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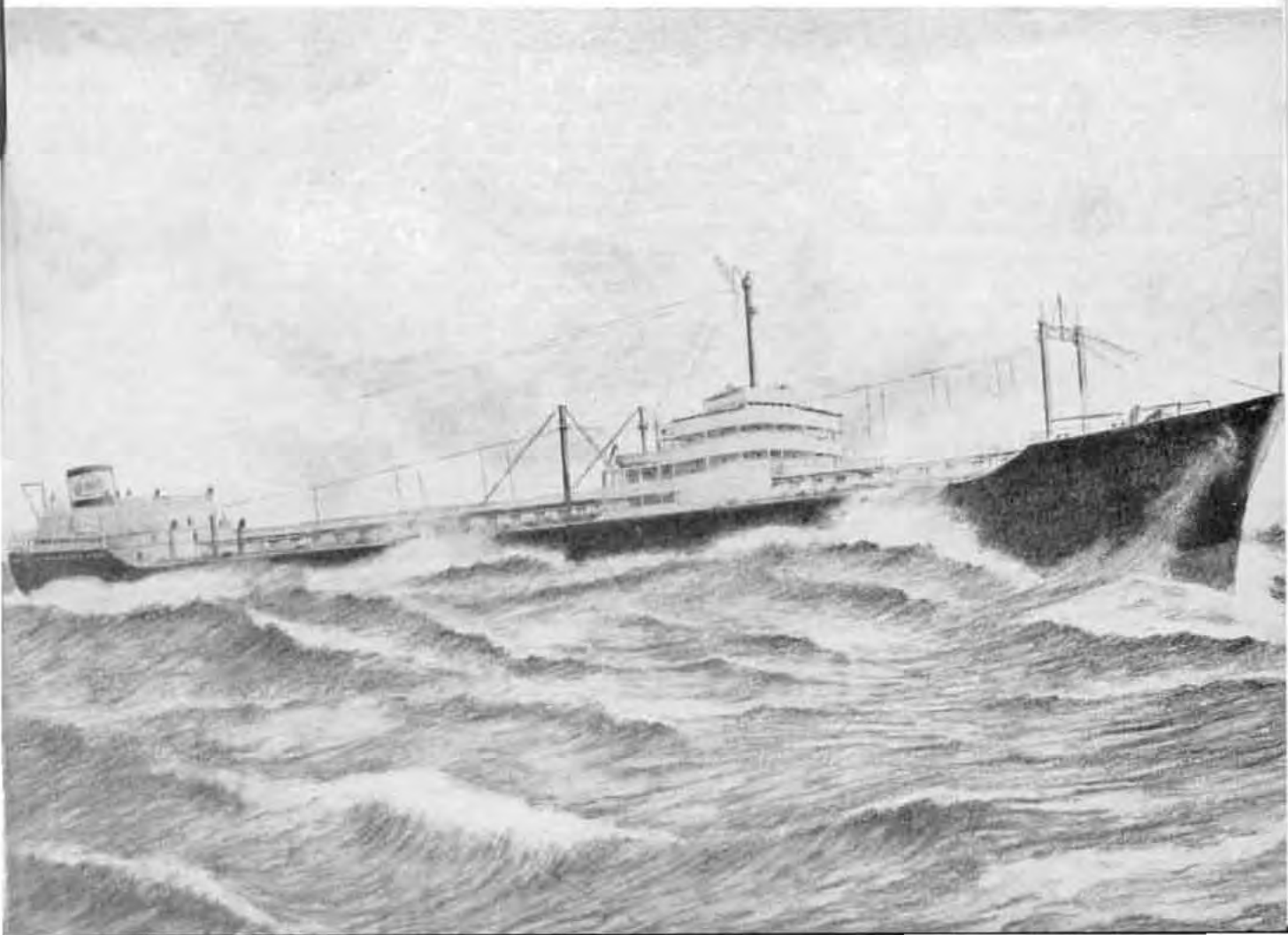

Proceedings of the

MERCHANT MARINE COUNCIL

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

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Cover Picture: Sketch of One of Six New Supertankers. Courtesy the Ships' Bulletin, Marine Department, Standard Oil Company (New Jersey).

