for use on merchant vessels.

PART 164—MATERIALS

1. Part 164 is amended by adding new subparts 164.001 and 164.002 reading as follows:

SUBPART 164.001—CORK, SHEET, FOR MERCHANT VESSELS

Sec.	
164.001-1	Applicable specifications.
164.001-2	Grade.
164.001-3	Material and workmanship.
164.001-4	Inspection.
164.001-5	Procedure for approval.

SUBPART 164.002—BALSA WOOD FOR MERCHANT VESSELS

164.002-1	Applicable specifications.
164.002-2	Grade and densities.
164.002-3	Material.
164.002-4	Defects permitted.
164.002-5	Inspection.
164.002-6	Procedure for approval.

AUTHORITY: §§ 164.001-1 to 164.002-6, inclusive, issued under R. S. 4405, 4417a, 4426, 4482, 4488, 4491, sec. 11, 35 Stat. 428, 49 Stat. 1544, 54 Stat. 163-167, 346, and sec. 5 (c), 55 Stat. 244, as amended; 46 U. S. C. 367, 375, 391a, 396, 404, 475, 481, 489, 526-526t, 1333, 50 U. S. C. 1275; and sec. 101, Reorganization Plan No. 3 of 1945, 11 F. R. 7875.

SUBPART 164.001—CORK, SHEET, FOR MERCHANT VESSELS

§ 164.001-1 *Applicable specifications.* (a) There are no other specifications applicable to this subpart.

§ 164.001-2 *Grade.* (a) Sheet cork shall be of but one grade as specified in this subpart.

§ 164.001-3 *Material and workmanship*—(a) *Freedom from imperfections.* The cork sheets shall be good quality cleaned cork, free from excessive bark, or cracks or other imperfections that will reduce its strength. The cork shall be considered free from cracks when 95% of the pieces are free from cracks greater than half the thickness of the sheet by $\frac{3}{8}$ -inch wide.

§ 164.001-4 *Inspection.* (a) Sheet

cork, to be used in a finished product subject to inspection by the Coast Guard, shall be subject to inspection at the plant of the manufacturer to determine compliance with the requirements of this specification.

(b) Acceptance of sheet cork prior to being incorporated into finished products, or during the course of manufacture, shall in no case be construed as acceptance of the finished product.

§ 164.001-5 *Procedure for approval.*

(a) Sheet cork is not subject to formal approval, but will be accepted by the inspector on the basis of this specification for use in the manufacture of lifesaving equipment utilizing it.

SUBPART 164.002—BALSA WOOD FOR MERCHANT VESSELS

§ 164.002-1 *Applicable specifications.* (a) There are no other specifications applicable to this subpart.

§ 164.002-2 *Grade and densities.* (a) Balsa wood shall be of one grade as specified in this subpart, and of the following densities:

- (1) Density A—8½ to 12 pounds per cubic foot.
- (2) Density B—5 to 9 pounds per cubic foot.

§ 164.002-3 *Material*—(a) *General.* Balsa wood shall be of the genus *Ochroma*. It shall be sound, square edge, kiln dried to a moisture content not exceeding 12 percent, and shall be free from rot, dote, large or unsound knots, wormholes, and other injurious defects, except those specified as admissible in § 164.002-4.

(b) *Size.* Balsa wood pieces shall be of a size suitable for use in the item of equipment utilizing it.

§ 164.002-4 *Defects permitted.* (a) One sound, tight knot, not over 1½ inches in diameter, will be permitted in each full 4 feet of length of any piece. Pin wormholes, or their equivalent, will be permitted provided their size does not exceed $\frac{1}{32}$ inch in diameter and their number is less than 150 in each 5 square feet surface measure, with no concentration of more than 40 pin wormholes in any square foot of surface area. Inclosed pith less than 1 inch in diameter will not be considered a defect. Surface pith and pith grooves on faces and/or edges, not exceeding 1 inch in diameter and in the aggregate $\frac{1}{8}$ of the length of the piece will be permitted. Wane not exceeding $\frac{1}{8}$ inch width on the surfaces on which it appears, sound wavy grain, or bird's eyes and twig specks less than 1 inch in smallest dimension, and sound stain, will be permitted.

§ 164.002-5 *Inspection.* (a) Balsa wood, to be used in a finished product subject to inspection by the Coast Guard, shall be subject to inspection at the plant of the manufacturer to determine compliance with the appli-

cable requirements of this specification.

(b) Acceptance of balsa wood prior to being incorporated into finished products, or during the course of manufacture, shall in no case be construed as acceptance of the finished product.

§ 164.002-6 Procedure for approval.

(a) Balsa wood is not subject to formal approval, but will be accepted by the inspector on the basis of this specification for use in the manufacture of lifesaving equipment utilizing it.

SUBPART 164.004—KAPOK, REPROCESSED

2. Subpart 164.004—*Kapok, reprocessed*, containing §§ 164.004-1 to 164.004-5, inclusive, is rescinded.

Dated: June 28, 1948.

J. F. FARLEY,
Admiral, U. S. Coast Guard,
Commandant.

[F. R. Doc. 48-5789; Filed, June 25, 1948;
8:59 a. m.; 13 F. R. 3521 to 3543, June
26, 1948]

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 4-48

UNITED STATES COAST GUARD,
Washington, May 18, 1948.

Defective Pyrene carbon tetrachloride type fire extinguishers manufactured by Pyrene Manufacturing Co., Newark 8, N. J.

1. During the reinspection of motor ferry vessels on November 21, 1947 at Greenport, N. Y., the Officer in Charge, Marine Inspection, found defective Pyrene 1-quart carbon tetrachloride type hand portable fire extinguishers. Specimens of the defective extinguishers were obtained and forwarded to the National Bureau of Standards for determination of the cause of failure, and the manufacturer was notified of the circumstances and requested to investigate the failures and inform the Coast Guard as to their findings.

2. The manufacturer has informed the Coast Guard that the reason for the failures was caused by a change made by their supplier in the method of preparing the chemicals used in the extinguishing liquid. The questionable liquid was believed to have caused internal corrosion of the extinguishers, making them inoperative. They have further informed us that extinguishers bearing the following serial numbers are suspect:

1½-quart Extinguishers

150781 to 150900	461331 to 478330
235486 to 235530	480481 to 494480
236731 to 237230	497631 to 504630

403106 to 404730	505631 to 509630
411998 to 414430	510256 to 518255
416631 to 419830	520356 to 520955
419931 to 449230	532356 to 533748
449631 to 458930	539856 to 544312
460931 to 461230	

1-quart Extinguishers

R689558 to R689997
R692644 to R693497
R731288 to R732363
R751698 to R753697
T334485 to T380550
T398671 to T485550
T583051 to T585050
T585551 to T601200
T601801 to T676150
T676251 to T680483
T680651 to T711650
T712151 to T792150
T793151 to T843750
T844550 to T845050
T846551 to T853350
T854051 to T854700
T861051 to T906880
T911051 to T976216
T977051 to T999999
U2 to U27050
U33051 to U33990
U37651 to U38784
U64651 to U79650
U80151 to U100150
U150151 to U152552

Exceptions: Some extinguishers listed above have been rebuilt recently and should not be returned. These are stamped around the outlet nozzle with symbols running from A-48 to L-48, or the letter X.

