

PROCEEDINGS OF THE MERCHANT MARINE COUNCIL UNITED STATES COAST GUARD



Vol. 5

August 1948

No. 8



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. Except for the cover picture there are no restrictions on the republication of material appearing in this issue.

Mention of source will be appreciated.

The Merchant Marine Council of the United States Coast Guard

Admiral J. F. FARLEY, U. S. C. G.
Commandant of the Coast Guard

Rear Admiral HALERT C. SHEPHEARD,
U. S. C. G., *Chairman*
Chief, Office of Merchant Marine
Safety, U. S. C. G.

Captain A. C. RICHMOND,
U. S. C. G., *Member*
Chief, Planning and Control Staff,
U. S. C. G.

Captain ROY L. RANEZ,
U. S. C. G., *Member*
Vice Chairman, Assistant Chief,
Office of Merchant Marine Safety.

Captain KENNETH K. COWART,
U. S. C. G., *Member*
Assistant Engineer in Chief

Captain HENRY T. JEWELL,
U. S. C. G., *Member*
Chief, Merchant Vessel Personnel
Division, U. S. C. G.

Captain ROBERT A. SMYTH,
U. S. C. G., *Member*
Chief, Merchant Marine Technical
Division, U. S. C. G.

Captain EDWARD C. CLEAVE,
U. S. C. G., *Member*
Chief, Merchant Vessel Inspection
Division, U. S. C. G.

Mr. KENNETH S. HARRISON,
Chief Counsel, U. S. C. G.

Captain JOSEPH A. KERRINS,
U. S. C. G., *Secretary*

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

CONTENTS

Magnetic Mines.....	122
Numbered and Undocumented Vessels.....	123
Lessons from Casualties:	
Death by Whirlabout Action of CO, Gas Cylinder.....	124
Ever Sleep On Deck? Read This.....	124
Appendix:	
Amendments to Regulations.....	125
Navigation and Vessel Inspection Circular No. 1-43.....	137
Navigation and Vessel Inspection Circular No. 2-48.....	138
Merchant Marine Personnel Statistics.....	139
Cover Picture: Courtesy Greene Line Steamers, Inc., by Jerry Bartness, Marietta, Ohio.	

MAGNETIC MINES

Since the end of World War II, more than 250 ships of all nations have been sunk or damaged by mines. Of this number, 43 United States ships have been affected. It is estimated that sweeping operations in Europe and the Far East will take at least another year. Authorities are agreed that no guaranty can be given that even after all the sweepers have ceased operations, a mine will not pop up from time to time in the next 20 years. In July of 1947 a World War I mine was reported off Cape May, N. J.

Information has recently been released indicating that the life of British magnetic ground mines laid during the war is in excess of the 3½-year period which has been accepted to date. It appears that a life of 8 to 12 years will now have to be allowed for these mines, and as a result the following policy has been approved. Shipping is to continue to use swept buoyed channels until it is considered that all mines have become inactive due to age. Annual trial sweep will be conducted of a chosen area to find out when mines become inactive due to age. Certain routes and channels will be amended and widened as may be possible with available minesweeping forces.

Just recently a small Danish coastal excursion vessel was destroyed in the Kattegat, with a reported loss of 200 lives, as a result of a floating mine. Statistics released by a New York war-risk insurance authority reveal that a total of 251 ships of all nationalities have struck mines since VE-day in the Atlantic and Mediterranean and since VJ-day in the Pacific. Of this number, 116 were either sunk or declared a total loss.

Although the danger from mines has not yet been eliminated, an international effort by all nations with naval minesweeping facilities has been undertaken. Swept channels

are thus established and maintained and are marked with buoys.

All mine information for the Pacific area is gathered and distributed by the Branch Hydrographic office at Honolulu while similar information in the European and Atlantic area is centralized in London and is distributed through an international committee known as the International Routing and Reporting Authority. Information on mines and mined areas is broadcast by radio and is given wide distribution.

In most cases of casualties reported, the ships had strayed from the limits of swept channels or had entered a minefield through which no safe channel had yet been swept. Section 62.27a, General Rules and Regulations for Vessel Inspection, Ocean and Coastwise, is quoted for information: "Due to existing mine field dangers, all licensed masters, officers, and certificated seamen on United States vessels shall comply strictly with the routing instructions issued by competent naval authority. Failure to comply with such routing instructions shall be deemed misconduct within the meaning of R. S. 4450, as amended (46 U. S. C. 239). Nothing herein shall be construed as relieving the master of the responsibility for the safety of his vessel."

THE DELTA QUEEN

The 285-foot, four-deck luxury tourist vessel, *Delta Queen*, to be operated by Greene Lines Steamers, Inc., as a passenger liner on the inland waterways, recently completed a thorough "beauty treatment."

The vessel was built in Scotland in 1924 and shipped piece by piece to Stockton, Calif., for assembly. Prior to World War II the boat operated on the Sacramento River hauling passengers and freight. During the war the vessel was used by the Navy to

transport personnel across San Francisco Bay. After her purchase by Greene Line Steamers, Inc., she was piloted 5,000 miles through the Pacific, Panama Canal, Caribbean, Gulf of Mexico and up the Mississippi and Ohio to Pittsburgh for overhaul and conversion.

During her overhaul period, cabins were modernized and can accommodate over 200 passengers. Additional fresh water tanks were installed as well as equipment for filtering water used for washing and the fuel capacity was doubled. The Siamese Iron-wood main deck was converted from cargo storage into a modern dining room and recreation hall with sound-proof ceiling and concealed lighting. Two observation decks were built over the bow to enable passengers to be near the front of the vessel and especially designed fenders were welded to the hull to prevent damage when going through locks. The forced heating and ventilating systems were improved to insure maximum comfort when cruising along the Mississippi River through the deep South.

HEARING UNITS

Coast Guard Merchant Marine investigating units and Merchant Marine details investigated a total of 750 cases during the month of May 1948. Of this number, charges were preferred involving 7 licensed and 38 unlicensed men. No hearings were held because examiners were not available.

AFFIDAVITS

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

Strahman Valve Division, Klingerit, Inc., 16-22 Hudson St., New York 13, N. Y. Valves.

Pacific Valve and Pump Co., 2976 Cherry Ave., Long Beach 6, Calif. Valves and fittings.

Manitowoc Ship Building Co., Manitowoc, Wis. Valves, flanges and forgings.

Flynn Brothers, 18th St. and Park Ave., Weehawken, N. J. Castings.

Doran Manganese Bronze Co., 611 Court St., Brooklyn, N. Y. Bronze castings.

Rodermond Industries, Inc., Foot of Henderson St., Jersey City 2, N. J. Valves.

CERTIFICATION OF ARTICLES OF SHIPS' STORES AND SUPPLIES

Articles of ships' stores and supplies certificated from June 25, 1948, to July 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.

Sumco Products, Inc., 144-146 Centre St., Brooklyn 31, N. Y. Dated July 2, 1948, certification No. 254, Marine Fuelklean Fuel Oil Treatment.

Saverite Engineering Co., 158 Fourteenth St., Hoboken, N. J., dated July 23, 1948, certification No. 255, Saverite Sludge Solvent.

Do First Things First

NUMBERED AND UNDOCUMENTED VESSELS

The table below gives the cumulative total of numbered but undocumented vessels in each Coast Guard district by Customs ports for the quarter ending June 30, 1948. Generally speaking, undocumented vessels are those machinery-propelled vessels of less than 5 net tons engaged in trade which by reason of tonnage are exempt from documentation, and those motorboats or motor vessels of less

than 16 gross tons which are not subject to documentation as yachts, together with motorboats and motor vessels used exclusively for pleasure purposes which are 16 gross tons or over and not so documented. These vessels are required to be numbered under the provisions of the Act of June 7, 1918, as amended (46 U. S. C. 288).

COAST GUARD DISTRICT	CUSTOMS PORT		TOTAL
1 (Boston)	(4) Boston	14,390	31,539
	(1) Portland, Maine	10,392	
	(2) St. Albans	2,754	
	(5) Providence	4,003	
	(45) St. Louis	17,054	
2 (St. Louis)	(12) Pittsburgh	2,602	43,690
	(34) Pembina	73	
	(35) Minneapolis	7,262	
	(40) Indianapolis	4,116	
	(42) Louisville	3,857	
	(43) Memphis (part)	8,145	
	(44) Vacant (Des Moines)	108	
	(46) Omaha (part)	474	
3 (New York)	(10) New York	45,428	74,590
	(6) Bridgeport	8,292	
	(11) Philadelphia	20,870	
5 (Norfolk)	(14) Norfolk	15,160	44,768
	(13) Baltimore	21,556	
	(15) Wilmington, N. C.	8,052	
	(18) Tampa (part)	21,414	
7 (Miami)	(16) Charleston	1,761	26,722
	(17) Savannah	3,118	
	(49) San Juan	362	
	(51) St. Thomas	67	
8 (New Orleans)	(20) New Orleans	18,452	
	(18) Tampa (part)	837	
	(19) Mobile	7,308	42,135
	(21) Port Arthur	3,805	
	(22) Galveston	9,798	
	(23) Laredo	1,833	
	(24) El Paso	6	
	(45) Memphis (part)	76	
9 (Cleveland)	(41) Cleveland	13,898	89,161
	(7) Ogdenburg	6,550	
	(8) Rochester	8,541	
	(9) Buffalo	8,116	
	(36) Duluth	4,036	
	(37) Milwaukee	12,348	
	(38) Detroit	27,841	
	(39) Chicago	7,831	
11 (Long Beach)	(27) Los Angeles	8,062	9,757
	(25) San Diego	1,621	
	(26) Nogales	74	
12 (San Francisco)	(28) San Francisco	19,660	19,660
	(47) Denver		
13 (Seattle)	(30) Seattle	31,322	45,051
	(29) Portland, Oreg.	9,278	
	(31) Junction	6,442	
	(33) Great Falls	1,009	
	(46) Omaha (part)		
14 (Honolulu)	(32) Honolulu	3,964	3,964
Grand Total			434,037

LESSONS FROM CASUALTIES

DEATH BY WHIRLABOUT ACTION OF CO₂ GAS CYLINDER

Within recent months, one man was instantly killed and another critically injured while tampering with a 10-pound CO₂ cylinder.

This unusual accident occurred aboard a dock boat (equipped with a tool room, machine shop, work space, and an office) of a small boat company. Work was underway fitting out several motorboats. Two men were removing new hand extinguishers, 10-pound CO₂ type, from shipping cartons. One man removed an extinguisher and rolled it over a couple of times to look at it, apparently unfamiliar with its operating principles. For some unknown reason, perhaps thinking it needed charging, he fitted a 15-inch crescent wrench to the screw cap on the charging side of the cylinder. As he loosened the cap a hissing noise was heard. "It's leaking gas," shouted his helper, as he came over to look on. The screw cap was turned back and this man began reading a tag (instructions for filling). While he was reading the instructions, the helper removed the cap from the discharge line and started to again loosen the plug on the charging side. Suddenly, there was a loud "pop" and the interior of the dock boat became dense with CO₂ fumes.

When asked by the investigating officer to describe the incident, an eyewitness related how the two men were working on the extinguisher with a wrench, and that when the smoke had cleared away the extinguisher had moved several feet, the wrench was driven through the floor, and the two men were lying in opposite directions from each other.

In commenting upon the case, the investigating officer concluded that it " * * * was caused by the lack of knowledge of characteristics and contents, while tampering with a fully charged CO₂ cylinder. It is evident that the plug on the charging side was backed off until the amount of threads holding were not sufficient to withstand the pressure within the cylinder. When the threads let go the escaping gas also fractured the rupture disk on the discharge side. This allowed the gas to pass out through the two openings, thus setting the cylinder in a whirling motion similar to jet propulsion. It is believed the cylinder struck the two men. It then appears that the course of the cylinder in its whirling motion was de-

flected downward where it gouged and splintered the wooden deck and came to rest about 10 feet from the scene of the accident when the effect of the pressure had been spent."

Further comment is unnecessary. It might be added that the 10-pound cylinders of CO₂ were a type intended to be fitted into a fixed system in Army tanks and were not approved by the Coast Guard for use on vessels. The moral of this story is: **BE SURE TO OBTAIN APPROVED EQUIPMENT AND UNDERSTAND HOW TO USE IT.**

EVER SLEEP ON DECK? READ THIS

A crew member of an American vessel at sea, while resting on a cot on deck, slid overboard and was lost.