TANKER TRANSPORTATION AND REMARKS ON INLAND-WATERWAY OPERATIONS

By M. G. Gamble, General Manager, Marine Department, Standard Oil Company (New Jersey)

The transportation of oil by tanker in much the same manner as we know it today began in 1886 with the construction in a British shipyard of the S. S. *Glückauf*. Since that time considerable progress has been made in hull and machinery design, and much more is in prospect; but the principle of carrying oil in tanks extending to the skin of the ship in a large seagoing vessel has remained the same over these 61 years, and there is little likelihood of this form of ocean transportation meeting any serious competition in the future.

The earliest form of deep-water transportation of petroleum was by means of cases and barrels loaded on barges and in dry-cargo sailing vessels. This method was followed by an earlier type of tanker which contained separate steel tanks with an air space under and around them. The chief objection to this type was the tendency of explosive gases to collect in the spaces around the tanks, with consequent danger to personnel and equipment. The *Glückauf* type obviated this danger, and at the same time provided much greater simplicity of construction.

Tankers in Two World Wars

In a general discussion of tankers it is interesting to review and compare the tanker-tonnage situation during and after the two world wars. In 1914 the total world tanker fleet consisted of little more than 2,000,000 deadweight tons, about 87 percent of which was under foreign flags. However, due largely to construction in United States yards, the world tonnage by the end of 1921 had increased to about 7,000,000 tons, more than half of which was under the United States flag. But unlike the situation today, United States Government-owned tankers accounted for only about one-fourth of the United States flag tonnage. A business depression then set in which, coupled with low-cost construction in European yards, brought building in United States yards to a standstill. In the period from 1921 to 1929, foreign-flag tonnage increased about 150 percent due to construction in Europe, while in the United States we were struggling to absorb the American-flag surplus.

In 1929 and 1930, it began for a time to look as though United States tanker construction would again come into its own, but once more a serious business depression called a halt. By 1935 the United States flag tanker fleet had dropped to about 30 percent of the world tonnage, and consisted mostly of vessels approaching obsolescence. Although there was a gradual rise in the construction of tankers from that year, the pace of building in United States yards did not approach that in foreign yards until 1941. In the year following, submarine warfare reached its peak; United States ship construction was stepped up rapidly, and for the first time since World War I, tanker construction in this country exceeded that in foreign yards. The bulk of our war-built fleet was constructed during the next 3 years. Today, as in 1922, more than half of the world's tanker tonnage is under the United States flag, and

again, as in that year, building here has practically reached a standstill. On the other hand, tankers under construction, or on order in European yards, now total about 180, the bulk of which is being built in Great Britain and Sweden. Deliveries in foreign yards reached a total of 58 tankers in 1946, and 17 have been reported so far this year.

Present Shortage

The foremost question within the industry today on the subject of tankers is: "Are there enough tankers?" If there are, "why are we experiencing such a transportation shortage as now exists?" The correct answer to the first question, I believe, is that there are ample tankers in the world today. As of October 1, there were approximately 96 United States Government-owned T-2 type vessels in tie-up over and above the 200 in operation.

From a long-range standpoint, it is felt that building in Europe—which apparently is being greatly retarded by material and labor shortages—will not, in itself, provide all tonnage needed to keep pace with world requirements, and construction in United States yards will, therefore, be necessary.

For national-defense purposes tankers should be fast, modern, and efficient in order to minimize the risk from enemy action and to insure prompt delivery of cargo. No less is this true for economical commercial operation. It is fortunate, therefore, that the Government is promoting sales to legitimate buyers for foreign industry, as this will provide an opportunity in the future for modernization of the U. S. flag tanker fleet.