3. The manufacturer has established a general program for replacement of the above extinguishers and a special program for replacing immediately any of those which are aboard ships or motorboats. Under the special marine program any of the above numbered extinguishers which may be on merchant vessels or motorboats should be exchanged at the nearest location listed below where provision has been made for immediate over-the-counter replacement:

PROPOSED MARINE EXCHANGE STOCK LOCATIONS

NEW JERSEY

Point Pleasant—Point Pleasant Hardware Co., Arnold and Richmond Aves.
Camden—Antrim Hardware Co., 1514 Federal St.

PENNSYLVANIA

Erie—H. P. Weller Supply Co., 11 W. 11th St.
Philadelphia—Theo. C. Ulmer Co., Richmond St. and E. Columbia Ave.

NEW YORK

Buffalo—H. D. Taylor & Co., 99 Oak St.
New York City—W. S. Wilson Corp., 11 S. William St.

OHIO

Cleveland—Geo. Worthington Co., 802 St. Clair Ave. NW.
Toledo—Bostwick-Braun Co., Summit and Monroe Sts.

MICHIGAN

Detroit—Henry H. Smith & Co., 356 E. Jefferson Ave.

CONNECTICUT

Bridgeport—Lindquist Hardware Co., 385 Fairfield Ave.
New Haven—C. S. Mersick & Co., 278 State St.
New London—Darrow & Comstock Co., 96 Bank St.

RHODE ISLAND

Providence—Combination Ladder Co., Inc., 381 Fountain St.

MASSACHUSETTS

New Bedford—E. F. Dahill Jr. & Co., 1828 Purchase St.
Boston—Marine Hardware & Supply Co., 390 Atlantic Ave.

MINNESOTA

Duluth—Kelly-How-Thomson Co., 309 S. 5th St. W.

MAINE

Portland—Eastern Fire Equipment Co., 403 Fore St.

WISCONSIN

Milwaukee—Milwaukee Recharging Service, 1012 N. Third St.

ILLINOIS

Chicago—Pyrene Manufacturing Co., 444 N. Lake Shore Drive.

WASHINGTON

Seattle—Pacific Marine & Supply Co., 1223 Western Ave.

OREGON

Portland—Munnell & Sherrill, Inc., 400 SW. First Ave.

CALIFORNIA

San Francisco—Pyrene Manufacturing Co., 977 Mission St.
Los Angeles—Huey & Phillips, 326 N. La Cienega Blvd.
San Diego—C. J. Hendry Co., 930 State St.
San Pedro—C. J. Hendry Co., 111 S. Front St.

TEXAS

Corpus Christi Empire Dock & Boat Co., Inc., 2504 Water St.
Orange—Sabine Supply Co., 412 Front St.
Houston—Butler Fire Equipment Co., 4905 Navigation Blvd.
Galveston—Black Hdwe. Co., 2213 Strand St.

LOUISIANA

New Orleans—Woodward, Wight & Co., Ltd., 450 Harvard Ave.
Shreveport—Pelican Well Tool & Supply Co.

ALABAMA

Mobile—McGowin-Lyons Hardware Co., 113-125 N. Water St.

FLORIDA

Pensacola—Gulf Marine Supply Co.
Miami—Frank T. Budge Co.
Tampa—Cameron & Barkley Co., 107 S. Franklin St.
Jacksonville—Georgia Supply Co.

GEORGIA

Savannah—Georgia Supply Co., 23 Bay St. W.
Atlanta—Pyrene Manufacturing Co., 242 Spring St. NW.

SOUTH CAROLINA

Charleston—Cameron & Barkley Co., 160 Meeting St.

NORTH CAROLINA

Wilmington—Hyman Supply Co., 261-265 N. Front St.

VIRGINIA

Norfolk—Curtis Marine Co., 550 Front St.
Richmond—Curtis Marine Co.

MARYLAND

Baltimore—The Wm. H. Whiting Co., 428 E. Pratt St.

MISSISSIPPI

Laurel—Marine Supply Co., 916 S. Magnolia St.

4. Extra charges of the Liquid Refills for Pyrene carbon tetrachloride type extinguishers should be returned if purchased from any source prior to 1 January 1948. Refills obtained subsequent to that date which bear any P. O. No. from 6701 to 12454 also should be returned. Shipping instructions are as follows:

PACKING LIST

Prepare packing list in triplicate. Enclose one copy with goods, and mark "packing list inside." Send to PYRENE MANUFACTURING COMPANY, 560 BELMONT AVE., NEWARK 8, N. J., attention of the Traffic Dept., keeping one copy attached to your debit memorandum and retaining the third copy for your file.

PACKAGING

Pack in boxes or cartons that comply with requirements of the rail and truck classifications. Use dividers between extinguishers or cans of liquid. Place cushioning material at bottom and top of containers. Containers should be securely sealed with tape or strapped.

MARKING

Mark each container with contents, your name and address as the shipper, and with the name of this company, street address and city as the consignee. If you use second-hand containers, cross out old markings completely.

CONSIGN TO PYRENE MANUFACTURING COMPANY, 560 BELMONT AVE., NEWARK 8, N. J.

WEIGHTS

Weigh each box and carton, and show gross weight on bill of lading or express receipt.

ROUTING

Shipments weighing up to 25 pounds—ship by parcel post insured. Shipments weighing 26 to 50 pounds—ship by express collect. Show your net cost as the value of the shipment.

Shipments weighing 51 pounds or more—ship by rail freight collect. Do not use freight forwarders. Please restrict routing to rail freight. However, if you ship from New York City metropolitan area or from New Jersey, ship by truck rather than by rail.

BILL OF LADING DESCRIPTION

Describe the Pyrene Fire Extinguisher Liquid as FIRE EXTINGUISHER CHARGES OR COMPOUNDS, NOIEN.

BILL OF LADING

Mail original bill of lading to PYRENE MANUFACTURING COMPANY, 560 BELMONT AVE., NEWARK 8, N. J., attention of the Traffic Department, with your debit memorandum and packing list.

5. The manufacturer voluntarily assumed full responsibility for replacing the defective extinguishers and liquid refills, with particular emphasis towards immediate replacement of extinguishers in the marine service.

It is believed that the strenuous efforts being exerted by the manufacturer to assure the continued high quality and serviceability of the extinguishers in question will satisfactorily correct, insofar as is possible at this time, the conditions brought about by occurrence of the defective extinguishers in marine service. The examinations and tests of the National Bureau of Standards and the Coast Guard's investigation into the reasons for the inoperative condition of the subject extinguishers found on an inspected vessel have not been completed. Pending final determination of the cause or causes of the failures, no action looking towards withdrawal of approval of the subject extinguishers for use on merchant vessels and motorboats is being taken. Current production of the Pyrene extinguishers complies with the applicable requirements, and Approval No. 162.004/34/0 for the 1-quart size and Approval No. 162.004/35/0 for the 1½-quart size are continued at this time for the new and replacement Pyrene extinguishers involved.