The vessel, a T-2 type tanker, was on a voyage from Japan to the Persian Gulf. She was in the South China Sea at the time of this incident. It was during the month of October, and the weather was overcast, wind 4 to 5, visibility fair to poor. The engines were at normal cruising speed. A rough following sea was causing a moderate roll.

One evening, just after supper time, several members of the crew were lolling around on the poop deck talking, smoking, and watching the ship toss and roll. Among the members was the Chief Pumpman, lying on a cot which was stretched fore and aft. Other crewmen were sitting in chairs, or on bitts, or leaning on the rail.

The pumpman had his foot hooked around the winch to prevent his cot from sliding. However, at about 1730, the vessel took an unusually heavy roll. This caused the cot to swing around athwartship in such a way that it unhooked the pumpman's foot. The cot then slid across the deck to the port rail. Before the pumpman could jump out, the cot went through the rail and the pumpman was dumped into the sea. What a surprise to his shipmates who saw the incident!

Inasmuch as the cot got caught on the gunwale between the lower rail and the deck, it was pulled back on board. In a not-too-well-organized fashion, three life rings were thrown over, word was sent to the bridge, and "man overboard" was passed throughout the messrooms and passageways. The second mate on watch put the wheel hard left. Lookouts were stationed in both fore and after crow's nests as well as at other vantage points. A search of the vicinity was

made until about 1830 when darkness, rain squalls, and heavy seas made it virtually impossible to continue.

One member of the crew said he saw the pumpman making efforts to reach a life ring in the water, but did not see him grasp it. The approximate spot was circled several times without success. No trace of the pumpman could be found—much to the regret of the entire crew.

This incident is not the first of its kind. Other seamen have fallen, slid, or have been washed overboard, before. It would seem that the logical thing to do to prevent similar misfortunes, would be to take adequate steps to insure a good foothold and a good handhold. The seaman's motto, "one hand for the ship and one for yourself," should also include one foot for yourself. In this instant case, the cot should have been lashed in addition to hooking a foot around the winch.

Even with the most efficient "man overboard" procedures, it should be remembered that it takes a certain amount of time to put such procedures into action. For the startled seaman floundering in the water, these are precious moments. They must not be wasted. An average vessel moving at normal speed could easily be several miles away before getting on a reverse course for search procedures. During this time, all real hope for survival may be lost, particularly if the weather and visibility are unfavorable.

Suggestions for the Care and Use of Electric Hand Tools

1. Keep in good repair (cleaned and oiled).
2. Examine both portable cord and connections before using. (Damaged cords or defective plugs or switches may be dangerous.)
3. Use an extra wire to ground tool casing when in use, if ground has not been built in.
4. When using do not hang cord over nails or other sharp edges; or allow cord to become kinked; or leave it where it may be run over.
5. Protect the cord against contact with oil, hot surfaces, and chemicals. (These may damage insulation.)
6. Do not patch any serious injury to cord insulation with tape. (Shorten the cord or get a new one.)
7. Wear goggles if there is any danger of flying particles while using tools.

APPENDIX

Amendments to Regulations

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.

TITLE 46—SHIPPING

Chapter I—Coast Guard: Inspection and Navigation

[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 F—Marine Engineering

PART 55—PIPING SYSTEMS

SUBPART 55.10—PUMPING ARRANGEMENTS AND PIPING SYSTEMS

6. Section 55.10-15 (b) is amended to read as follows:

§ 55.10-15 *Vent, overflow, and sounding pipes.* * * *

(b) *Overflow pipes.* Where overflow pipes are fitted to fuel oil settling tanks or deep tanks, they shall meet the following requirements:

(1) Where tanks may be filled by a pressure head exceeding that for which the tank is designed, the aggregate area of the vents in each tank shall be at least equal to the area of the filling line unless the tanks are protected by overflows, in which case the area of the overflow shall not be less than that of the filling line.

(2) Overflow pipes which discharge through the vessel's side shall be located as far above the deep load line as practicable and shall be provided with nonreturn valves located on the vessel's side. Where the overflows do not extend above the freeboard deck before discharging overboard there shall be provided in addition an efficient and accessible means for preventing water from passing inboard. Such means may consist of another nonreturn valve located in an accessible position above the deepest load line. Where it is impracticable to locate the inboard valve in an accessible position, one nonreturn valve with positive means of closing same from above the bulkhead or freeboard deck will be acceptable. (R. S. 4417a, 4418, 4426, 4427, 4429-4434, 4453, and 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, 391a, 404, 405, 407-412, 435, 1333, 50 U. S. C. 1275)

PART 56—ARC WELDING, GAS WELDING, AND BRAZING

SUBPART 56.01—ARC WELDING AND GAS WELDING

Section 56.01-80 (e) (13 F. R. 1748) is amended to read as follows:

§ 56.01-80 *Welded piping.* * * *

(e) For class I piping, double welded butt joints or single welded butt joints fitted with a backing ring or its equivalent on the inside of the pipe shall be employed when the pipe diameter exceeds 2 inches. Piping of diameters not exceeding 2 inches may be joined by sleeves fitted over the ends of the pipes, or by socket joints attaching the ends of the pipes by strength fillet welds. If butt joints are employed for pipe diameters of 2 inches and below the backing ring may be omitted in sizes below 1 inch. (R. S. 4417a, 4418, 4426, 4427, 4429-4434, 4453, and 4491, as amended, 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, 391a, 392, 404, 405, 407-412, 435, 1333, 50 U. S. C. 1275)

Subchapter G—Ocean and Coastwise: General Rules and Regulations

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

1. Section 59.11 (f) is amended to read as follows:

§ 59.11 *Lifeboat equipment.* * * *

(f) *Parachute flare distress signals.*

(1) Twelve approved parachute red flare distress signals and an approved means of projecting them, all contained in a portable watertight case. Service use of the signals shall be limited to a period of three years from date of manufacture. (For specifications for the above equipment, see subparts 160.024 and 160.036 in Subchapter Q of this chapter.)

(2) The storage of this equipment, except in the emergency and motor lifeboats, is discretionary with the master.

(3) On cargo vessels, parachute red flare distress signal equipment need not be provided for more than two lifeboats. (R. S. 4488, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended, 46 U. S. C. 367, 481, 1333, 50 U. S. C. 1275)

2. Section 59.55 *Life preservers* is amended by deleting paragraph (e) *Buoyant materials.* (R. S. 4426, 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, 396, 404, 481, 490, 1333, 50 U. S. C. 1275)

3. Section 59.56 is amended to read as follows:

§ 59.56 *Life buoys*—(a) *Number required.* (1) The minimum number of approved 30-inch life buoys and the minimum number to which approved water lights shall be attached shall be in accordance with the following table:

Length of vessel	Minimum number of approved 30-inch life buoys	Minimum number of approved 30-inch life buoys with approved water lights attached
Under 200 feet	8	6
200 feet and under 400 feet	12	6
400 feet and under 600 feet	18	9
600 feet and under 800 feet	24	12
800 feet and over	30	15

(2) One life buoy on each side of a vessel shall have an attached line at least 15 fathoms in length.

(b) *Distribution and securing of life buoys and water lights.* All life buoys and water lights shall be distributed and secured as follows:

(1) All life buoys shall be so placed as to be readily accessible to the persons on board, and their positions plainly indicated so as to be known to the persons concerned.

(2) The life buoys shall always be capable of being cast loose, and shall not be permanently secured in any way. (R. S. 4426, 4488, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 367, 404, 481, 1333, 50 U. S. C. 1275)

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

1. Section 60.9 (f) is amended to read as follows:

§ 60.9 *Lifeboat equipment.* * * *

(f) *Parachute flare distress signals.*

(1) Twelve approved parachute red flare distress signals and an approved means of projecting them, all contained in a portable watertight case. Service use of the signals shall be limited to a period of three years from date of manufacture. (For specifications for the above equipment, see subparts 160.024 and 160.036 in Subchapter Q of this chapter.)

(2) No passenger vessels certificated for the Coastwise Service, parachute red flare distress signal outfits shall be provided in the ratio of one outfit for each five boats or fraction thereof.

(3) The stowage of this equipment, except in the emergency and motor

lifeboats, is discretionary with the master.

(4) On cargo vessels, parachute red flare distress signal equipment need not be provided for more than two lifeboats. (R. S. 4488, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 367, 481, 1333, 50 U. S. C. 1275)

2. Section 60.48 *Life preservers* is amended by deleting paragraph (e) *Buoyant materials.*

3. Section 60.49 is amended to read as follows:

§ 60.49 *Life buoys*—(a) *Number required.* (1) The minimum number of approved 30-inch life buoys and the minimum number to which approved water lights shall be attached shall be in accordance with the following table:

Length of vessel	Minimum number of approved 30-inch life buoys	Minimum number of approved 30-inch life buoys with approved water lights attached
Under 100 feet	2	0
100 feet and under 200 feet	4	2
200 feet and under 300 feet	6	2
300 feet and under 400 feet	12	4
400 feet and under 600 feet	18	6
600 feet and under 800 feet	24	12
800 feet and over	30	15

(2) One life buoy on each side of a vessel shall have an attached line at least 15 fathoms in length.

(b) *Distribution and securing of life buoys and water lights.* All life buoys and water lights shall be distributed and secured as follows:

(1) All life buoys shall be so placed as to be readily accessible to the persons on board, and their positions plainly indicated so as to be known to the persons concerned.

(2) The life buoys shall always be capable of being cast loose, and shall not be permanently secured in any way. (R. S. 4426, 4488, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 367, 404, 481, 1333, 50 U. S. C. 1275)

PART 61—FIRE APPARATUS; FIRE PREVENTION

Section 61.17 (b) (4) (ii) is amended to read as follows:

§ 61.17 *Fire-detecting and automatic sprinkling systems.* * * *

(b) *Electrical and pneumatic-tube systems.* * * *

(4) *Zoning.* * * *

(ii) Spaces separated by watertight or main vertical zone bulkheads shall not be included in the same fire alarm

zone. Further, a fire alarm zone shall not include spaces on more than one deck except in the case of peak spaces having a combined ceiling area not exceeding 3,000 square feet, or in the case of a system with indicators for individual spaces. (R. S. 4426, 4470, 4471, 49 Stat. 1544, 54 Stat. 346, 1028, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 367, 404, 463, 463a, 464, 1333, 50 U. S. C. 1275)

PART 63—INSPECTION OF VESSELS

Part 63 is amended by adding a new § 63.5a to immediately follow § 63.5, reading as follows:

§ 63.5a *Gas-free certificates for repairs or alterations involving hot work.* On any vessel which has carried inflammable or combustible liquids in bulk, as fuel or cargo, whether in a repair yard or elsewhere, no repairs or alterations involving riveting, welding, burning, or like fire-producing operations shall be made in or on the boundaries of oil bunkers, oil tanks, oil pipe lines and heating coils until an inspection has been made to determine that such operations can be undertaken with safety. Such inspections shall be made and evidenced as follows:

(a) When in a port of the United States, this inspection shall be made by a gas chemist certificated by the American Bureau of Shipping; however, if the services of such certified gas chemist are not reasonably available, the marine inspector of the Coast Guard, upon recommendation of the vessel's owner and his contractor, or their representatives, shall select a person who, in the case of an individual vessel, shall be authorized to make the inspection. If the inspection indicates that such operations can be undertaken with safety, a certificate setting forth that fact in writing and qualified, as may be required, shall be issued by the certified gas chemist or the authorized person before the work is started.

(b) When not in such a port and a gas chemist is not available, this inspection shall be made by the senior officer present, who shall make an entry in the log to that effect. (R. S. 4417, 4426, 49 Stat. 1544, 54 Stat. 346, 1028, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 367, 391, 404, 463a, 1333, 50 U. S. C. 1275)

Subchapter H—Great Lakes: General Rules and Regulations

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

1. Section 76.14 is amended by changing paragraphs (e) and (s) to read as follows:

§ 76.14 *Equipment for lifeboats on vessels of classes (a), (b), (c), (d), and (e).* * * *

(e) *Distress signals.* (1) Twelve approved hand red flare distress signals in a watertight container, or twelve approved hand combination flare and smoke distress signals in a watertight container. Service use shall be limited to a period of three years from date of manufacture. Distress signals not bearing date of manufacture shall not be carried after January 1, 1949. (For specifications for the above signals see subparts 160.021, 160.022, and 160.023 in Subchapter Q of this chapter.)