War Construction

The war resulted in the loss of about 40 percent of the prewar worldwide tanker fleet. However, it also had the effect of hastening the general utilization of larger and faster ships. For example, the average prewar American-flag tanker had a deadweight tonnage of about 11,500 tons and a speed of about 10 knots, whereas today the average American tanker has a deadweight of about 15,000 tons and a speed of 14 knots. In general, we might safely say that the size and speed of a tanker, within certain limits, are all-important in reducing operating costs. This is particularly true with today's high and rising costs.

Our Government constructed during the war about 9,000,000 tons of T-2 type tankers. These vessels have a deadweight of about 16,600 tons, a speed of 15 knots, and a capacity of 138,000 barrels of gasoline. In most trades oil can be transported in them about 25 percent cheaper than in a prewar 13,000-ton 12-knot tanker, and for about 30 to 40 percent less than on the old 11,000-ton vessels. Looking at this question in another way, it is estimated that out-of-pocket operating costs have about doubled since 1939. However, the increased size and speed of the modern fleet, with consequent increased haulage capacity, has fortunately reduced the cost per ton-mile, so that the effective rise on that basis has only been about 65 percent.

New Tanker Types

Inasmuch as it is obvious from the foregoing that large, fast tankers are an answer to the high cost which owners—and, I might say, particularly American owners—are experiencing today, the question naturally arises as to how far one should go in this matter of size and speed. Since difficulties have been experienced in accommodating T-2 tankers in many ports, some may question the advisability of going to still larger ships. However, various waterway improvement projects already carried out or in progress by the United States Army Engineers, coupled with terminal improvements by private companies, have greatly improved this situation. Recent studies made on this subject by our technical staff have led to the design of a 26,000-ton 16-knot vessel with a length of 628 feet and a draft on summer freeboard of 31½ feet. This is felt to be the most practical answer to the foregoing question. The draft, which is only slightly more than a foot above that of a T-2, will permit this large vessel to enter the majority of ports which can accommodate T-2's with full cargo. The cargo tank capacity, after making the usual allowance for expansion, is about 228,000 barrels. It is estimated that transportation costs on such a vessel would be about 20 percent less than on a T-2. Naturally, the use of this size of tanker will involve some sacrifice in flexibility, both as regards the grades that may be carried and the terminals at which they can be accommodated. In the early stages, these vessels would probably be used principally with fuel oil and crude oil; but, with the present upward trends in the volume of petroleum products consumed, it is a safe assumption that, as time goes on, they will be used to an increasing extent for the transportation of products. Also, as vessels of this size increase in use, they will be taken into account in the design of future terminal facilities, and in the improvements in existing ones both here and abroad.

Operating Costs

Just as high operating costs highlight the need for large, fast tankers, so do these high costs (many of which go on in port the same as at sea) accentuate the need for quick turnaround. The average cost of a T-2 at the dock is about $1,800 per day, which gives some idea of the importance of keeping port time to a minimum. Given the proper shore facilities, a modern tanker is capable of loading or discharging at a rate of at least 10,000 barrels per hour. It is in the common interest of all concerned, therefore, including suppliers and consignees, to provide loading and discharging facilities with the maximum capacity justified by the volume handled. In normal times, when rates follow closely the market situation, the charterer with a reputation for quick turn-arounds will be favored over others. Another factor which may react to the charterers' benefit is the covering of their requirements well in advance and for as long a period as practicable. Over the long run, rates reflect the owner's costs; and it is, therefore, in the interest of all concerned to keep these costs to a minimum.

Beginning of Inland-Waterway Transport

Let us now turn from the subject of ocean tankers and discuss briefly inland-water operations in the United States. Here there are more than 26,000 miles of navigable waters. Of this total, 9,200 miles, or about 35 percent, have a depth of 9 feet or more; and 14,300 miles, or about 54 percent, are 6 feet or more in depth. The remainder have depths less than 6 feet.