6. Every effort of all concerned towards assisting in the expeditious replacement of the defective extinguishers in question should be made.

(S) MERLIN O'NEILL,
Rear Admiral, U. S. Coast Guard,
Acting Commandant.

CORRECTION

That part of section 53.05-35 which reads "§ 53.05-55 shall apply to cast-iron boilers" should read "§ 53.03-55 shall apply to cast-iron boilers." This section appears on page 114, July 1948 issue of the Proceedings.

Equipment Approved by the Commandant

[CGFR 48-42]

APPROVAL OF EQUIPMENT

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, 439), and section 101 of Reorganization Plan No. 3 of 1946 (11 F. R. 7875), 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:

Approval No. 161.005/36/1, Sound powered telephone handset, Type 333, Dwg. No. A-257, Alt. 5, manufactured by United States Instrument Corp., 409 Broad St., Summit, N. J. (This approval supersedes previous approval No. 161.005/36/0 published in the Federal Register of May 15, 1948.)

Approval No. 161.005/37/0, Sound powered telephone station with internal ringer, selective ringing, common talking, drip-proof, bulkhead mounting, Types 2, 8, and 17, Dwg. No. 70-525, Alt. 2, manufactured by the Henschel Corp., Amesbury, Mass.

(R. S. 4417a, 4418, 4426, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 367, 391a, 392, 404, 1333, 50 U. S. C. 1275; 46 CFR 32.9-4, 63.11, 79.12, 97.14, 116.10)

SAFETY VALVES

Approval No. 162.001/87/0, Series 70, cast iron body pop safety valve, enclosed spring, expanded outlet, maximum working pressure 30 p. s. i., maximum temperature 450° F., limited to installation on heating boilers and evaporators, not permitted on power boilers Dwg. No. P-20119, approved for sizes 1½", 2", 2½", 3", and 4", manufactured by Marine and Industrial Products Co., 1526 Vine Street, Philadelphia 2, Pa.

Approval No. 162.001/88/0, Series 70E, cast iron body pop safety valve, exposed spring, expanded outlet, maximum working pressure 30 p. s. i., maximum temperature 450° F., limited to installation on heating boilers and evaporators, not permitted on power boilers Dwg. No. P-20120, approved for sizes 1½", 2", 2½", 3", and 4", manufactured by Marine and Industrial Products Co., 1526 Vine Street, Philadelphia 2, Pa.

Approval No. 162.001/89/0, Series 72, cast iron body pop safety valve, enclosed spring, standard outlet, maximum working pressure 30 p. s. i., maximum temperature 450° F., limited to installation on heating boilers and evaporators, not permitted on power boilers, Dwg. No. P-20119, approved for sizes 1½", 2", 2½", 3", and 4", manufactured by Marine and Industrial Products Co., 1526 Vine Street, Philadelphia 2, Pa.

Approval No. 162.001/90/0, Series 72E, cast iron body pop safety valve, exposed spring, standard outlet, maximum working pressure 30 p. s. i., maximum temperature 450° F., limited to installation on heating boilers and evaporators, not permitted on power boilers, Dwg. No. P-20120, approved for sizes 1½", 2", 2½", 3", and 4", manufactured by Marine and Industrial Products Co., 1526 Vine Street, Philadelphia 2, Pa.

Approval No. 162.001/91/0, Series 200 steel body pop safety valve, enclosed spring, expanded outlet, 150 and 300 p. s. i. pressure rating, 450° F. maximum temperature, Dwg. No. P-20119, approved for sizes 1½", 2", 2½", 3", and 4", manufactured by Marine and Industrial Products Co., 1526 Vine Street, Philadelphia 2, Pa.

Approval No. 162.001/92/0, Series 200E steel body pop safety valve, exposed spring, expanded outlet, 150 and 300 p. s. i. pressure rating, 450° F. maximum temperature, Dwg. No. P-20120, approved for sizes 1½", 2", 2½", 3", and 4", manufactured by Marine and Industrial Products Co., 1526 Vine Street, Philadelphia 2, Pa.

Approval No. 162.001/93/0, Series 200-E-S steel body pop safety valve, exposed spring, expanded outlet, 150 and 300 p. s. i. pressure rating, 450° F. maximum temperature, Dwg. No. R-30035, approved for size 3", manufactured by the Marine and Industrial Products Co., 1526 Vine Street, Philadelphia 2, Pa.

Approval No. 162.001/94/0, Series 210 steel body pop safety valve, enclosed spring, standard outlet, 150 and 300 p. s. i. pressure rating, 450° F. maximum temperature, Dwg. No. P-20119, approved for sizes 1½", 2", 2½", 3", and 4", manufactured by Marine and Industrial Products Co., 1526 Vine Street, Philadelphia 2, Pa.

Approval No. 162.001/95/0, Series 210E steel body pop safety valve, exposed spring, standard outlet, 150 and 300 p. s. i. pressure rating, 450° F. maximum temperature, Dwg. No. P-20120, approved for sizes 1½", 2", 2½", 3", and 4", manufactured by Marine and Industrial Products Co., 1526 Vine Street, Philadelphia 2, Pa.

(R. S. 4417a, 4418, 4426, 4433, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 367, 391a, 392, 404, 411, 1333, 50 U. S. C. 1275, 46 CFR 52.65-10)

BOILERS, HEATING

Approval No. 162.003/69/0, National Heat Extractor, Series 100, sectional cast iron heating boiler, manufactured by The National Radiator Co., 221 Central Ave., Johnstown, Pa.

Approval No. 162.003/70/0, National Heat Extractor, Series 200, sectional cast iron heating boiler, manufactured by The National Radiator Co., 221 Central Ave., Johnstown, Pa.

Approval No. 162.003/71/0, National Heat Extractor, Series 300, sectional cast iron heating boiler, manufactured by The National Radiator Co., 221 Central Ave., Johnstown, Pa.

Approval No. 162.003/72/0, National Heat Extractor, Series 400, sectional cast iron heating boiler, manufactured by The National Radiator Co., 221 Central Ave., Johnstown, Pa.

Approval No. 162.003/73/0, National Heat Extractor, Series 500, sectional cast iron heating boiler, manufactured by The National Radiator Co., 221 Central Ave., Johnstown, Pa.

(R. S. 4417a, 4418, 4426, 4433, 4434, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 367, 391a, 392, 404, 411, 412, 1333, 50 U. S. C. 1275, 46 CFR, Part 53)

PRESSURE VACUUM RELIEF VALVES

Approval No. 162.017/1/1, Butterworth Type E pressure vacuum relief valve, atmospheric pattern, spring loaded, fitted with flame arrester, bronze body, Dwg. No. PV-116 dated August 21, 1948, approved for sizes 3", 4", and 6" for use with inflammable or combustible liquids of Grade A or lower, manufactured by Butterworth System, Inc., Bayonne, N. J. (This approval supersedes previous approval No. 162.017/1/0 in FEDERAL REGISTER of July 31, 1947.)