(2) Either an approved flashlight or twelve approved parachute red flare distress signals and an approved means of projecting them, all contained in a portable watertight case, may be substituted for six of the above distress signals, but at least six of the above hand red flare distress signals shall be carried. Service use of the signals shall be limited to a period of three years from date of manufacture. (For specifications for the parachute red flare distress signal equipment, see subparts 160.024 and 160.036 in Subchapter Q of this chapter.) (R. S. 4426, 4488, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 367, 404, 481, 1333, 50 U. S. C. 1275)

(s) *Parachute flare distress signals.* (Optional, see distress signals in paragraph (e) of this section.) The stowage of parachute flare distress signals in lifeboats is discretionary with the master.

2. Section 76.52 *Life preservers* is amended by deleting paragraph (e) *Buoyant materials.* (R. S. 4426, 4488, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 404, 481, 1333, 50 U. S. C. 1275.)

3. Section 76.53 is amended to read as follows:

§ 76.53 *Life buoys.* (See § 60.49 of this chapter, as amended, which is identical with this section.)

PART 77—FIRE APPARATUS; FIRE PREVENTION

Section 77.17 (b) (4) (ii) is amended to read as follows:

§ 77.17 *Fire detecting and automatic sprinkling systems.* (See § 61.17 of this chapter, as amended, which is identical with this section.)

PART 79—INSPECTION OF VESSELS

Part 79 is amended by adding a new § 79.5a to immediately follow § 79.5, reading as follows:

§ 79.5a *Gas-free certificates for repairs or alterations involving hot work.* (See § 63.5a of this chapter, which is identical with this section.)

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

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

1. Section 94.52 *Life preservers* is amended by deleting paragraph (e) *Buoyant materials.* (R. S. 4426, 4488, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 404, 481, 1333, 50 U. S. C. 1275)

2. Section 94.53 is amended to read as follows:

§ 94.53 *Life buoys.* (See § 60.49 of this chapter, as amended, which is identical with this section.)

PART 95—FIRE APPARATUS; FIRE PREVENTION

Section 95.16 (b) (4) (ii) is amended to read as follows:

§ 95.16 *Fire detecting and automatic sprinkling systems.* (See § 61.17 of this chapter, as amended, which is identical with this section.)

PART 97—INSPECTION OF VESSELS

Part 97 is amended by adding a new § 97.5a to immediately follow § 97.5, reading as follows:

§ 97.5a *Gas-free certificates for repairs or alterations involving hot work.* (See § 63.5a of this chapter, which is identical with this section.)

Subchapter J—Rivers: General Rules and Regulations

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

1. Section 113.44 *Life preservers* is amended by deleting paragraph (e) *Buoyant materials.* (R. S. 4482, 4488, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 474, 481, 1333, 50 U. S. C. 1275)

2. Section 113.46 is amended to read as follows:

§ 113.46 *Life buoys.* (See § 60.49 of this chapter, as amended, which is identical with this section.)

PART 114—FIRE APPARATUS; FIRE PREVENTION

Section 114.17 (b) (4) (ii) is amended to read as follows:

§ 114.17 *Fire detecting and automatic sprinkling systems.* (See § 61.17 of this chapter, as amended, which is identical with this section.)

PART 116—INSPECTION OF VESSELS

Part 116 is amended by adding a new § 116.5a to immediately follow § 116.5, reading as follows:

§ 116.5a *Gas-free certificates for repairs or alterations involving hot work.* (See § 63.5a of this chapter, which is identical with this section.)

Subchapter M—Construction or Material Alteration of Passenger Vessels of the United States of 100 Gross Tons and Over Propelled by Machinery

PART 144—CONSTRUCTION OR MATERIAL ALTERATION OF PASSENGER VESSELS OF THE UNITED STATES OF 100 GROSS TONS AND OVER PROPELLED BY MACHINERY

Section 144.29 is amended to read as follows:

§ 144.29 *Alternate materials.* (a) In any case where it is shown to the satisfaction of the Commandant that the use of fire retardant materials required by §§ 144.09 to 144.27, inclusive, for the construction or material alteration of any vessel is not reasonable nor practicable, the Commandant may permit the use of alternate materials to such an extent and upon such conditions as will insure, to his satisfaction, a degree of safety consistent with the minimum standards set forth in this part.

(b) Prior to July 1, 1949, plain glass may be used as an alternate for the wire inserted glass required by this subchapter. (Sec. 5, 49 Stat. 1384, sec. 2, 54 Stat. 1028, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 369, 463a, 50 U. S. C. 1275)

Subchapter N—Explosives or Other Dangerous Articles or Substances, and Combustible Liquids on Board Vessels

PART 146—TRANSPORTATION, OR STORAGE OF EXPLOSIVES OR OTHER DANGEROUS ARTICLES OR SUBSTANCES, AND COMBUSTIBLE LIQUIDS ON BOARD VESSELS

DETAILED REGULATIONS GOVERNING CORROSIVE LIQUIDS

1. Section 146.23-10 is amended to read as follows:

§ 146.23-10 *Sulfuric acid in bulk.* Sulfuric acid may be transported in bulk on board cargo vessels in conformity with the following provisions:

(a) In tanks forming an integral part of the structure of the vessel:

(1) Provided the sulfuric acid is of a specific gravity of not less than 1.8125 (65° Baumé) or of greater strength.

(2) Sulfuric acid of a specific gravity of not less than 1.7059 (60° Baumé) and of greater strength, up to but not exceeding 1.8068 specific gravity (64.75° Baumé) provided the acid has been treated with an inhibitor that renders its corrosive effects on steel no greater than that of 66° Baumé, commercial sulfuric acid.

(3) Integral tanks shall be constructed and tested to meet the requirements of the rules of the American Bureau of Shipping.

(4) Integral tanks used for the stowage of the types of sulfuric acid in bulk permitted by subparagraphs (1) and (2) of this paragraph shall

be vented to the atmosphere to prevent development of internal pressure. The vent pipe shall be at least equal in diameter to that of the tank filling line and of a thickness not less than that of standard weight pipe. No openings shall be permitted in a tank below deck, except such openings as are required for access or maintenance purposes, and these openings shall be fitted with bolted plate covers and gaskets. The gaskets shall be of a material resistive to the action of sulfuric acid. Filling and discharge lines shall terminate above the weather deck and be fitted with suitable stop valves.

(5) The exhaust end of the vent line shall terminate above the weather deck in a location clear of obstruction and away from any source of open flame. The outlet of the vent shall be fitted with a gooseneck bend and flame screen made of corrosive-resistant wire of at least 30 x 30 mesh for a single screen, or two screens of corrosive-resistant wire at least 20 x 20 mesh, placed not less than 1 inch or more than 1½ inches apart. No stop valve or frangible disk shall be fitted in a vent line.

(6) An outage space of not less than 1% of the capacity of the tank shall be maintained at time of filling.

(7) Air pressure shall not be used to discharge cargo from tanks forming an integral part of the structure of the vessel.

(b) In tanks (pressure-vessel type) independent of the structure of the vessel, acid of 52° Baumé minimum strength or over may be transported without restriction: *Provided:*

(1) The acid is stowed in independent tanks which shall be designed for a pressure of not less than 50 pounds per square inch and shall be fabricated, inspected, and tested in compliance with the requirements for Class III arc-welded unfired pressure vessels, as set forth in Parts 50 to 57, inclusive, of this chapter (Subchapter F—Marine Engineering).

(2) Independent tanks used for the stowage of the type of sulfuric acid in bulk permitted by paragraph (b) of this section shall be fitted with vent pipes discharging to the atmosphere. The vent shall be fitted with a frangible rupture disk to permit the use of air pressure in discharging the cargo and to prevent development of internal pressure in the tank of above 30 pounds per square inch. The vent shall be at least equal in diameter to that of the tank filling line, and of a thickness of not less than that of standard weight pipe. No openings shall be permitted in a tank below deck, except such openings as are required for access or maintenance purposes, and these openings shall be fitted with bolted plate covers and

gaskets. The gaskets shall be of a material resistive to the action of sulfuric acid. Filling and discharge lines shall terminate above the weather deck and be fitted with suitable stop valves.

(3) The outlet of the vent line shall terminate above the weather deck in a location clear of obstruction and away from any source of open flame. The outlet of a vent line shall be fitted with a gooseneck bend and flame screen made of corrosive-resistant wire of at least 30 x 30 mesh for a single screen, or two screens of corrosive-resistant wire at least 20 x 20 mesh, placed not less than 1 inch or more than 1½ inches apart. The vent shall be closed with a frangible disk of lead or other suitable material of a thickness that will hold a pressure of 30 pounds per square inch for a period of one hour but will rupture within eight hours. No stop valve shall be fitted in a principal vent line. An auxiliary vent for use in relieving pressure or vacuum in the tank during filling or discharge of cargo may be taken off a vent pipe between the tank and the frangible disk, provided such vent discharges above the weather deck and provided further the outlet of the vent is fitted with a gooseneck bend and flame screen or screens, as described in this subparagraph. The auxiliary vent shall be fitted with a stop valve.

(4) An outage space of not less than 1% of the capacity of the tank shall be maintained at time of filling.

(5) Independent tanks shall be so installed in the vessel that sufficient space is provided between any structure of the vessel and the tank itself for purpose of inspection. Such space must be sufficient to permit unobstructed examination.

2. Part 146 is amended by adding two new §§ 146.23-10a and 146.23-10b, to follow § 146.23-10, reading as follows:

§ 146.23-10a *Spent sulfuric acid in bulk.* Spent sulfuric acid may be transported in bulk on board cargo vessels in conformity with the following provisions:

(a) In independent, rubber-lined, tanks (pressure-vessel type) or in "built-in" rubber-lined tanks. Approval by the Commandant is required for "built-in" type of construction.

(b) Independent tanks shall be designed for a pressure of not less than 50 pounds per square inch and shall be fabricated, inspected, and tested in compliance with the requirements for Class III arc-welded unfired pressure vessels, as set forth in Parts 50 to 57, inclusive, of this chapter (Subchapter F—Marine Engineering).

(c) Independent tanks used for the stowage of spent sulfuric acid in bulk

shall be fitted with vent pipes discharging to the atmosphere. The vent pipes shall be fitted with a frangible rupture disk to permit the use of air pressure in discharging the cargo and to prevent development of internal pressure in the tank of above 30 pounds per square inch. The vent pipes shall be at least equal in diameter to that of the tank filling line and of a strength at least equivalent to that of the tank. No openings shall be permitted in a tank below deck, except such openings as are required for access or maintenance purposes, and these openings shall be fitted with bolted plate covers and gaskets. The gaskets shall be of a material resistive to the action of sulfuric acid. The cargo filling line shall terminate above the weather deck and shall be fitted with a stop valve. The cargo discharge line may terminate above the weather deck or through the shell of the vessel, provided in the latter case such piercing of the vessel's hull shall conform to the rules and requirements of the American Bureau of Shipping.

(d) For independent tanks, the vent and its fittings, such as gooseneck, flame screen, frangible disk, stop valve, and the auxiliary vent, shall be installed in compliance with the provisions of paragraph (b) (3) of § 146.23-10.

(e) An outage space of not less than 1% of the capacity of the tank shall be maintained at time of filling.

(f) Independent tanks used for the stowage of spent sulfuric acid shall be so installed in the vessel that sufficient space is provided between any structure of the vessel and the tank itself for purpose of inspection. Such space must be sufficient to permit unobstructed examination. This provision shall not apply to "built-in" tanks when approval is given to permit parts of the structure of a vessel to be used to form a part or parts of the tank.

(g) "Built-in" tanks shall be fitted with pipes discharging to the atmosphere. The vent pipe shall be at least equal in diameter to that of the tank filling line, and of a thickness of not less than that of standard weight pipe. No openings shall be permitted in a tank below deck except such openings as are required for access or maintenance purposes, and these openings shall be fitted with bolted plate covers and gaskets. The gasket shall be of a material resistive to the action of sulfuric acid. The cargo filling line shall terminate above the weather deck and shall be fitted with a stop valve. The cargo discharge line may terminate above the weather deck or through the shell of the vessel, provided in the latter case such piercing of the vessel's hull shall conform to the rules of the American Bureau of Shipping.

(h) The outlet of the vent shall terminate above the weather deck in a location clear of obstruction and away from any source of open flame. The outlet of the vent shall be fitted with a gooseneck bend and flame screen made of corrosive-resistant wire of at least 30 x 30 mesh for a single screen, or two screens of corrosive-resistant wire at least 20 x 20 mesh, placed not less than 1 inch or more than 1½ inches apart. No stop valve or frangible disk shall be fitted in a vent line.