Inland-waterway transportation began at the time oil was discovered in Pennsylvania in 1859. Oil was then moved on rafts, which were steered by poles and floated with the current from the upper reaches of the Allegheny River to the Pittsburgh area. Since this early beginning, transportation has evolved until in recent years large single barges, or groups of them in flotilla, are towed or pushed in our inland rivers. On other waterways, where deeper drafts are possible and other considerations favorable, small self-propelled tank vessels are used. However, by far the greater volume is still transported in nonpropelled equipment.

Nonpropelled Equipment

One might ask why greater utilization is not made of self-propelled equipment. The answer, as far as our own operations are concerned, is that, in the majority of river operations,

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the greatest economy lies in the use of nonpropelled equipment handled by powerful pusher-type towboats, and in certain other operations barges towed by conventional tugboats give better results. The latest type of river towboats has a horsepower of 2,000, and pushes twelve 9,000-barrel barges, making a total capacity for one tow of 108,000 barrels.

With a tow of this kind, one or more barges are released as terminals are reached on the route, and the towboat with the remaining barges continues on the voyage, thereby avoiding the laying up of the power plant while barges are being discharged, as would be the case with a self-propelled barge. When a sharp bend, coupled with a narrow channel and perhaps a swift current, makes the going hazardous, the majority of the barges may be moored while the towboat takes one at a time over the difficult crossing. Also, additional barges of suitable type and draft may be rented for use with the tow as occasion requires. In our western-rivers operations, the usual permissible draft is in the neighborhood of 9 feet to 10 feet, which, coupled with other local conditions, is not satisfactory for economical self-propelled barge operations.

On the Gulf Intracoastal Canal and, to some extent, along the inland waterways of the Atlantic seaboard, barges towed by small tugboats of the type seen around New York Harbor are commonly used. Tugs and barges have, in the majority of cases, also been found to be the most economical units for bunkering large vessels. This is because of the length of time consumed alongside the ship being bunkered and the consequent saving of the power plant's time. This saving is especially important today with the prevailing high wages.

Again referring to our own company's operations, in the Chesapeake Bay, the Erie Canal, the New York State Barge Canal, and the Great Lakes, as well as for short coastwise trips on the North Atlantic seaboard, conditions are favorable for the use of self-propelled equipment. Such of our equipment now in use consists of six self-propelled Diesel barges ranging in capacity from about 600 barrels to 13,700 barrels. Our people are now taking steps to acquire larger units with capacities of more than 18,000 barrels for use in the New York State Barge Canal and on the Great Lakes.

Barge transportation costs vary with the volume involved in each shipment, the distance covered, the efficiency of the unit used, and the extent of delays at terminals and in transit. Where conditions are favorable for the use of self-propelled equipment, the larger and faster the vessel up to limits governed by local conditions, the lower will be the transportation costs.

In any new inland-waterway operation where a choice must be made as to the type of equipment to be used, the right decision can only be reached after a careful study of all the factors involved. Among these are:

1. The physical characteristics of the waterway, i. e., whether open but "easy" water, open with strong current, locks present; or whether there are shallow crossings with swift currents, sharp bends, etc.
2. Kind of terminal facilities available at loading and discharging ports.
3. Volumes to be handled annually.
4. Size of deliveries.
5. Generally accepted local competitive transportation practices.
6. Labor and other costs.
7. Special regulations governing the use of waterways.

Taking all of these factors into account, an economic study is made to determine the most advantageous and economical type and size of equipment for the intended service.

Among the advances made in recent years in barging equipment are the following:

1. Improvement in the lines of nonpropelled barges: For many years short stubby rakes at the bow and stern were used. The latest design in these barges employs the so-called "Dravo hull," which has been developed after exhaustive model basin tests. With this design, the rakes at both ends are longer, but the stern is designed in such a way as to facilitate the clearance of water and the elimination of drag.