Approval No. 162.017/2/1, Butterworth Type F pressure vacuum relief valve, atmospheric pattern, spring loaded, fitted with flame arrester and spring lifting lever, bronze body, Dwg. No. PV-12 dated March 30, 1936, approved for sizes 3", 4", and 6", for use with inflammable and combustible liquids of Grade A or lower, manufactured by Butterworth System, Inc., Bayonne, N. J. (This supersedes previous approval No. 162.017/2/0 in FEDERAL REGISTER of July 31, 1947.)

Approval No. 162.017/56/0, Butterworth Type 2H-1 pressure vacuum relief valve, two unit duplex enclosed pattern in solid manifold, spring loaded, fitted with spring lifting levers, bronze body, Dwg. No. PV-204, dated June 10, 1948, approved for 3", 4", 5", and 6" inlet sizes, for use with inflammable or combustible liquids of Grade A or lower in closed venting system, manufactured by Butterworth System, Inc., Bayonne, N. J.

Approval No. 162.017/57/0, Butterworth Type 3H-1 pressure vacuum relief valve, three unit triplex enclosed pattern in solid manifold, spring loaded, fitted with spring lifting levers, bronze body, Dwg. No. PV-203, dated June 8, 1948, approved for 3", 4", 5", 6", inlet sizes, for use with inflammable or combustible liquids of Grade A or lower in closed venting system, manufactured by Butterworth System, Inc., Bayonne, N. J.

(R. S. 4417a, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 391a, 50 U. S. C. 1275; 46 CFR 32.7-4)

Dated: August 23, 1948.

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

APPROVAL OF EQUIPMENT

CORRECTION OF PRIOR DOCUMENT

By virtue of the authority vested in me, as Commandant, United States Coast Guard, by R. S. 4405, 4491, as amended; 46 U. S. C. 375, 489; and section 101 of Reorganization Plan No. 3 of 1946 (11 F. R. 7875), as well as the additional authorities cited with specific items below, the following correction of a prior document and the approvals of equipment are prescribed and the approvals 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:

CLEANING PROCESSES FOR LIFE PRESERVERS

NOTE: Where buoyancy fillers are not removed from envelope covers during cleaning process.

Approval No. 160.006/12/0, Right-way cleaning process for kapok life preservers with permanently installed buoyant inserts as outlined in letter of May 10, 1948, from the Rightway Mattress Co., 475 Long Beach Boulevard, Long Beach, N. Y.

Approval No. 160.006/13/0, Magaril cleaning process for kapok life preservers with permanently installed buoyant inserts as outlined in letter of May 27, 1948, from Magaril, Inc., Bordentown, N. J.

(R. S. 4417a, 4426, 4488, 4492, 35 Stat. 428, 49 Stat. 1544, 54 Stat. 164, 166, 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 367, 391a, 396, 404, 481, 480, 526e, 526p, 1333, 50 U. S. C. 1275; 46 CFR 160.006-4)

BUOYANT CUSHIONS, STANDARD

NOTE: Cushions are for use on motor-boats of classes A, 1, or 2 not carrying passengers for hire.

Approval No. 160.007/72/0, Standard kapok buoyant cushion, U. S. C. G. Specification 160.007, manufactured by Zatz Upholstering, 801 Atlantic Avenue, Atlantic City, N. J.

Approval No. 160.007/73/0, Standard kapok buoyant cushion, U. S. C. G. Specification 160.007, manufactured by the Leather Specialty Co., 10 Devereux Street, Utica 2, N. Y.

(54 Stat. 164, 166; 46 U. S. C. 526e, 526p; 46 CFR 25.4-1, 28.4-8)

BUOYANT APPARATUS

Approval No. 160.010/15/0, Buoyant apparatus, solid balsa wood, 20-person capacity, Dwg. No. MDC-CG-38, dated June 7, 1948, rev. June 25, 1948, manufactured by Modcraft Co., Inc., 300 Wyckoff Avenue, Brooklyn 27, N. Y.

(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, 1333, 50 U. S. C. 1275; 46 CFR 37.1-1, 59.54a, 60.47a, 76.51a)

WINCH, LIFEBOAT

Approval No. 160.015/46/0, Type WH-10, Size 6 lifeboat winch for use with mechanical davits; fitted with wire rope not greater than 1/2 inch in diameter and with not more than 6 wraps of the falls on the drums, approved for maximum working load of 6,000 pounds at the drums (3,000 pounds per fall), identified by General Arrangement Dwg. No. 1113-D-3 dated January 20, 1948, submitted by The Landley Co., Inc., 15 Park Row, New York 7, N. Y.

(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 37.1-5, 59.3a, 60.21, 76.15a, 94.14a)

LIFEBOATS

Approval No. 160.035/181/0, 22.0' x 7.5' x 3.17' steel, oar-propelled, lifeboat, 31-person capacity, identified by construction and arrangement Dwg. No. 3196, dated December 15, 1947, submitted by Welin Davit and Boat Division of the American Steel & Copper Industries, Inc., Perth Amboy, N. J.

Approval No. 160.035/220/0, 26.0' x 9.0' x 3.83' aluminum, motor-propelled lifeboat without radio cabin, 46-person capacity, identified by construction and arrangement Dwg. No. 3208, dated April 10, 1948, submitted by Welin Davit and Boat Division of the American Steel & Copper Industries, Inc., Perth Amboy, 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)

SOUND POWERED TELEPHONE EQUIPMENT

Approval No. 161.005/1/1, Sound powered telephone station, selective ringing, common talking, 17 stations maximum, bulkhead mounting, splashproof, Dwg. No. 70-523-1, Alt. 3, manufactured by Henschel Corp., Amesbury, Mass. (This approval supersedes previous approval No. 161.005/1/0 published in the FEDERAL REGISTER of July 31, 1947.)

Approval No. 161.005/2/1, Sound powered telephone station, selective ringing, common talking, 8 stations maximum, bulkhead mounting, splashproof, Dwg. No. 70-523, Alt. 4, manufactured by Henschel Corp., Amesbury, Mass. (This approval supersedes previous approval No. 161.005/2/0 published in the FEDERAL REGISTER of July 31, 1947.)

Approval No. 161.005/3/1, Sound powered telephone station assembly, selective ringing, common talking, 8 and 17 stations maximum, waterproof, Dwg. No. 70-526, Alt. 1, manufactured by Henschel Corp., Amesbury, Mass. (This approval supersedes previous approval No. 161.005/3/0 published in the FEDERAL REGISTER of July 31, 1947.)

Approval No. 161.005/4/1, Sound powered telephone station relay, for operation with hand generator, non-locking, splashproof, Dwg. No. 60-162, Alt. 3, manufactured by Henschel Corp., Amesbury, Mass. (This approval supersedes previous approval No. 161.005/4/0 published in the FEDERAL REGISTER of July 31, 1947.)