(i) An outage space of not less than 1% of the capacity of the tank shall be maintained at time of filling.

(j) Air pressure shall not be used to discharge cargo from "built-in" tanks.

(k) Rubber-lined tanks shall have their interior surfaces prepared to receive the lining. Welds shall be chipped or ground smooth. The interior surface shall be thoroughly cleaned and maintained free of all foreign matter during the lining process. The rubber used for lining shall be of a type resistive to dilute sulfuric acid, and shall be of a thickness of not less than ¼ inch and shall be bonded to the plating. Joints shall overlap at least 1½ inches and the edges shall be beveled to an angle of approximately 45° and vulcanized in place. Filling and discharge lines shall be rubber lined or otherwise lined or coated with material resistive to dilute sulfuric acid. Vent lines shall be rubber lined at least to the height of the frangible disk.

§ 146.23-10b General requirements.

(a) Where applicable the provisions of this section shall be complied with in the handling and transportation of sulfuric acid in bulk and spent sulfuric acid in bulk.

(b) All inclosed compartments in which acid tanks are installed shall be provided with efficient means of ventilation. Pump rooms and compartments containing machinery to handle acid cargo shall be ventilated.

(c) All cargo pumps, piping, valves and fittings used for handling acid shall be made of material resistive to the corrosive effects of the type acid being handled, or shall be suitably protected against corrosion.

(d) In handling sulfuric acid or spent sulfuric acid in bulk no naked light shall be permitted in the vicinity of the operation. Smoking shall be prohibited and the master or person in charge of the vessel shall post "No Smoking" signs. All artificial lights other than electric lights or portable battery lights are prohibited from use during the operation. A water hose shall be connected and ready for use and any leakage of acid shall be immediately washed down. Tools

necessary in loading or unloading operations shall be of the nonsparking type. Fire or other naked light shall not be applied to any tank for the purpose of liquefying congealed sulfuric acid. The only means permitted to liquefy frozen or congealed sulfuric acid shall be a steam-heated coil or coils.

(R. S. 4472, as amended, 54 Stat. 1023, sec. 5 (e), 55 Stat. 244; 46 U. S. C. 170, 50 U. S. C. 1275)

DETAILED REGULATIONS GOVERNING COMPRESSED GASES

3. Section 146.24-2 is amended to read as follows:

§ 146.24-2 Compressed gas defined.

(a) A compressed gas for the purposes of these regulations is defined as any material or mixture having in the container either an absolute pressure exceeding 40 pounds per square inch at 70° F., or an absolute pressure exceeding 104 pounds per square inch at 130° F., or both; or any liquid inflammable material having a Reid¹ vapor pressure exceeding 40 pounds per square inch absolute at 100° F. (See §§ 146.25-1 to 146.25-100, inclusive, for gases defined and classified as poisonous.)

(b) Any compressed gas, as defined in paragraph (a) of this section, shall be classified as an inflammable compressed gas if either:

(1) A mixture of 13 percent or less (by volume) with air forms an inflammable mixture;² or,

(2) The inflammability range³ with air is greater than 12 percent regardless of the lower limit. (R. S. 4472, as amended, 54 Stat. 1023, sec. 5 (e), 55 Stat. 244; 46 U. S. C. 170, 1275)

4. Part 146 is amended by adding a new § 146.24-16 to immediately follow § 146.24-15, reading as follows:

§ 146.24-16 Anhydrous ammonia in bulk. (a) Anhydrous ammonia may be transported in bulk on board Class "AA", "BB", or "BC" cargo barges and cargo vessels when loaded in unfired pressure vessel type tanks independent of the structure of the vessel.

(b) New or existing barges and cargo vessels proposed to be used for

the transportation of anhydrous ammonia in bulk shall be constructed or altered in accordance with the applicable regulations in this chapter.

(c) The cargo tanks shall meet the requirements for class II arc-welded unfired pressure vessels and shall be fabricated, inspected, and tested in accordance with the applicable requirements of parts 50 to 57, inclusive, of this chapter (Subchapter F—Marine Engineering).

(d) (1) Unlagged cargo tanks subject to atmospheric temperatures shall be designed for a pressure of not less than 250 pounds per square inch gauge.

(2) Where cargo tanks are lagged as required by paragraph (1) of this section, the tanks shall be designed for a pressure of not less than 225 pounds per square inch gauge.

(3) Refrigerated cargo tanks, in which the temperature of the liquid ammonia is maintained below the normal atmospheric temperatures, shall be designed for a pressure of not less than the vapor pressure corresponding to the temperature of the liquid at which the system is to be maintained, but in no case shall the design pressure be less than 90 pounds per square inch gauge.

(e) Each tank shall be provided with not less than a 12" x 16" or a 15" diameter manhole fitted with a cover located above the maximum liquid level and as close to the top of the tank as possible.

(f) (1) Independent tanks shall be arranged in the barge or vessel so as to provide a minimum clearance of not less than 24 inches from the vessel's side and not less than 15 inches from the vessel's bottom. Where more than one tank is installed in a vessel, the distance between such tanks shall be not less than 15 inches. Alternate provisions may be made for moving such tanks to provide adequate inspection and maintenance of the vessel's structure and the tanks.

(2) The design shall show the manner in which the tanks are to be installed, supported, and secured in the barge or vessel and shall be approved prior to installation. Tanks shall be supported in steel saddles and securely anchored in place. If the tanks are required to be stress-relieved no appendages shall be welded to the tanks after they have been stress-relieved.

(3) Tanks may be located in dry cargo holds or in liquid cargo tanks and may be installed "on deck" or "under deck" with the tank protruding above deck. On installation where a portion of the tank extends above the weather deck, provision shall be made to maintain the weather tightness of the deck except that vessels operating on protected inland waters may have tanks located in the

¹ American Society for Testing Materials Method of Test for Vapor Pressure of Petroleum Products (D-323-43).

² These limits shall be determined at atmospheric temperature and pressure. The method of sampling and the test procedure shall be acceptable to the Interstate Commerce Commission (Bureau of Explosives). The inflammability range is defined as the difference between the minimum and maximum percentage by volume of the material in mixture with air that forms an inflammable mixture.

holds of hopper type barges without the watertightness of the deck being maintained. All tanks shall be installed with the manhole opening located above the weather deck.

(4) Sides of cargo barges shall be provided with suitable guards as an added protection against the cargo tanks becoming damaged as a result of collision.

(5) The anhydrous ammonia tanks may be installed in the bulk liquid cargo tanks provided the liquid surrounding the anhydrous ammonia tanks complies with the following chemical and physical properties:

(i) Boiling point above 125° F. at atmospheric pressure.

(ii) Inert to ammonia at 100° F. at atmospheric pressure.

(iii) Noncorrosive in the liquid and vapor phase to the ammonia tanks and piping.

(g) (1) Upon satisfactory completion of tests and inspection, the following markings, at least $\frac{3}{8}$ inch high, shall be stamped into the metal of the tank or stamped into a noncorrodible name plate permanently attached to the tank by means of welding.

Name and address of fabricator	p. s. i.	p. s. i.
Design pressure	Shop test pressure	
Inspector's number, initials, and CG symbol		
Manufacturer's serial number		
Date of manufacture	U. S. gallons	Water capacity

(2) In addition to the markings required to be stamped on the tank, the legend, "Anhydrous Ammonia Only", shall be stenciled or painted in black letters approximately 4 inches high upon the dome or upper portion of the tank.

(3) All tank inlet and outlet connections, except safety relief valves, liquid level gauging devices, and pressure gauges shall be labeled to designate whether they communicate with the vapor or liquid space. Labels of noncorrosive material may be attached to valves.

(4) All tank markings shall be permanently and legibly stamped in a readily visible position. If the tanks are lagged, the markings attached to the tank proper shall be duplicated on the outside jacket of the lagging.

(h) (1) All valves, flanges, fittings, and accessory equipment shall be of a type suitable for use with anhydrous ammonia, and shall be made of forged steel, cast steel, or Grade A malleable iron conforming to the requirements of subpart 51.61 of Part 51 of this chapter (Subchapter F—Marine Engineering). Valves shall be fitted with noncorrosive material suitable for ammonia service. Valves, flanges, and

pipe fittings shall be of the square or round ammonia tongue and groove type or raised-face American Standard Association 300-pound standard, fitted with suitable soft gasket material. Welded fittings shall be used wherever possible, and the number of pipe joints shall be held to a minimum. Nonferrous materials, such as copper, copper alloys, and aluminum alloys, and ferrous materials, such as cast iron and Grade B cupola malleable iron, shall not be used in the construction of valves, fittings, or accessory equipment.

(2) Piping shall be of seamless drawn steel designed for the maximum pressure to which the system may be subjected but in no case shall pipe of thickness less than American Standards Association Schedule 40 be employed. In case of piping on the discharge side of the liquid pumps or vapor compressors, the design shall be for a pressure of not less than the pump or compressor relief valve setting, or provided the piping is not fitted with relief valves, the design pressure shall not be less than the total discharge head of the pump or compressor.

(3) Each tank shall be provided with the necessary fill and discharge liquid and vapor shut-off valves, safety valves, liquid level gauging devices, thermometer well, and pressure gauges which shall be grouped in the smallest practicable space and shall be suitably protected against mechanical damage. Other openings in tanks, except as specifically permitted in the regulations in this section are prohibited.

(4) All liquid and vapor connections to tanks, except safety relief valves and liquid level gauging devices and pressure gauges described in subparagraphs (7) and (8) of this paragraph, shall be equipped with automatic excess flow valves, or in lieu thereof, may be fitted with quick closing internal stop valves. The control mechanism for such valves shall be provided with a secondary control which will cause the internal stop valves to close automatically in case the liquid or vapor line is broken. The excess flow or internal stop valve shall be located on the inside of the tank or outside where the piping enters the tank; in the latter case, installation shall be made in such a manner that any undue strain will not cause breakage between the tank and the excess flow or internal stop valve.

(5) Liquid level gauging devices shall be of the following types: magnetic, rotary tube, slip tube, fixed tube, automatic float, or such other suitable type as may be approved by the Commandant.

(6) All liquid level gauging devices

shall be designed to indicate the maximum level to which the tank may be filled with liquid at temperatures between 20° F. and 130° F.

(7) Gauging devices that require bleeding of the product to the atmosphere, such as rotary tube, fixed tube, and slip tube, shall be so designed that the bleed valve maximum opening is not larger than a No. 54 drill size, unless provided with an excess flow valve.

(8) Pressure gauge connections need not be equipped with excess flow valves if the openings are not larger than a No. 54 drill size.

(9) Where possible, provision shall be made for expansion and contraction of piping by means of seamless steel pipe expansion bends. Special consideration will be given for packless type expansion joints. Slip type expansion joints are prohibited.

(10) Piping shall be provided with adequate support to take the weight of the piping off the valves and fittings.

(1) (1) Each tank shall be fitted with two or more approved safety relief valves of either the internal or external spring-loaded type suitable for ammonia service.

(2) Each safety relief valve shall be set to discharge at a pressure not in excess of the design pressure of the tank. The combined relieving capacities of the safety relief valves shall be such as to prevent a rise of pressure in the tank of more than 10 percent above the maximum allowable pressure.

(3) The minimum required rates of discharge of the safety relief valves for each tank expressed in terms of cubic feet per minute of free anhydrous ammonia at 60° F. and atmospheric pressure shall be determined by converting the actual free discharge area for anhydrous ammonia, as calculated by Fetterly's formula¹ to dis-

¹ Fetterly's formula:

$$A = \frac{[(DU \times 3.1416) + 2E] \times C \times t_1 - t_2}{L \times F \times 50} \sqrt{\frac{W_2}{W_1}}$$

Where:

A = free discharge area of the safety relief valve, in square inches.

D = outside diameter of tank, in feet.

U = overall length of tank, in feet.

E = area of end of tank, in square feet.

C = $\frac{t_1 - t_2}{62.5 + 20t_2}$, B. t. u. transmitted to

contents of the tank per square foot of tank surface per hour per degree Fahrenheit temperature difference between 1,200° F. and the temperature of the contents.

t₁ = flame temperature at outside of the tank, in degrees Fahrenheit (1,200° F.-1,000° F.).

t₂ = temperature of the liquid contents in the tank corresponding to pressure P, in degrees Fahrenheit.

t = thickness of tank, in inches.