2. The stern-wheel towboat, so long in use on the Mississippi River and tributaries, and very aptly described in a recent issue of *The Lamp* under the title, "Big Mama," is being replaced gradually by a more powerful pusher-type towboat with finer lines and conventional twin screws. Two of the new type are now being built for our company.

3. As time goes on, no doubt there will be a more extensive use of twin-screw self-propelled barges of from 15,000- to 20,000-barrel capacity, with speeds up to 12 knots and drafts of more than 12 feet.

Water-Transport Advantages

In conclusion, I should like to stress the advantage of water transportation from the standpoint of flexibility wherever conditions are favorable to its use. Both ocean tankers and inland-waterway equipment can be readily moved from one area of operation to another to suit changed conditions. As petroleum becomes more extensively used throughout the world, the need for its transportation by water gains increasing importance, and today the best estimates of normal postwar shipping show tankers comprising almost half of the total United States merchant fleet.

From the Ships' Bulletin

INTERNATIONAL CONFERENCE FOR SAFETY OF LIFE AT SEA

The International Conference for Safety of Life at Sea, convened in London in April 1948. Admiral Joseph F. Farley, Coast Guard Commandant, was selected as chairman by the State Department, and eight other Coast Guard officers were members of the United States delegation, along with 24 other members, representing naval and maritime interests, and several Federal and civil agencies were also present for the conference.

Most of the maritime nations of the world will attend the conference for the purpose of revising currently recognized safety of life at sea measures adopted at the last conference (London, 1929) to include higher standards and more effective procedures made possible by the numerous scientific and technical advances made since that time.

HEARING UNITS

Coast Guard merchant marine investigating units and merchant marine details investigated a total of 772 cases during the month of March 1948. Of this number, charges were preferred involving 21 licensed and 57 unlicensed men. No hearings were held because examiners were not available.

SAFETY HINTS

When heaving in a hawser:

1. **Put sufficient turns on the nigger head;**
2. **Stand away from the moving parts; and**
3. **Stay OUT of the bight of the line.**

Rope does not have to be around your neck to kill you

There are three ways of doing a job:
1. The right way;
2. The wrong way;
3. The haphazard way.
Think safety—do it the safe way.

HELP do a better safety job

SIX SUPERTANKERS

Contracts for the construction of 6 new 26,000 D. W. T. tankers, having a carrying capacity of 228,000 barrels of high-gravity cargo, have been signed by Standard Oil Co. (New Jersey), 2 of the ships to be built by Sun Shipbuilding & Dry Dock Co., Chester, Pa., and 4 by Newport News Shipbuilding and Dry Dock Co., Newport News, Va. The vessels will be built from designs prepared by the Marine Department's technical staff. Each ship will have a normal complement of about 50 officers and men.

Dimensions and Particulars

Length, over-all	628'0".
Length, between perpendiculars.	600'0".
Breadth, molded	82'6".
Depth, molded to upper deck at side amidships.	42'6"
Designed load draft, molded.	31'5".
Displacement, total, at designed load draft, about.	34,100 tons.
Deadweight at designed load draft, approximate.	26,000 tons.
Normal shaft horsepower.	12,500 at 112 revolutions per minute.
Speed, on trial, approximate.	16 knots on designed load draft.

The vessel will have a rounded curved stem, a merchant cruiser stern, a vertical mast for radar and radio antennae and a raked streamlined stack. The propelling machinery spaces will be located aft, consisting of engine room and boiler room, separated by a watertight bulkhead. The boiler room will be on a raised flat aft of the engine room. The hull will be of the single deck design, with forecastle, poop, and bridge deckhouse, all connected together by the usual fore and aft walkways at the center of the vessel. The upper deck will be the strength deck and will extend from stem to stern. There will be 10 main cargo oil tanks, each divided into 3 separate transverse compartments by twin longitudinal bulkheads, providing 30 main cargo compartments. Cofferdams will be provided at the extreme ends of the cargo oil tanks.