Approval No. 161.005/5/1, Sound powered telephone station relay, for operation with hand generator, manual release, splashproof, Dwg. No. 60-164, Alt. 3, manufactured by Henschel Corp., Amesbury, Mass. (This approval supersedes previous approval No. 161.005/5/0 published in the FEDERAL REGISTER of July 31, 1947.)

(R. S. 4417a, 4418, 4426, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 367, 391a, 392, 404, 1333, 50 U. S. C. 1275; 46 CFR 32.9-4, 63.11, 79.12, 97.14, 116.10)

BOILERS, POWER

Approval No. 162.002/78/0, Type H-B Two-Drum bent tube waste heat boiler, integrally fired with an oil burner, Casing Arrangement Dwg. No. H54-452, Boiler Piping Arrangement Dwg. No. H512-452, manufactured by Heilman Boiler Works, Front Linden Streets, Allentown, Pa.

(R. S. 4417a, 4418, 4433, 4434, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 367, 391a, 392, 411, 412, 1333, 50 U. S. C. 1275, 46 CFR Part 52)

FLAME ARRESTERS FOR TANK VESSELS

Approval No. 162.016/30/0, Oceco Type E-21-B flame arrester, cast iron body, extensible bank assembly, aluminum plates, bolted end covers, Dwg. No. HOC-195 dated June 30, 1948, approved for sizes 3", 4", 6", 8", and 10", for use with inflammable or combustible liquids of Grade A or lower grades, manufactured by The Johnston & Jennings Co., 877 Addison Road, Cleveland, Ohio.

(R. S. 4417a, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 391a, 50 U. S. C. 1275; 46 CFR 30.3)

PRESSURE VACUUM RELIEF VALVES

Approval No. 162.017/6/1, Oceco Type T pressure vacuum relief valve, weight loaded, atmospheric pattern,

outlets fitted with flame screens, cast iron body, aluminum valves and guide rods, spindle-guided valves, without flame snuffer, Dwg. No. 12811 dated June 8, 1948, approved for sizes 3" and 4" for use with inflammable or combustible liquids of Grade A and lower grades, manufactured by The Johnston & Jennings Co., 877 Addison Road, Cleveland, Ohio. (This approval supersedes previous Approval No. 162.017/6/0 published in the Federal Register of July 31, 1947.)

Approval No. 162.017/55/0, Oceco Type V-113 pressure-vacuum relief valve, weight loaded, atmospheric pattern, outlets fitted with flame screens semi-steel body, aluminum valves and guide rods, spindle-guided valves without flame snuffer, Dwg. No. FOC-69 dated June 30, 1948, approved for sizes 3", 4", 6", 8", 10", and 12" for use with inflammable or combustible liquids of Grade A and lower grades, manufactured by The Johnston & Jennings Co., 877 Addison Road, Cleveland, Ohio.

(R. S. 4417a, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 391a, 50 U. S. C. 1275; 46 CFR 32.7-4)

GAS RANGES USING PROPANE OR BUTANE GASES

Approval No. 162.020/4/0, Magic Chef gas range, Model No. 1000-14, using liquefied petroleum gas, tested and approved by the American Gas Association, certificate of approval No. 11-22-4801 issued January 5, 1948, manufactured by the American Stove Co., 4931 Daggett Avenue, St. Louis 10, Mo.

(R. S. 4417a, 4426, 49 Stat. 1544, 54 Stat. 1028, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 367, 391a, 404, 463a, 1333, 50 U. S. C. 1275; 46 CFR 32.9-11, 61.25, 77.24, 95.24, 114.25)

DECK COVERING

Approval No. 164.006/36/0, "Kom-poflex" magnesite terrazzo type deck covering identical to that described in National Bureau of Standards Test Report No. TP 367-88; FR 1978, dated July 1, 1942, and modified in accordance with letter from Kompolite Co., Inc., dated May 28, 1948, approved for use without other insulating material as meeting Class A-60 requirements in a 1 3/4 inch thickness, manufactured by Kompolite Co., Inc., 111-115 Clay Street, Greenpoint, Brooklyn 22, N. Y.

(R. S. 4417a, 4426, 49 Stat. 1384, 1544, 54 Stat. 346, 1028, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 367, 369, 391a, 404, 463a, 1333, 50 U. S. C. 1275; 46 CFR 164.006)

INCOMBUSTIBLE MATERIAL

Approval No. 164.009/17/0, "Knipp-lite" plaster type incombustible ma-

terial identical to that described in National Bureau of Standards Test Report No. TG3610-1522; FP2631 dated June 25, 1948, manufactured by Knipp & Co., Inc., 29 Broadway, New York 6, N. Y.

(R. S. 4417a, 4426, 49 Stat. 1384, 1544, 54 Stat. 346, 1028, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 367, 369, 391a, 404, 463a, 1333, 50 U. S. C. 1275; 46 CFR Part 144)

LIFE PRESERVERS, CORK AND Balsa WOOD (JACKET TYPE)

Approval No. A-348, Standard adult cork life preserver, manufactured by Southern Pacific Co., 65 Market Street, San Francisco 5, Calif.

Approval No. A-349, Standard child cork life preserver, manufactured by Southern Pacific Co., 65 Market Street, San Francisco 5, Calif.

(R. S. 4417a, 4426, 4488, 4492, 35 Stat. 428, 49 Stat. 1544, 54 Stat. 164, 166, 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 367, 391a, 396, 404, 481, 490, 526e, 526p, 1333, 50 U. S. C. 1275; 46 CFR 28.4-1, 33.6-1, 59.55, 60.48, 76.52, 94.52, 113.44)

CORRECTION OF PRIOR DOCUMENT

Approval No. 160.031/2/0, published in Coast Guard Document CGFR 47-38, Federal Register document 47-7118, filed July 30, 1947, and published in the Federal Register dated July 31, 1947 (12 F. R. 5203) is corrected to read as follows:

Approval No. 160.031/2/0, Bridger, 45/70 caliber line-throwing gun, shoulder type, Dwg. No. H-102 dated September 26, 1945, manufactured by the Naval Co., Old Easton Highway, Doylestown, Pa.

Dated: July 30, 1948.

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

[F. R. Doc. 48-7113; Filed, Aug. 5, 1948;
8:54 a. m.]

BUOYANT CUSHIONS, NON-STANDARD

NOTE: Cushions are for use on motor-boats of classes A, 1, and 2 not carrying passengers for hire.

Approval No. 160.008/386/0, 15" x 15" x 2" rectangular buoyant cushion, 20 oz. kapok, unsupported plastic film cover and straps, Dwg. No. B-46, Rev. March 6, 1946, and Dwg. No. A-203 dated 2 February 1948, manufactured by The American Pad and Textile Co., Greenfield, Ohio.