P = relieving pressure of the safety relief valve, 105 percent of the set pressure of the safety relief valve

charge capacities using the orifice flow formula² and employing the physical properties of the gas (molecular weight, ratio of specific heats and absolute temperature) at a maximum relieving pressure of 5 percent in excess of the set pressure of the safety relief valve.

(4) Prior to the approval of safety relief valves by the Commandant, manufacturers shall have tests conducted or submit satisfactory evidence that such tests have been conducted and approved by the Underwriters Laboratories, Inc., or by a properly supervised and inspected testing laboratory acceptable to the Commandant relative to determining the actual relieving capacity at various pressures of three representative samples for each size of each design or type of safety relief valve submitted for approval. The actual relieving capacity shall be determined by flow tests at a rated pressure of 5 percent in excess of the set pressure of the valve. A table relieving capacities for each size of valve for which approval is requested shall be submitted, indicating actual capacities in cubic feet per minute of anhydrous ammonia gas and equivalent rates of discharge for free air corrected to 60° F. and atmospheric pressure.

(5) Safety relief valves shall be attached to the tank near the highest point of the vapor space. Shut-off valves shall not be installed between the tanks and the safety relief valves, except manifolds for mounting multiple safety relief valves may be fitted with acceptable interlocking 3-way valves so arranged at all times as to permit at any position of the 3-way valve an unrestricted flow of vapors through at least one port. When two safety relief valves are mounted in parallel on both the upper outlets of the 3-way valve, the arrangement shall be such as to permit at least one

safety relief valve to be operative at all times.

(6) (i) Each safety relief valve installed on a cargo tank shall be connected to a branch vent of a venting system which shall be constructed so that the discharge of gas will be directed vertically upward to a point at least 10 feet above the weather deck or above the top of any tank or house located above the weather deck. The capacity of branch vents or vent headers shall depend upon the number of cargo tanks connected to such branch or header and upon their total safety relief valve orifice discharge areas as provided for in the following table:

Number of cargo tanks:	Percent of total discharge area
1 or 2	100
3	90
4	80
5	70
6 or more	60

(ii) In addition to the requirement specified in subdivision (i) of this subparagraph, the size of the branch vents or vent holders shall be such that the back pressure in the relief valve discharge lines, shall not be more than 10 percent of the safety relief valve setting.

(iii) Return bends and restrictive pipe fittings are not permitted. Vents and headers shall be so installed as to prevent stresses on safety relief valve mountings.

(iv) The vent discharge riser shall be so located as to provide protection against mechanical injury and such discharge pipes shall be fitted with loose raincaps.

(v) No valve of any type shall be fitted in the vent pipe between the safety relief valve and the vent outlets. Suitable provision shall be made for draining the discharge pipe.

(7) Each safety relief valve shall be marked with data as follows:

- (i) Name of manufacturer.
- (ii) Size of valve.
- (iii) Pressure rating of valve and set pressure.

(iv) Actual rate of discharge in cubic feet per minute of the gas at 60° F. and atmospheric pressure.

(8) Each safety relief valve shall be tested in the presence of an inspector before being placed in service. The tests shall satisfactorily indicate that the safety relief valve will start to discharge at a pressure not in excess of the design pressure of the tank.

(j) The filling density, or the percent ratio of the liquefied gas that may be loaded in the tank to the weight of the water the tank will hold at 60° F., shall not exceed 50 percent for unlagged tanks and 57 percent for lagged or refrigerated tanks.

(k) (1) The cargo tanks shall be loaded or unloaded by the pressure

differential method. Alternate methods of filling or discharging the lading may be submitted for approval.

2. Where cargo barges or vessels are provided with compressors for maintaining the pressure differential between the shore storage tanks and cargo tanks, the following procedure for unloading and loading the tanks shall be followed:

(i) In loading cargo tanks, the compressor shall be connected to the vapor suction line on the cargo tank and discharge to the vapor line on the shore storage tank. The connection between the liquid line on the shore storage tank and the unloading line on the barge may be made by wire braided armored rubber hose or other type of suitable hose. The hose shall be designed for a bursting pressure of five times the safety relief valve setting and be hydrostatically tested to twice the setting of the safety relief valve.

(ii) During loading operations, the pressure differential between the high and low side of the compressor shall be not more than 50 p. s. i. gauge.

(iii) When the pressure differential has dropped to between 5 and 10 p. s. i. indicating that all of the liquid has been removed from the shore tanks, the compressor suction and discharge shall be reversed in order to remove the remaining gas from the shore tanks.

(iv) An oil separator, relief valve, and pressure gauge shall be installed on each side of the compressor.

(v) For unloading the cargo tanks, the connections shall be reversed and the compressor shall take suction on the shore tanks and discharge through the vapor lines to the cargo tanks.

(3) A diagrammatic sketch of filling and discharge systems shall be submitted for approval.

(i) (1) Lagged tanks shall be covered with a nonflammable insulating material of a thickness to provide a thermal conductance of not more than 0.075 B. t. u. per square foot per degree Fahrenheit differential in temperature per hour. The entire insulation shall be covered with a sheet metal jacket of not less than 0.083" thickness and efficiently flashed around all openings so as to be weathertight.

(2) Where unlagged tanks are installed in insulated holds or 'tween-deck spaces such tanks shall be considered lagged provided the thermal conductance of the insulation is not less than that required by subparagraph (1) of this paragraph.

(m) (1) Where refrigerated systems are installed to maintain the temperature of the liquid below atmospheric, at least two complete refrigeration plants automatically started and stopped by pressure varia-

plus 14.7, in pounds per square inch absolute.

L = latent heat of vaporization of the liquid portion of the gas at pressure P , in B. t. u. per pound.

W_s = density of steam at pressure P , in pounds per cubic foot.

W_g = density of the gas at pressure P , in pounds per cubic foot.

Fetterly's formula may be modified for tank sizes above a DU value of 160 by proportionately reducing the flame temperature t_f , from 1,200° F. to 1,000° F. until a DU value of 500 is reached, above which the flame temperature shall remain constant at 1,000° F.

²The expression for orifice flow corresponds to the maximum adiabatic flow of an ideal gas through a frictionless orifice (coefficient of discharge of unity) when the back pressure on the discharge side is less than the critical pressure. Allowance should be made for deviations from the ideal gas laws at the relieving pressure P .

tions within the tanks shall be provided, each to be complete with the necessary auxiliaries for proper operation. The capacity of each refrigeration compressor shall be sufficient to maintain the vapor pressure in the tanks during peak atmospheric temperature conditions below the pressure for which the tanks are designed.

(2) An alternate arrangement may consist of three compressors, any two of which shall be capable of maintaining the vapor pressure in the tanks during peak atmospheric temperature conditions below the pressure for which the tanks are designed, the third compressor acting as a stand-by unit.

(3) Refrigerated tanks shall be covered with a suitable insulant to prevent sweating of the tank surfaces.

(n) (1) Cargo tanks shall be examined and retested at least every four years in the presence of an inspector. The examination shall consist of a thorough internal and external examination, except as noted in subparagraph (4) of this paragraph. The hydrostatic test shall be equal to twice the design pressure of the tank.

(2) The safety relief valves shall be dismantled, overhauled, and reset at the time of the four-year inspection. Said valves may be dismantled, overhauled, and reset at such other times as is the desire of the carrier; provided such work is done with the cognizance of and under such conditions as are agreed upon with the Officer in Charge, Marine Inspection.

(3) Upon satisfactory completion of the test at the time of the four-year inspection, the inspector shall stamp upon the tank the date and other identification necessary to indicate authority for continued use of the cargo tanks and safety relief valves. When a carrier finds it necessary to replace a safety relief valve, he shall report the change in writing to the Officer in Charge, Marine Inspection, in the district where the change took place or at the first port of call. The replacement shall be the same size, capacity, and material as the replaced valve and shall be set to relieve at no more than the design pressure of the tank.

(4) In addition to the test prescribed in subparagraph (1) of this paragraph, each lagged tank shall be subject to an external inspection at least once every eight years by having the jacket and lagging removed. If the jacket and lagging are not removed during the four-year test, the tank shall hold the prescribed hydrostatic pressure for at least 20 minutes without any pressure drop.

(o) Each cargo tank shall be electrically grounded to the hull. The

cargo barge or vessel shall be electrically connected to the shore piping prior to connecting the cargo hose.

(p) Repairs involving the use of welding or burning equipment shall not be undertaken on the anhydrous ammonia tanks or liquid or vapor piping while the lading in either liquid or vapor form is present in the tanks.

(q) During the time anhydrous ammonia is laden in the tanks the barge or vessel shall be under constant surveillance. A towing vessel engaged in transporting such barges shall not leave the barge unattended except when the barge is moored at a pier, wharf, dock, or other terminal and then only if such facility is provided with watchman or guard service. When the barge is at the consignor's or consignee's terminal, watchman or guard service shall be provided by said consignor or consignee.

(r) The ICC's standard "Dangerous" placard shall be displayed in four locations on the barge when anhydrous ammonia is laden in the tanks. A placard shall be posted approximately amidships on each side and facing outboard. A placard shall be posted at each end of the barge at about the ends of the tanks facing outboard. Racks for mounting such placards shall be so arranged as to provide clear visibility and be protected from becoming readily damaged or obscured. After unloading and before a tank or tanks are gasfreed, the placard shall be reversed to show the "Dangerous-Empty" legend.

Subchapter Q—Specifications

PART 160—LIFESAVING EQUIPMENT

1. Part 160 is amended by adding a new subpart 160.007 reading as follows:

SUBPART 160.007—BUOYANT CUSHIONS, KAPOK, STANDARD, FOR MOTORBOATS OF CLASSES A, 1, OR 2 NOT CARRYING PASSENGERS FOR HIRE

Sec.

- 160.007-1 Applicable specifications and plan.
- 160.007-2 Type and size.
- 160.007-3 Materials.
- 160.007-4 Construction, workmanship, and performance requirements.
- 160.007-5 Inspections and tests.
- 160.007-6 Marking.
- 160.007-7 Procedure for approval.

AUTHORITY: §§ 160.007-1 to 160.007-7, inclusive, issued under R. S. 4405 and 54 Stat. 163-167, as amended; 46 U. S. C. 375, 526-526t; and sec. 101, Reorg. Plan No. 3 of 1946; 11 F. R. 7875.

§ 160.007-1 *Applicable specifications and plan*—(a) *Specifications.* The following specifications, of the issue in effect on the date standard kapok buoyant cushions are manufactured, form a part of this subpart:

- (1) Navy Department specifications:
 - 21T4—Twine, cotton, mattress, polished for use in tufting machines.
 - 27D1—Drill, cotton, fire and water resistant.
- (2) Federal specifications:
 - V-T-276—Thread, cotton.
 - V-T-291—Thread, linen.
 - KK-L-291—Leather, upholstery.
 - KK-L-311—Leather and leather products; general specifications (methods of sampling, inspection and tests).
 - CCC-D-651—Drill, unbleached.
 - CCC-T-191—Textiles; general specifications, test methods.
 - DDD-S-751—Stitches; seams; and stitching.
- (3) Coast Guard specification:
 - 164.003—Kapok, processed.

(b) *Plan.* The following plan, of the issue in effect on the date standard kapok buoyant cushions are manufactured, forms a part of this specification:

Dwg. No. 160.007—Buoyant cushion; cutting pattern and construction.¹

§ 160.007-2 *Type and size*—(a) *Type.* Standard kapok buoyant cushions shall be of but one type as herein specified.

(b) *Size.* Buoyant cushions specified by this subpart shall have finished dimensions approximately 15" x 15" x 2". (For cushions of greater size see subpart 160.008.)

§ 160.007-3 *Materials*—(a) *Kapok.* The kapok shall comply with subpart 164.003 of this subchapter and shall be properly processed.

(b) *Cover.* The buoyant cushion cover shall be of the materials described in subparagraphs (1), (2), and (3) below, and may be of any color:

(1) *Cloth fabrics.* Cotton drill without sizing, thread count approximately 74 x 60, having a minimum breaking strength of 100 pounds in the warp and 80 pounds in the fill when tested in accordance with Federal Specification CCC-T-191, and may be treated with a clear, uncolored fire-resistant substance of an approved type. Cotton drills conforming to Navy Department Specification 27D1 or those meeting the requirements for Class A drill contained in Federal Specification CCC-D-651 are acceptable, and other fabrics having not less weight and breaking strength are also acceptable.