The cargo oil pumproom will be located at the aft end of the aftermost center oil tank and adjoining the engine room. A small pumproom for ballasting purposes will be located forward at the center of the vessel and adjoining the forward center cargo oil tank.

Fuel oil settling tanks will be located at the forward end of the engine room; extending from the top of the main pumproom to the upper deck between the twin longitudinal bulkheads. Deep fuel oil storage tanks will be located port and starboard at the forward end of the engine room, outboard of the settling tanks. The double bottom under the machinery space will be arranged for reserve feed water. Potable water tanks will be provided aft at the poop deck level, and one in the upper deck enclosure amidships. Deep fuel oil or water ballast tanks will be provided under the second deck in the forehold.

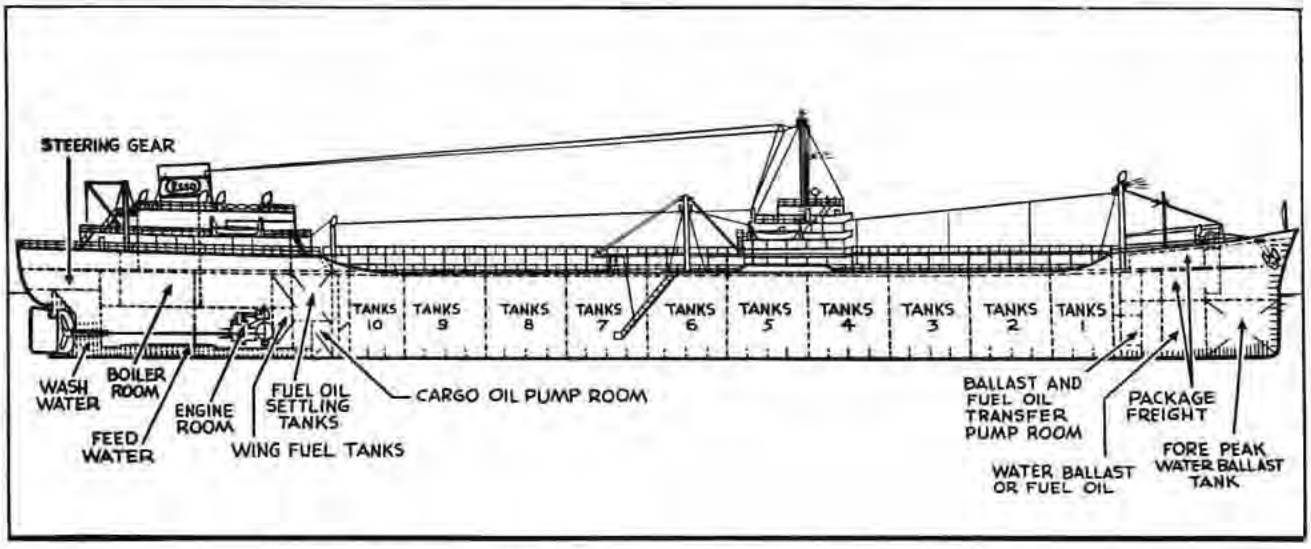
Kingposts

For handling the cargo hose two steel kingposts, one port and one starboard, will be located immediately aft of the amidship superstructure, provided with steel booms of 3 tons capacity. The spaces in the forehold above the second deck will be arranged for package freight, served through cargo hatches by twin steel kingposts with a 5-ton boom at the forward side of each kingpost. For handling ship's stores, there will be two steel kingposts aft on the poop, each having one 2-ton boom. The stores will be loaded through cargo ports into the poop.

Accommodations

All officers will be berthed in the midship superstructure and petty officers and crew in the poop. Accommodations for captain and chief engineer will consist of suites containing stateroom, office, and private shower and toilet. Other licensed officers, and purser, steward and radio operator, will each have a stateroom with private shower and toilet. An officers' recreation room will be provided in the midship house, while the officers' mess will be conveniently located in the poop. Petty officers and crew will be berthed generally not more than two persons per room, with either a private shower and toilet or connecting shower and toilet for adjoining rooms. There will be separate petty officers' and crew's messrooms and a comfortable recreation room for both. An engineers' dayroom, hospital, laundry, and usual ship's service rooms will be provided. The galley will be electrically equipped.