Approval No. 160.008/393/0, 15" x 15" x 2" rectangular buoyant cushion, 20 oz. kapok, unsupported plastic film cover and straps, Dwg. No. 107 dated April 27, 1948, manufactured by Merit

Manufacturing Corp., 225-27 Powell Street, Brooklyn 12, N. Y., (54 Stat. 164, 166; 46 U. S. C. 526e, 526p; 46 CFR 25.4-1, 28.4-8)

DAVITS, LIFEBOAT

Approval No. 160.032/101/0, Mechanical davit, boom sheath screw Type B-25, approved for maximum working load of 5,000 pounds per set (2,500 pounds per arm) using 5 part falls, identified by Arrangement Dwg. No. 3211 dated March 13, 1948, submitted by the Welin Davit and Boat Division of the American Steel & Copper Industries, Inc., Perth Amboy, N. J.

Approval No. 160.032/102/0, Mechanical davit, crescent sheath screw Type C-65, approved for maximum working load of 13,000 pounds per set (6,500 pounds per arm) using 2 part falls, identified by General Arrangement Dwg. No. 2082-10 dated September 22, 1947, manufactured by Welin Davit and Boat Division of the American Steel & Copper Industries, Inc., Perth Amboy, N. J.

(R. S. 4417a, 4426, 4481, 4488, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 367, 391a, 404, 474, 481, 1333, 50 U. S. C. 1275; 46 CFR 37.1-4, 59.3, 60.21, 76.15, 94.14, 113.23)

LIFEBOATS

Approval No. 160.035/159/0, 12' x 4.4' x 1.9' steel, oar-propelled lifeboat, 6-person capacity, identified by General Arrangement and Construction Dwg. No. 1215 dated May 3, 1946 and revised April 27, 1947, manufactured by Lane Lifeboat & Davit Corp., Foot of 40th Road and Flushing River, Flushing, N. Y.

Approval No. 160.035/160/1, 16.0' x 5.0' x 2.1' steel, oar-propelled lifeboat, 10-person capacity, identified by construction and arrangement Dwg. No. 1613 dated November 27, 1946, manufactured by Lane Lifeboat & Davit Corp., Foot of 40th Road and Flushing River, Flushing, N. Y. (This approval supersedes previous approval No. 160.035/160/0 published in the Federal Register of July 31, 1947.)

Approval No. 160.035/195/0, 35.0' x 12.33' x 5.25', steel, motor-propelled lifeboat with radio cabin, 130-person capacity, identified by Construction and Arrangement Dwg. No. 3195 dated November 18, 1947, submitted by the Welin Davit and Boat Division of the American Steel & Copper Industries, Inc., Perth Amboy, N. J.

Dated: June 2, 1948.

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

[F. R. Doc. 48-5132; Filed, June 8, 1948;
8:54 a. m., 13 F. R. 3098, June 9, 1948]

AFFIDAVITS

The following affidavits were accepted during the period from July 15 to August 16, 1948:

Alabama Dry Dock and Shipbuilding Co., Foot of Canal Street, Mobile 2, Ala. Valves, pipe fittings, flanges, forgings and castings.

Arthur Tickle Engineering Works, Inc., 21 Delevan St., Brooklyn 31, N. Y. Valves.

Atlas Foundry Co., 517-533 Lyons Ave., Irvington 11, N. J. Castings.

The Coe Mfg. Co., Pinesville, Ohio. Pipe fittings.

The Trane Co., LaCrosse, Wis. Pipe fittings.

CERTIFICATION OF ARTICLES OF SHIPS' STORES AND SUPPLIES

Articles of ships' stores and supplies certificated from July 25, 1948 to August 25, 1948, inclusive, for use on board vessels in accordance with the provisions of part 147 of the Regulations Governing Explosives or Other Dangerous Articles on Board Vessels:

E. F. Drew and Co., Inc., 15 E. 26th St., New York 10, N. Y., certification No. 256, dated August 5, 1948. Ameriod Fuel Oil Treatment and Sludge Remover "Special".

Shell Oil Co., Inc., Suite 1120 Shoreham Bldg., Washington 5, D. C., certification No. 189, August 25, 1948. Shell Wall-Tox.

Shell Oil Co., Suite 1120, Shoreham Bldg., Washington 5, D. C., certification No. 189, February 25, 1946. Shell Ship-Tox. Canceled.

HEARING UNITS

Coast Guard Merchant Marine investigating units and merchant marine details investigated a total of 567 cases during the month of June 1948. Of this number, charges were preferred involving 8 licensed and 37 unlicensed men. No hearings were held because examiners were not available.

WHAT NOT TO PAINT

- *Rubber gaskets on watertight doors, port-holes, and deadlights.
- *Thread on bolts and nuts.
- *Builders name plates on lifeboats.
- *Manufacturers plates on boat davits.
- *Identification plates over compartments or rooms.
- *Fire extinguishers or lifebuoy lights.
- *Radio antenna lead-in or outlet.
- *Valve tags on fire extinguishing systems.
- *Gear clutch shaft on anchor windlass.
- *Detector heads or sprinkler heads.
- *Knife edges of watertight doors and hatches.

ELECTRICAL APPLIANCES

The following list supplements that published by the United States Coast Guard under date of May 15, 1943, entitled "Miscellaneous Electrical Equipment Satisfactory for Use on Merchant Vessels," as well as subsequently published lists and is for the use of Coast Guard personnel in their work of inspecting merchant vessels. Other electrical items not contained in this pamphlet and subsequent listings may also be satisfactory for marine use but should not be so considered until the item is examined and listed by Coast Guard Headquarters. Before listings of electrical appliances are made, it is necessary for the manufacturer to submit to The Commandant (MMT), United States Coast Guard, Washington 25, D. C., duplicate copies of a detail assembly drawing, including a material list with finishes of each corrosive part of each item.