(2) *Artificial leather.* Artificial leather, consisting of coated 59-inch, 1.85 drill, thread count approximately 68 x 40; the artificial leather, includ-

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.

ing both the fabric backing and the coating to be at least the weight of 14 ounces for a finished width of 54 inches. Artificial leather, consisting of other coated fabrics, having a finished weight not less than the above and a minimum breaking strength of 110 pounds in the warp and 60 pounds in the fill when tested in accordance with Federal Specification CCC-T-191, is also acceptable.

(3) *Leather.* Leather shall be of Grade A leather as covered by Federal Specification KK-L-291, and shall have a breaking strength of not less than 100 pounds when tested in accordance with Method 242.1 of Federal Specification KK-L-311.

(c) *Straps.* The grab straps shall be of materials permitted for the cover.

(d) *Thread.* The thread shall be Type IB, No. 20, 4-ply cotton thread conforming to Federal Specification V-T-276; Type IIIB, No. 10, 4-ply cotton thread conforming to Federal Specification V-T-276; or No. 25, 3-cord linen thread conforming to Federal Specification V-T-291. Alternate threads will be given special consideration.

(e) *Tufts.* Tufting buttons or stops where used shall be of corrosion-resistant materials or materials treated to resist corrosion. Tufting twine shall be in compliance with Navy Department Specification 21T4.

(f) *Compartment dividers.* Compartment dividers where used shall be of materials permitted for the cover.

(g) *Beading.* The beading where used may be of any beading material suitable for the purpose.

(h) *Flaps for attaching other cushions.* When flaps, equipped with snap fasteners for the purpose of attaching other cushions, are inserted between the seams of the cover, the flaps shall be of the materials permitted for the cover, and snap fasteners shall be of corrosion-resistant material. When cushions are equipped in this manner, each cushion shall comply in all other respects with the requirements of this subpart.

§ 160.007-4 *Construction, workmanship, and performance requirements—(a) General.* This specification covers standard kapok buoyant cushions of a square box-like type, which are intended to provide buoyancy to aid a person to keep afloat in the water and which have two grab straps, one each located on opposite sides.

(b) *Cover.* The cover shall be of one piece each for the top, bottom, and the boxing or border, all cut to the pattern shown on Dwg. No. 160.007, and joined together by stitching and seams illustrated on the drawing

and described in paragraph (e) of this section.

(c) *Buoyant material.* Each cushion shall be filled with not less than 20 ounces of kapok uniformly distributed.

(d) *Straps.* The grab straps shall be constructed as indicated by Section A-A on Dwg. No. 160.007, approximately 1 inch in width, and shall be sewn to the cover as shown on the drawing. Straps shall be of such length that both are tight when grasped in one hand.

(e) *Stitching.* Stitching with No. 20/4 cotton thread shall be a lock stitch conforming to stitch Type 301 of Federal Specification DDD-S-751, and there shall be not less than 7 nor more than 9 stitches to the inch. Stitching with No. 10/4 cotton thread or No. 25/3 linen thread shall be of the same type stitch with not less than 5 stitches to the inch.

(f) *Tufting and compartmentation.* The cushions specified by this subpart are not required to be tufted or compartmented, but where done, the cushion shall at no point be compressed to less thickness than the width of the boxing.

(g) *Beading.* The cushions specified by this subpart are not required to have beading inserted between the seams, but where done, it shall be done in such manner as not to detract from the strength of the seams.

(h) *Flaps for attaching other cushions.* The cushions specified by this subpart are not required to have flaps equipped with snap fasteners inserted between the seams of the cover for attaching other cushions, but where done, it shall be done in such manner as not to detract from the strength of the seams.

(i) *Workmanship.* The cushions specified by this subpart shall be of first class workmanship and shall be free from any defects materially affecting their appearance or serviceability.

(j) *Buoyancy.* Buoyant cushions shall possess not less than 20 pounds buoyancy as determined by the test described in § 160.007-5 (b).

§ 160.007-5 *Inspection and tests—*

(a) *General.* Buoyant cushions specified by this subpart are not inspected at regularly scheduled factory inspections; however, the Commander of the Coast Guard District may detail an inspector at any time to visit any place where buoyant cushions are manufactured to check materials and construction methods and to conduct such tests and examinations as may be required to satisfy himself that buoyant cushions are being manufactured in compliance with the requirements of this specification. The manufacturer shall provide a suitable

place and the necessary apparatus for the use of the inspector in conducting tests at the place of manufacture.

(b) *Buoyancy; test method.* The buoyant cushion shall be placed in a wire basket sufficiently weighted to submerge the cushion, and the basket shall be submerged for a period of 48 hours in a tank of fresh water so that the top of the basket is approximately 2 inches below the surface. The buoyancy of the cushion shall be determined to equal the weight of the weighted basket in water empty less the weight of the basket in water with the buoyant cushion inside. Cushions having watertight or semiwatertight covers shall be opened at or near the top and bottom of the boxing for not less than 6 inches along each of the four edges of the cushion before making the buoyancy test.

§ 160.007-6 *Marking.* (a) Each buoyant cushion shall be marked with a rectangular tag attached to the boxing or border of the cushion by stitching along all edges of the tag. The following information shall be plainly marked in waterproof ink on each tag: "Approved buoyant cushion for use on Motorboats of Classes A, 1, or 2 not carrying passengers for hire, Act of Congress April 25, 1940, U. S. Coast Guard Approval No. _____, and name and address of manufacturer."

§ 160.007-7 *Procedure for approval—(a) General.* Buoyant cushions are approved only by the Commandant, U. S. Coast Guard, Washington 25, D. C. Correspondence relating to the subject matter of this specification shall be addressed to the Commander of the Coast Guard District in which the factory is located. Manufacturers who desire to manufacture standard kapok buoyant cushions shall complete the affidavit in form as provided in paragraph (b) of this section and submit such affidavit, together with a sample buoyant cushion for which approval is desired, for assignment of an official approval number.

(b) *Manufacturer's affidavit.*

AFFIDAVIT OF MANUFACTURER OF STANDARD TYPE BUOYANT CUSHION FOR USE ON VESSELS SUBJECT TO THE ACT OF APRIL 25, 1940 (54 STAT. 163-167; 46 U. S. C. 526-526t), AND REGULATIONS THEREUNDER

State of _____, County of _____
On this _____ day of _____, 19____, I, the undersigned, _____, hereby

(Name)
certify that I am the _____ of the

(Title)
located at _____

(Name of Company) (Address)
that I am authorized to make this affidavit; and that the standard kapok buoyant cushions of our manufacture to be furnished directly or through agents or dealers for use on motorboats subject to the Act of April 25, 1940, will comply with the applicable provisions of the regula-

tions prescribed by the Commandant, United States Coast Guard.

(Signature) _____
Subscribed and _____ to be
(Sworn or affirmed)
before me this _____ day of _____, 19____
[SEAL] (Signature) _____
(Notary Public)

2. Part 160 is amended by adding a new subpart 160.008 reading as follows:

SUBPART 160.008—BUOYANT CUSHIONS, NONSTANDARD, FOR MOTORBOATS OF CLASSES A, 1, OR 2 NOT CARRYING PASSENGERS FOR HIRE

- Sec.
160.008-1 Applicable specifications.
160.008-2 Types.
160.008-3 Materials.
160.008-4 Construction, workmanship, and performance requirements.
160.008-5 Inspections and tests.
160.008-6 Marking.
160.008-7 Procedure for approval.

AUTHORITY: §§ 160.008-1 to 160.008-7, inclusive, issued under R. S. 4405 and 54 Stat. 163-167, as amended; 46 U. S. C. 375, 526-526t; and sec. 101, Reorg. Plan No. 3 of 1946; 11 F. R. 7875.

§ 160.008-1 *Applicable specifications.* (a) The following specifications, of the issue in effect on the date nonstandard buoyant cushions are manufactured, form a part of this subpart:

- (1) Coast Guard specification:
160.007—Buoyant cushions, kapok, standard.
(2) Navy Department specification:
23G7—Glass, fibrous (for life preservers).

§ 160.008-2 *Types*—(a) *General.* Buoyant cushions specified by this subpart shall be of the types designated below which differ from the standard kapok buoyant cushion specified by subpart 160.007 of this part, but alternate arrangements which will meet the performance requirements of this specification will be given special consideration:

Type I—Single cushion.
Type II—Double cushion (two cushions joined together in a permanent manner forming a hinged seat and back effect).

§ 160.008-3 *Materials.* (a) All materials shall be those specified by subpart 160.007 of this subchapter for standard kapok buoyant cushions with the exception that fibrous glass complying with Navy Department Specification 23G7 may be used as buoyant material in lieu of kapok when the amount of fibrous glass used is in accordance with § 160.008-4 (c). Other alternate materials will be given special consideration.

§ 160.008-4 *Construction, workmanship, and performance requirements*—(a) *General.* Construction, workmanship, and performance requirements for nonstandard buoyant cushions shall be in accordance with

those specified in subpart 160.007 of this part for standard kapok buoyant cushions, with the exceptions set forth in paragraphs (b), (c), (d), and (e) of this section.

(b) *Size.* Nonstandard buoyant cushions may be of any size greater than 225 square inches top surface area and shall have a minimum 2-inch boxing or border. Type II (double) cushions will be considered as one cushion. Variations of one inch plus or minus the length and/or width of approved cushions are permitted: *Provided,* That no cushion shall have dimensions less than the minimums set forth above and that the amount of buoyant material is varied proportionally. Additional variations in dimensions may be made to approved square or rectangular shaped cushions to produce irregular shaped cushions for special purposes provided the amount of buoyant material is varied proportionally. The approval number of the square or rectangular cushion which is varied is used, but in all variations the dimensions of the largest square or rectangular surface obtainable from the cushion shall be within the dimension limits of the approved square or rectangular cushion.

(c) *Amount of buoyant material.* Kapok shall be used in the ratio of 1 ounce for each 11¼ square inches of top surface area for a 2-inch cushion thickness. Where thickness is greater than 2 inches, kapok shall be increased ½ ounce per each 11¼ square inches of top surface area for each additional inch of thickness. Fibrous glass shall be used in the ratio of 1.8 ounces of fibrous glass to 1 ounce of kapok required for a cushion by the above.

(d) *Straps.* Grab straps shall not be required to be of such length that both are tight when grasped in one hand, but no strap shall have a finished length of less than 20 inches.

(e) *Cover.* The number of pieces for the cover shall be a minimum consistent with the size of the cushion and the kind of material used.

§ 160.008-5 *Inspections and tests.* (a) Inspections and tests for nonstandard buoyant cushions shall be in accordance with those specified in subpart 160.007 of this part for standard kapok buoyant cushions.

§ 160.008-6 *Marking.* (a) Marking for nonstandard buoyant cushions shall be as specified in subpart 160.007 of this part for standard kapok buoyant cushions.

§ 160.008-7 *Procedure for approval*—(a) *General.* Nonstandard buoyant cushions are approved only by the Commandant, U. S. Coast Guard, Washington 25, D. C. Correspondents relating to the subject

matter of this specification shall be addressed to the Commander of the Coast Guard District in which the factory is located. Each nonstandard buoyant cushion approved will receive a separate approval number. Manufacturers who desire approval of nonstandard buoyant cushions shall submit descriptive drawings in quadruplicate for each design of cushion for which approval is desired, showing principal dimensions, amount and kind of buoyant material, details of construction, and a bill of materials for each size, together with representative samples in duplicate of each design.

3. Part 160 is amended by adding a new subpart 160.009 reading as follows:

SUBPART 160.009—BUOYS, LIFE, RING, CORK OR BALSA WOOD, FOR MERCHANT VESSELS AND MOTORBOATS

- Sec.
160.009-1 Applicable specifications and plan.
160.009-2 Types and sizes.
160.009-3 Materials.
160.009-4 Construction, workmanship, and performance requirements.
160.009-5 Inspections and tests.
160.009-6 Marking.
160.009-7 Procedure for approval.

AUTHORITY: §§ 160.009-1 to 160.009-7, 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 (e), 55 Stat. 244, as amended.

§ 160.009-1 *Applicable specifications and plan*—(a) *Specifications.* The following specifications, of the issue in effect on the date ring life buoys are manufactured, form a part of this subpart:

- (1) Navy Department specification:
52G11—Glue, resin (urea formaldehyde).
(2) Federal specifications:
C-G-496—Glue; urea-resin-type (liquid and powder).
V-T-276—Thread, cotton.
V-T-291—Thread, linen.
T-R-601—Rope, manila.
CCC-D-761—Ducks; cotton, plied filling yarns and single yarns (flat-duck).
DDD-S-751—Stitches; seams; and stitching.
(3) Coast Guard specifications:
164.001—Cork, sheet.
164.002—Balsa wood.