Manufacturer and description of equipment	Location apparatus may be used				Date of action
	Passenger and crew quarters and public spaces	Machinery, cargo, and work spaces	Open decks	Pump rooms of tank vessels	
Carpenter Products, Inc., Los Angeles, Calif.: Cable clamp hanger assembly, drawing No. 1001-3, Alt. 3.	x	x			7/16/48
The Dayton Mfg. Co., Dayton, Ohio: Illuminated medicine cabinet, nonwatertight, with convenience outlet, drawing No. 48J266, Alt. 0, material list 48J284, Alt. 0, 4 25-watt lamps maximum.	x				7/15/48
Empire Switchboard Corp., Brooklyn, N. Y.: Fuse panel, watertight, double pole, double feed, 6-30 ampere N. E. C. fuses, 2 W., 125 V., A. C. or D. C., drawing No. 8-7129, Alt. 1.	x	x			7/19/48
Murlin Mfg. Co., Philadelphia, Pa.: Edgell sign, bulkhead mounted, nonwatertight, 2 25-watt lamps maximum, drawing No. 1297, Alt. 1.	x				6/20/48
Mirror light, with convenience outlet, nonwatertight, 1 25-watt lamp maximum, drawing No. 312, Alt. 4.	x				7/12/48
Chronometer light, nonwatertight, 1 25-watt lamp maximum, drawing No. 326, Alt. 1.	x				7/12/48
The Simes Co., New York, N. Y.: Clock spot light, type S, nonwatertight, 1 25-watt lamp maximum, drawing No. 43901, Alt. 0.	x				6/20/48
Table lamps, types L1 and L2, nonwatertight, 1 100-watt lamp maximum, drawing No. 43894, Alt. 0.	x				6/20/48
Gift shop trough light, type D8-1, nonwatertight, 1 60-watt lamp maximum, drawing No. 43884, Alt. 0.	x				6/20/48
Deluxe suites cove, type D8-8, nonwatertight, 6 60-watt luminaire lamps, drawing No. 43890, Alt. 0.	x				7/19/48
Ceiling light, type B, nonwatertight, 1 75-watt lamp maximum, drawing No. 43875, Alt. 0.	x				7/19/48
Ceiling light, type D-2, nonwatertight, 1 100-watt lamp maximum, drawing No. 43878, Alt. 0.	x				7/19/48
Ceiling light, type L, nonwatertight, 2 25-watt lamps maximum, drawing No. 43893, Alt. 0.	x				7/19/48
Dressing table light, type L-6, nonwatertight, 2 25-watt lamps maximum, drawing No. 43897, Alt. 0.	x				7/19/48
Mural light trough, type W-1, nonwatertight, 1 60-watt luminaire lamp, drawing No. 43902, Alt. 0.	x				7/19/48
Ceiling light, type L-17, watertight, 1 60-watt lamp maximum, drawing No. 43453, Alt. 0.	x				7/19/48
Bar trough light, type D8-5, nonwatertight, 16 10-watt lamps maximum, drawing No. 43888, Alt. 0.	x				7/19/48
Ceiling fixture, types D4 & D4A, nonwatertight, 1 150-watt lamp maximum, drawing No. 43880, Alt. 0.	x				7/19/48
Lounge desk light, type L-8, nonwatertight, 2 25-watt lamps maximum, drawing No. 43899, Alt. 0.	x				7/19/48
Dining room trough, type D8-6, nonwatertight, 16 30-watt luminaire lamps, drawing No. 43889, Alt. 0.	x				7/19/48
Table lamps, types L3 & L4, nonwatertight, 1 300-watt lamp & 2 25-watt lamps maximum, drawing No. 43895, Alt. 0.	x				7/19/48
Lounge prom, deck cove light, types C-1, C-3, & C-4, nonwatertight, 25-watt lamps maximum, drawing No. 43876, Alt. 0.	x				7/19/48
Dining room "A" deck cove light, type C-2, nonwatertight, 25-watt lamps maximum, drawing No. 43877, Alt. 0.	x				7/19/48
Ceiling lights, types D-3 & D-4, nonwatertight, 1 60-watt lamp maximum, drawing No. 43879, Alt. 0.	x				7/19/48
Purser's counter light, type D8-2, nonwatertight, 9 25-watt lamps maximum, drawing No. 43885, Alt. 0.	x				7/19/48
Dining room mural light, type F, nonwatertight, 16 100-watt lamps maximum, drawing No. 43891, Alt. 0.	x				7/19/48
Picture frame bed light, type L-7, nonwatertight, 1 60-watt luminaire lamp, drawing No. 43898, Alt. 0.	x				7/19/48
Table lamp, type L-5, nonwatertight, 1 300-watt lamp and 2 25-watt lamps maximum, drawing No. 43896, Alt. 0.	x				7/19/48

Merchant Marine Personnel Statistics

MERCHANT MARINE LICENSES ISSUED DURING JULY 1948

DECK OFFICERS

REGION	Master										Chief mate										Second mate									
	Ocean		Coast-wise		Great Lakes		B. S. & L.		Rivers		Ocean		Coast-wise		Great Lakes		B. S. & L.		Rivers		Ocean		Coast-wise		Great Lakes		B. S. & L.		Rivers	
	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R
Atlantic coast.....	28	52	2	3	---	---	2	18	2	1	18	8	---	1	---	---	1	---	---	---	10	12	---	---	---	---	---	---	---	---
Gulf coast.....	9	22	10	---	---	---	1	2	4	---	---	---	---	---	---	---	---	---	---	2	9	2	---	---	---	---	---	---	---	---
Great Lakes and rivers.....	---	---	---	1	---	---	8	---	2	8	---	---	---	---	---	---	---	---	5	6	---	---	1	---	---	---	---	---	---	---
Pacific coast.....	7	36	---	---	---	---	1	5	---	---	10	1	---	1	---	---	3	3	---	---	16	10	---	---	---	---	---	---	---	---
Total.....	44	110	12	5	---	---	9	5	27	7	15	43	13	---	2	---	---	4	4	5	8	35	24	---	1	---	---	---	---	---

REGION	Third mate										Pilots						Master mate				Total		
	Ocean		Coast-wise		Great Lakes		B. S. & L.		Rivers		Great Lakes		B. S. & L.		Rivers		Uninspected vessels, high seas				Original	Re-newal	Grand total
	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R			
Atlantic coast.....	10	10	1	---	---	---	---	---	---	---	---	---	45	61	---	---	---	1	---	---	119	167	286
Gulf coast.....	4	5	---	---	---	---	---	---	---	---	2	2	9	11	11	13	---	---	---	---	68	73	141
Great Lakes and rivers.....	---	3	---	---	---	---	---	---	---	---	1	1	1	10	14	16	---	---	---	---	23	54	77
Pacific coast.....	4	6	---	---	---	---	---	---	---	---	---	---	9	26	1	---	3	---	---	---	60	89	149
Total.....	18	24	1	---	---	---	---	---	---	---	3	3	64	108	26	29	3	1	---	---	270	383	653

ENGINEER OFFICERS

REGION	Chief engineer, steam				First assistant engineer, steam				Second assistant engineer, steam				Third assistant engineer, steam				Chief engineer, motor			
	Unlimited		Limited		Unlimited		Limited		Unlimited		Limited		Unlimited		Limited		Unlimited		Limited	
	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R
Atlantic coast.....	27	75	3	43	25	9	2	3	26	18	1	---	10	19	---	---	---	19	11	22
Gulf coast.....	7	32	---	12	7	8	---	3	5	7	---	1	---	5	---	---	2	7	2	3
Great Lakes and rivers.....	---	4	2	15	---	1	1	4	---	2	---	---	---	4	---	---	---	2	---	5
Pacific coast.....	15	39	---	8	4	12	---	---	12	25	---	---	---	7	13	---	1	16	3	6
Total.....	49	150	5	78	36	30	3	10	43	52	1	1	18	41	---	---	3	44	16	36

REGION	First assistant engineer, motor				Second assistant engineer, motor				Third assistant engineer, motor				Uninspected vessels				Totals		
	Unlimited		Limited		Unlimited		Limited		Unlimited		Limited		Chief engineer		Assistant engineer		Original	Re-newal	Grand total
	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R			
Atlantic coast.....	---	1	2	1	---	5	1	---	3	17	---	---	---	1	---	---	111	233	344
Gulf coast.....	---	2	---	---	---	1	1	---	1	1	---	---	---	---	---	---	26	82	108
Great Lakes and rivers.....	---	2	1	---	---	---	---	---	1	---	1	---	---	---	---	---	7	39	46
Pacific coast.....	1	3	---	1	1	---	---	---	2	11	---	---	---	---	1	---	47	134	181
Total.....	1	8	3	2	1	6	2	---	7	29	1	---	---	1	2	---	191	488	679

ORIGINAL SEAMEN'S DOCUMENTS, ISSUED MONTH OF JULY 1948

REGION	(1) Staff officer	(2) Contin- uous dis- charge book	(3) U. S. mer- chant mariner's documents	(4) AB any waters un- limited	(5) AB any waters 12 months	(6) AB Great Lakes 18 months	(7) AB tugs and tow- boats any waters	(8) AB 1 days and sounds	(9) AB sea- going barges	(10) Life- boat- man	(11) Q. M. E. D.	(12) Radio opera- tors	(13) Certifi- cate of service	(14) Tanker- man
Atlantic coast.....	39	2	1,184	270	220	16	1	32	0	489	275	20	988	10
Gulf coast.....	5	7	361	40	56	6	0	0	0	79	59	3	279	21
Pacific coast.....	24	0	574	89	84	0	0	0	0	360	103	0	484	11
Great Lakes and rivers.....	4	0	1,389	37	154	63	0	0	0	177	133	2	1,288	23
Total.....	72	9	3,508	416	514	85	1	32	0	1,105	570	25	3,039	65

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

NOTE.—Columns 4 through 14 indicate endorsements made on U. S. merchant mariner's documents.

WAIVERS OF MANNING REQUIREMENTS FROM JULY 1 TO JULY 31, 1948

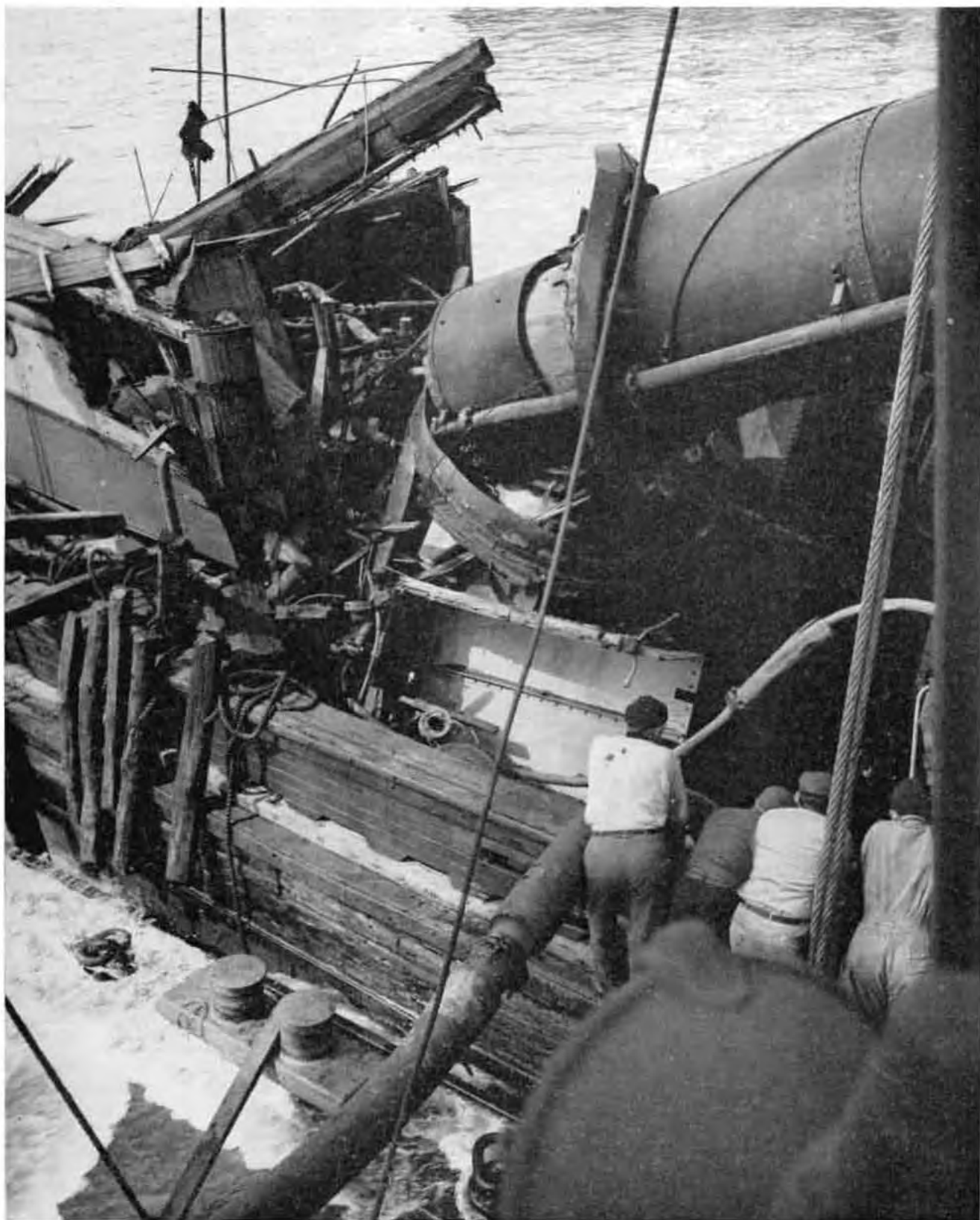
REGION	Number of vessels	Deck offi- cers sub- stituted for higher ratings	Engineer officers sub- stituted for higher ratings	Able sea- men sub- stituted for deck officers	Ordinary seamen sub- stituted for able seamen	Qualified members of engine department substituted for engi- neer officers	Wipers or coal passers substituted for qualified members of engine department	Wipers, coal passers, or cadets substituted for engi- neer officers	Ordinary seamen or cadets sub- stituted for deck officers	Total
Atlantic coast.....	108	2	11		167		66			246
Gulf coast.....	44		5	2	44		25			76
Pacific coast.....	20		2		14	1	9			26
Great Lakes.....	53	1	4		37		52			94
Total.....	225	3	22	2	262	1	152			442

CREW SHORTAGE REPORTS FROM JULY 1 TO JULY 31, 1948

REGION	Number of vessels	Ratings in which shortages occurred											Total	
		Chief mate	Second mate	Third mate	Radio	Able seamen	Ordinary seamen	Chief engineer	First engineer	Second engineer	Third engineer	Qualified member engine department		Wiper or coal passer
Atlantic coast.....	5			1		3			1	1	1	1		8
Gulf coast.....	2			1			1							2
Pacific coast.....	1					1								1
Great Lakes.....	118	4	5	6		28	6	2	1	5	26	73	20	176
Total.....	126	4	5	8		32	7	2	2	6	27	74	20	187

Distribution (SDL 34):

- A: a, b, c (2ea.); remainder (1 ea.).
- B: c (14 ea.); g, 1 (5 ea.); e, f, h (3 ea.); d (2 ea.); remainder (1 ea.).
- C: All (1 ea.).
- D: All (1 ea.).
- List 141M.



Deck house and stack over boiler after explosion.