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

Dwg. No. 160.009—Cork and balsa wood ring life buoy; arrangement and construction details¹

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.

§ 160.009-2 *Types and sizes*—(a) *Types*. Ring life buoys covered by this specification shall be of two types as follows, but alternate arrangements meeting the performance requirements of this specification will be given special consideration:

Type I—Cork.
Type II—Balsa wood.

(b) *Sizes*. Ring life buoys shall be of the sizes set forth in the following table with the dimensions indicated:

TABLE 160.009-2 (b)—DIMENSIONS FOR LIFE BUOYS

Size	Outside diameter A (inches)	Inside diameter B (inches)	Cross section	
			Long diameter C (inches)	Short diameter D (inches)
30-inch	30	17	61½	3
24-inch	24	13	51½	3
20-inch	20	11	41½	3½

§ 160.009-3 *Materials*—(a) *Buoyant material*. Cork buoyant material for Type I ring life buoys shall comply with Coast Guard Specification 164.001 (subpart 164.001 of part 164 of this subchapter). Balsa wood buoyant material for Type II ring life buoys shall comply with Coast Guard Specification 164.002 (subpart 164.002 of part 164 of this subchapter).

(b) *Cover*. The cover shall be unbleached cotton duck of a weight not less than 9.68 ounces per square yard, complying with Federal Specification CCC-D-761 for Type I, Class A, or Type II, Class A, gray goods; except that the inspector may accept other fabrics having not less weight and strength.

(c) *Grab line*. The grab line shall be ¾", three-strand (twelve yarns) manilla, complying with Federal Specification T-R-601. The substitution of ¾" sisal will be accepted.

(d) *Beckets*. The beackets shall be of materials permitted for the cover.

(e) *Thread*. The thread shall be No. 16, three-cord linen thread, complying with Federal Specification V-T-291, Table I; or No. 10, 6-ply, glazed finish, heavy cotton thread, complying with Federal Specification V-T-276; Table IV, Type IIIB. Alternate threads will be given special consideration.

(f) *Glue*. The adhesive shall be a waterproof resin-type glue, complying with Navy Department Specification 52G11 or Federal Specification C-G-496.

(g) *Dowels*. The dowel pins or skewers shall be of white pine, birch, Douglas fir, or equivalent, approximately ⅜" in diameter, and of such

length as to extend through the entire body of the buoy.

§ 160.009-4 *Construction, workmanship, and performance requirements*—(a) *General*. This specification covers ring life buoys, each consisting of a body constructed in the shape of an annular ring with an approximately elliptical cross section as illustrated by Dwg. No. 160.009, which provide buoyancy to aid in keeping persons afloat in the water.

(b) *Body*—(1) *Layers and segments*. The body shall be constructed of two or three layers of buoyant material with not more than the total number of segments shown in the table below for the sizes indicated. Minimum thickness per layer for two-layer construction shall be 1¼" and for three-layer construction ¾".

TWO-LAYER CONSTRUCTION

Size and number of segments allowed

30-inch: Maximum 18 (with not more than 12 in any one layer).

24-inch and 20-inch: Maximum 12 (with not more than 7 in any one layer).

THREE-LAYER CONSTRUCTION

30-inch: Maximum 24 (with not more than 6 in either outside layer nor more than 12 in the center layer).

24-inch and 20-inch: Maximum 18 (with not more than 5 in either outside layer nor more than 8 in the center layer).

(2) *Gluing and dowsing*. The ends and edges of adjacent segments shall be fitted neatly and glued one to the other. The layers shall be neatly joined and securely glued together with butts and seams of adjacent layers being staggered. The body shall then be reinforced with not less than two dowels or skewers driven on each side of the joints on both sides of the body. The body shall then be clamped until the glue is dry.

(3) *Shaping and smooth finish*. The body shall be worked down to the shape illustrated on Dwg. No. 160.009 and sanded to a smooth finish.

(4) *Waterproof finish for Type II buoys*. The entire finished body of each balsa wood ring life buoy shall be given a copious coat of waterproof glue, "Hydrotuf", "Synthetic Plaso-leum", or "Balsa Wood Coating", which shall be allowed to dry thoroughly before the cover is placed on the buoy.

NOTE: "Hydrotuf", "Synthetic Plaso-leum", and "Balsa Wood Coating" are trade names for waterproof substances for covering balsa wood furnished by Winner Mfg. Co., Inc., Trenton, New Jersey; Revertex Corp. of America, 3708 Northern Blvd., Long Island City, New York; and Akron Paint & Varnish Co., Akron, Ohio; respectively.

(c) *Cover*. The cover shall be of not more than two pieces, one for either side, and shall be joined by stitching

and seams as set forth in paragraph (f) of this section.

(d) *Beackets*. Four beackets of double fabric thickness with raw edges under, 2½ inches wide, shall be attached to the cover by stitching and seams as set forth in paragraph (f) of this section and shall be spaced equidistant from each other. Beackets shall be arranged to cover the cross section seams where the cover is joined.

(e) *Grab line*. The finished length of the grab line shall be four times the outside diameter of the buoy. The ends of the grab line shall be securely and neatly spliced together. It shall be festooned in bights around the buoy and pass through the beackets. The beackets shall be sewn tightly and securely to the grab line by stitching as described in paragraph (f) of this section.

(f) *Stitching*. All machine stitching shall be a lock stitch conforming to stitch type 301 of Federal Specification DDD-S-751, and there shall be not less than five stitches to the inch. The stitching around the inside perimeter of the buoy to close the cover shall be a hand rope stitch not less than two stitches to the inch. The beackets and grab line shall be attached as follows: The ends of the beackets shall be turned back at least 1 inch, one end to go around the grab line and the other to be laid against the first end, and hand stitched together with at least six equally spaced stitches, through the ends of the beackets and at least one strand of the grab line. On the inside perimeter of the buoy, the beackets shall be fastened to the cover on both edges with a hand cross stitch. All hand stitching shall be made with double threads.

(g) *Workmanship*. Ring life buoys shall be of first-class workmanship and free from any defects materially affecting their appearance or serviceability.

(h) *Buoyancy*. Test specimens shall support the net weight as set forth in the following table for the sizes indicated when subjected to the test described in § 160.009-5 (b):

Size	Buoyancy, lbs.
30-inch	32
24-inch	16½
20-inch	16½

(i) *Strength*. Test specimens shall not break or show rupture of the joints, nor shall there be an elongation of inside diameter of more than 1½ inches, when subjected to the test described in § 160.009-5 (c).

§ 160.009-5 *Inspection and tests*—(a) *General*. A marine inspector shall examine all ring life buoys at the place of manufacture for compliance with this specification, and shall test

each specimen ring life buoy for strength in accordance with the method set forth in paragraph (c) of this section, with the exception that the period of suspension shall be only long enough to permit a visual examination of the body to assure that the segments and joints are secure and the buoyant material not fractured. Specimens or samples of materials entering into the construction may be taken at random, either in the raw material state or during manufacture, by the inspector and tests made for compliance with the applicable requirements. After satisfying himself that ring life buoys have been manufactured according to this specification and are of a type officially approved in the name of the manufacturer, the inspector shall mark each ring life buoy plainly in waterproof ink as follows: On the nude body of the buoy—"Passed, U. S. Coast Guard, (Inspection date), (Inspector's initials), (Port)"; on the cover of the completed buoy—"Approved, U. S. Coast Guard, (Inspection date), (Inspector's initials), (Port)." If the inspector has any doubt regarding compliance with this specification, he may select specimens at random and conduct buoyancy and strength tests in accordance with paragraphs (b) and (c) of this section and such other tests as he may consider necessary, accepting or rejecting the ring life buoys at his discretion upon the basis of such tests. The manufacturer shall provide a suitable place and the necessary apparatus for the use of the inspector in conducting tests at the place of manufacture.

(b) *Test method; buoyancy.* (1) Weigh iron or other weight under water. The weight shall be more than sufficient to submerge the ring life buoy.

(2) Attach the iron or other weight to the ring life buoy and submerge with the top of the buoy approximately 2 inches below the surface for 48 hours.

(3) Weigh the buoy with iron or other weight attached while both the iron and the buoy are under water.

(4) The buoyancy (net weight the buoy will support) is considered to be the weight of the iron or other weight under water (1), minus the weight of the iron or other weight with the buoy attached under water (3).

(c) *Test method; strength.* Suspend the specimen ring life buoy body without covering in a vertical position by passing a strap approximately 2 inches in width through the buoy. Attach a weight of 200 pounds to another strap of the same width. Hang the weight from the buoy by passing the strap through the buoy.

Allow the weight to hang suspended for 30 minutes.

§ 160.009-6 *Marking.* (a) Each ring life buoy shall be plainly marked in waterproof ink on both the body and the cover with the name and address of the manufacturer and with the official approval number assigned. The 24-inch and 20-inch sizes shall also bear the words, "For use on motorboats not carrying passengers for hire."

§ 160.009-7 *Procedure for approval.*—(a) *General.* Ring life buoys for use on merchant vessels and motorboats are approved only by the Commandant, U. S. Coast Guard, Washington 25, D. C. Correspondence relating to the subject matter of this specification shall be addressed to the Commander of the Coast Guard District in which the factory is located.

(b) *Preapproval tests.* Manufacturers who desire to manufacture ring life buoys complying with this specification shall apply to the Commander of the Coast Guard District in which the plant is located, who will detail an inspector to the plant to observe production facilities and manufacturing methods and to select at random from not less than 6 of each size ring life buoy for which approval is desired a sample of not less than two specimen buoys of each size with which he shall conduct buoyancy and strength tests in accordance with § 160.009-5 (b) and (c) above and make such other examinations as may be necessary to satisfy himself that the specimen buoys are in accordance with this specification. Upon completion of satisfactory tests, the inspector's report shall be forwarded to the Commandant for assignment of an official approval number for each size and type.

SUBPART 160.021—SIGNALS, DISTRESS, FLARE, RED, HAND, FOR MERCHANT VESSELS

4. Section 160.021-3 (h) is amended to read as follows:

§ 160.021-3 *Materials, workmanship, construction and performance requirements.* * * *

(h) *Temperature of ignition of signal materials.* When tested as described by § 160.021-4 (j), the temperature of ignition of the signal materials shall be not less than 338° F. (170° C.) (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, 50 U. S. C. 1275)

5. Section 160.021-4 (j) is amended to read as follows:

§ 160.021-4 *Sampling, inspections, conditioning, and tests.* * * *

(j) *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. (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, 50 U. S. C. 1275)

SUBPART 160.022—SIGNALS, DISTRESS, SMOKE, ORANGE, FLOATING FOR MERCHANT VESSELS

6. Section 160.022-3 is amended by changing paragraphs (g) and (l) to read as follows:

§ 160.022-3 *Materials, workmanship, construction, and performance requirements.* * * *

(g) *Temperature of ignition of signal materials.* When tested as described by § 160.022-4 (g), the temperature of ignition of the signal materials shall be not less than 338° F. (170° C.).

(l) *Color of smoke.* The color of the smoke shall be orange as determined by § 160.022-4 (k). (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, 50 U. S. C. 1275)

7. Section 160.022-4 (g) is amended to read as follows:

§ 160.022-4 *Sampling, inspections, conditioning, and tests.*

(g) *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 date. Alternate test methods will be given special consideration by the Coast Guard. (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, 50 U. S. C. 1275)

This document will be continued in subsequent issues of the Proceedings.

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. 1-48

UNITED STATES COAST GUARD

WASHINGTON 25, D. C.

JANUARY 19, 1948.

Requirements for recording of undocumented vessels.

1. The Act of June 7, 1918, as amended (46 U. S. C. 288), requires the numbering of undocumented vessels which are equipped with permanently installed motors or when over 16 feet in length equipped with detachable motors. These vessels must be owned in the United States and found on the navigable waters thereof. Undocumented vessels not exceeding 16 feet in length temporarily equipped with detachable motors, public vessels, or motor lifeboats carried as lifesaving equipment on inspected vessels are not required to be numbered and ordinarily will not be issued a number by the Coast Guard.

2. A number will be assigned by the Officer in Charge, Marine Inspection, upon receipt of the application (Form CG 1512 or 1513), together with proof of ownership. This action is accompanied by a letter which will authorize the vessel to be operated pending the issuance of the certificate of award of number. The Coast Guard District Commander will issue the certificate of award of number in all instances except where he has designated and authorized officers or employees under his command to issue such certificates in his behalf. Generally the numbers are assigned according to the customs district in which the vessel is owned. No special series of numbers are awarded to any particular type of vessel.

3. The number and certificates of award of number issued to undocumented vessels are not certificates of title but rather are means of identification. The certificates of award of number are merely evidence of a prima facie showing of ownership which is rebuttable by other evidence in case court action is brought to clear title. All evidence submitted regarding ownership, which may include bills of sale, canceled checks, builder's statement, etc., for ownership, and master carpenter's certificate, statement of builder, etc., for proof of build, become official records of the Coast Guard and are placed on file in the office of the proper District Commander. Certified copies of any such documents may be issued to the owner or other properly authorized

or interested party upon request. The assigning of a number or the issuing of a certificate of award of number will not be made until the applicant has legal title to the vessel.

4. The documentary evidence required to prove ownership of a vessel will vary according to the circumstances which are generally as follows:

A. NEW VESSELS PURCHASED FROM MANUFACTURERS OR DEALERS

- (1) Builder's statement on Form CG 2895 or master carpenter's certificate; and,
- (2) Bill of sale.

B. NEW VESSELS BUILT BY OWNER

- (1) Receipted bills for materials used in construction; or,
- (2) Claim of ownership of undocumented vessel, Form CG 2945, issued under certain conditions; or,
- (3) Builder's statement, Form CG 2895, or master carpenter's certificate (if owner is a manufacturer or builder).

C. NUMBERED VESSELS

- (1) Bill of sale on reverse side of certificate of award of number, Form CG 1513, completed in favor of the purchaser; the bill of sale sworn to before a proper officer authorized to administer oaths; and the application completed and signed by the purchaser (all on the same Form CG 1513); or,
- (2) Application on Form CG 1512 if the old form of certificate of award of number, Form CG 1513, does not contain an application form; and,
- (3) A complete chain of ownership should be established, where possible.

NOTE: In the case of vessels already numbered, bills of sale other than those on Form CG 1513 will not be accepted, except when accompanied by an affidavit stating that the certificate of award of number issued the vessel or a duplicate thereof cannot be obtained. Such a statement must be satisfactory to the District Commander and will be accepted only after all efforts to meet the requirements have failed.

D. VESSELS NOT CLASSIFIED AS NEW BUT WHICH HAVE NEVER BEEN PREVIOUSLY NUMBERED

- (1) Builder's statement, Form CG 2895; or master carpenter's certificate, where possible; or execution of Form CG 2945, Claim of Ownership of Undocumented Vessel, where applicable; and,
- (2) Complete chain of ownership, where possible.

E. VESSELS PURCHASED AS SURPLUS PROP- ERTY FROM THE U. S. GOVERNMENT

- (1) The "sale order" or "certificate of delivery of vessel" issued by the U. S. Maritime Commission or the

War Shipping Administration, as the case may be; or,

(2) If application is made by one other than the successful bidder, the subsequent owners should establish complete chain of ownership from time of purchase by the successful bidder.

5. Attention is also called to the statutory requirement that notice of destruction, or abandonment, or any change in the ownership of a numbered vessel shall be furnished within 10 days by the owner to the Coast Guard District Commander. The penalty for failure to make such a report is \$10 for each violation of the Act of June 7, 1918, as amended, and the regulations promulgated thereunder.

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

Navigation and Vessel Inspection Circular No. 2-48

UNITED STATES COAST GUARD
WASHINGTON 25, D. C.

25 FEBRUARY, 1948.

Ferry Vessels; Safety practices for embarking motor vehicles.

1. The Coast Guard is in receipt of information indicating that motor vehicles, particularly busses carrying passengers, are being permitted to board ferry vessels at excessive rates of speed. A review of casualty records discloses that on three occasions, at least, motor vehicles have, because of excessive speed or faulty brakes, been driven through the offshore chain or cable barriers of ferry vessels resulting in the drowning of occupants.

2. Clearly, a barrier of sufficient strength to stop a fast moving vehicle, such as a bus or truck, would assume unwieldy proportions and in addition would probably cause a tragedy of equal consequences. It does seem, however, that such casualties could be entirely eliminated by requiring that the speed of the first vehicles boarding a ferry be moderate and a complete stop executed at a distance of at least 30 feet from the offshore barrier. This would insure that the vehicles were under absolute control of the drivers and that the brakes were effective. After so stopping, the vehicle should approach the barrier cautiously under the guidance of a competent deck hand. Upon taking position for transit, the emergency brakes of all motor vehicles should be firmly set and the wheels of

vehicles next to the barriers on both ends of ferries should be securely and effectively blocked to prevent movement in either direction.

3. It is gratifying to note that most of the ferry services recognize this element of danger and have adopted preventative safety measures similar to those outlined above. It is believed, however, that a restatement of these proven safety practices will intensify interest in this subject and lend effectiveness to the success of such measures.

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

FUSIBLE PLUGS

The marine engineering regulations and material specifications require that manufacturers submit samples from each heat of fusible plugs to the Commandant for test prior to plugs manufactured from the heat being used on vessels subject to inspection by the Coast Guard. A list of approved heats which have been tested and found acceptable during the period from May 15 to June 15, 1948, is as follows:

H. B. Sherman Mfg. Co., 22 Barney St., Battle Creek, Mich. Heat Nos. 618, 620, 621, and 623.

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 list, 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	
Buchanan Electrical Products Corp., Elizabeth, N. J.: Wire splice caps, catalog Nos. 2001, 2004, 2011 Wire splice cap insulating caps, catalog Nos. 2005 and 2012					6/17/48 6/17/48 6/17/48
Wire terminals, catalog No. 16-8 Metropolitan Electric Mfg. Co., Long Island City, N. Y.: Typical distribution panelboards, cabinets N, E, C, standard, fuse gaps and tumbler switch branches and circuit breaker types, 3/2W 250V and 3/3W 440V A. C., and 2/2W 230V D. C., drawing No. 330-87, Alt. 2					
Murlin Mfg. Co., Philadelphia, Pa.: Directional sign fixture, bulkhead mounting, non-watertight, 2 25-watt lamps maximum, drawing No. 306-5, Alt. 0 Desk light, nonwatertight, 1 60-watt lamp maximum, drawing No. 619, Alt. 2 Desk light, nonwatertight, 1 60-watt lamp maximum, drawing No. 620, Alt. 1	X X X X	X			6/18/48 6/15/48 6/18/48 6/18/48
Lloyd E. Oneal, Jersey City, N. J.: Oneal-Doran lighting fixture for mounting in deck over cargo oil pump room, watertight, 1 94-watt PS-25 lamp maximum	X	X	X		6/ 8/48
The Reeve Electrical Co., Dept. of Automatic Fire Alarm Co., Brooklyn, N. Y.: Reeve A. C. watertight bells, 4", 6", 8", 10", and 12" gong sizes, 110, 24, and 12 volts 60 cycles, and 90 volts 20 cycles, types 1 A TV, 2 A TV, 3 A TV, 7 A TV, 8 A TV, and 9 A TV Reeve D. C. watertight bells, 4", 6", 8", 10", and 12" gong sizes, 115, 20, 12, and 6 volts, type 1 D TV, 2 D TV, 3 D TV, 4 D TV, and 5 D TV	X X	X X	X X		6/18/48 6/18/48
The Sines Co., New York, N. Y.: Berth light, type L-10, nonwatertight, 1 25-watt lamp maximum, drawing No. 43402-R3 Change III Ceiling fixture, recessed, type L-18, nonwatertight, 1 60-watt lamp maximum, drawing No. 43910 Change I Ceiling fixture, surface mounted, type L-19, non-watertight, 1 60-watt lamp maximum, drawing No. 43530 Change II Ceiling fixture, type L-16, nonwatertight, 2 60-watt lamps maximum, drawing No. 43925 Change I Mirror light with convenience outlet, type L-11, non-watertight, 2 25-watt lamps maximum, drawing No. 43363 Change II	X X X X X X				6/ 7/48 6/ 8/48 6/ 8/48 6/ 8/48 6/ 8/48

Merchant Marine Personnel Statistics

MERCHANT MARINE LICENSES ISSUED DURING JUNE 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	45	96	4	13	1	1	3	48	2	3	24	11	2	3			3	8		1	36	22								
Gulf coast	14	31	1	7			4				8	4	1	1			1	1			13	2		1						
Great Lakes and rivers	4				7			2	12										6	13										
Pacific coast	18	55	3	3			14		1	14	7						4	2			19	15								
Total	77	186	8	23	1	8	3	66	8	21	46	22	3	4			8	11	6	14	68	42		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	11	31											59	148	2			1	3	1	195	387	582
Gulf coast	7	3		1							2	1	19	23	1	8					71	92	163
Great Lakes and rivers		3									1	11	2	3	22	15					33	71	104
Pacific coast	12	5											23	39	1		5	1			99	142	241
Total	30	42		1							3	12	103	213	26	23	5	2	3	1	398	692	1,090

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	18	95	9	64	21	19			4	30	29		1	47	26		2	18	10	28
Gulf coast	6	40	1	6	5	4			4	14	14		2	6			2	2	1	13
Great Lakes and rivers		9	2	26	1	1			7		6	1	1	3	3		3	4	1	4
Pacific coast	6	51	1	10	13	12			1	25	15		1	10	6		4	20	10	10
Total	30	195	13	106	40	36			16	69	64	1	3	62	41		9	44	22	55

REGION	First assistant engineer, motor				Second assistant engineer, motor				Third assistant engineer, motor				Uninspected vessels				Total		
	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	4	4		2	4	1		41	20							186	312	498
Gulf coast		1	1					1		1							30	92	122
Great Lakes and rivers										3							11	64	75
Pacific coast	1		2		3	2			2	12			3		4		84	140	224
Total	2	5	7		5	6	1	1	43	36			3		4		311	608	919

ORIGINAL SEAMEN'S DOCUMENTS ISSUED MONTH OF JUNE 1948

REGION	(1) Staff officer	(2) Contin- uous dis- charge book	(3) U. S. mer- chant mariner's docu- ments	(4) AB any waters unlim- ited	(5) AB any waters 12 months	(6) AB Great Lakes 18 months	(7) AB tugs and tow- boats any waters	(8) AB bays and sounds*	(9) AB sea- going barges	(10) Life- boatman	(11) Q. M. E. D.	(12) Radio operators	(13) *Certifi- cate of service	(14) Tanker- man
Atlantic coast	76	2	1,405	127	199	9	1	1	0	396	214	10	1,197	8
Gulf coast	15	17	364	32	57	10	0	0	0	92	94	3	311	20
Pacific coast	30	1	560	59	95	4	0	0	0	280	141	4	483	5
Great Lakes and rivers	9	0	1,737	22	118	40	0	0	0	150	117	0	1,653	24
Total	130	20	4,066	240	469	63	1	1	0	918	566	17	3,644	57

*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 JUNE 1 TO JUNE 30, 1948

REGION	Number of vessels	Deck offi- cers sub- stituted for higher ratings	Engineer officers sub- stituted for higher ratings	Able seamen substituted for deck officers	Ordinary seamen sub- stituted for able seamen	Qualified members of engine de- partment substituted for engineer officers	Wipers or coal passers substituted for qualified members of engine de- partment	Wipers, coal passers or cadets sub- stituted for engineer officers	Ordinary seamen or cadets sub- stituted for deck officers	Total
Atlantic coast	157		10		268	1	55			334
Gulf coast	48		4		71		18			93
Pacific coast	30	4	1		22	2	16			45
Great Lakes	50		3	1	28		55			87
Total	294	4	18	1	389	3	144			559

CREW SHORTAGE REPORTS FROM JUNE 1 TO JUNE 30, 1948

REGION	Num- ber of vessels	Ratings in which shortages occurred												Total
		Chief mate	Second mate	Third mate	Radio	Able seaman	Ordinary seaman	Chief engineer	First engineer	Second engineer	Third engineer	Qualified member engine depart- ment	Wiper or coal passer	
Atlantic coast	6					4	1					4		9
Gulf coast	1						1							1
Pacific coast	3					2						1		3
Great Lakes	12	11	4	27		26	7		6	10	31	73	13	208
Total	22	11	4	27		32	9		6	10	31	78	13	221

Distribution (SDL 34):

A: a, b, c, (2 ea.); 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.