Accommodations on the bridge deck will be provided for four passengers in two rooms, each with a private shower and toilet. The accommodations throughout will be of fireproof



Profile of the six supertankers to be constructed for Standard Oil Co. (New Jersey).

construction and mechanically ventilated.

The fire-fighting and safety appliances provided will be of the usual high standard existing in Esso fleet tankers. Four 24-foot, 35-person metal lifeboats, two aft and two amidships, will be part of each vessel's lifesaving equipment. The boats will be suspended from mechanical davits.

Machinery

The propelling machinery will consist of a geared turbine propulsion unit with cross-compound impulse type steam turbines and a double reduction gear. The cross-compound turbines consist of one high pressure ahead turbine and one low pressure ahead turbine with an astern turbine incorporated in the exhaust end of the low pressure turbine. Multiple hand operated valves are used for control of the number of the first stage ahead nozzles to obtain improved steam economy for part load operation.

Reduction Gears

The two turbine rotors are connected to the high-speed pinions through flexible couplings of the high-speed gear tooth type. The double reduction gear has the high-speed first reduction elements placed forward of, and above, the low-speed reduction element. The two high-speed pinions drive two intermediate gears, connected through a flexible coupling to a low-speed pinion. The two low-speed pinions drive the low-speed gear. Double helix design is used for all the reduction gear elements. The main thrust bearing, housed in the forward end of the reduction gear casing, is of the pivoted segmental, single collar, marine type, and is arranged to take the thrust in both directions. The ahead power and revolutions per minute for the unit are:

Power and revolutions per minute	*Rated*	*Maximum*
Shaft horsepower	12,500	13,750
Propeller revolutions per minute	112	115.7

The propelling machinery is designed for reliable and economical operation at an estimated fuel consumption of 0.52 pounds of bunker fuel oil per shaft horsepower per hour when developing about 12,500 S. H. P. and not heating cargo, ballasting or tank cleaning.

The turbines are designed to operate at normal steam condition of:

Steam pressure at turbine inlet, pounds/square inch gauge	835
Steam temperature at turbine inlet, °F	840
Exhaust back pressure at turbine exhaust flange, in Hg abs	1½

Boilers and Condensers

Two Babcock & Wilcox watertube two-drum air incased boilers will be

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Marine Information Broadcasts

The schedule of marine information broadcasts has been revised effective September 1, 1947, and appears in table form for ready reference.

This information replaces that published on page 42 in the April 1948 Proceedings.

Bell System Coast Harbor Station

Station	Call letters	Frequency (kc.)	Present schedule
Astoria, Oreg	KFX	2598	0915–2115
Boston, Mass	WOU	2506	1120–2320
Charleston, S. C	WJO	2566	1100–2300
Eureka, Calif	KOE	2506	0900–2100
Galveston, Tex	KQP	2530	0030–1900
Miami, Fla	WDR	2514	1200–2400
New Orleans, La	WAK	2598	1100–2300
New York, N. Y	WOX	2522	1050–2250
Do	WAQ	2558	1050–2250
Norfolk, Va	WGB	2538	2400–1200
Portland, Oreg	KQX	2598	0930–2130
San Francisco, Calif	KLH	2506	0830–2030
San Pedro, Calif	KOU	2566	0800–2000
Seattle, Wash	KOW	2522	0900–2100
Tampa, Fla	WFA	2550	1100–2300
Wilmington, Del	WEH	2558	0030–1230

Note.—All schedules are local standard time.

STATIONS BROADCASTING MARINE INFORMATION

Station and call letters	Time (G. C. T.)	Frequency	Emission	Nature of broadcast
Boston, Mass. (NMF)	0350, 1550	425	A-1	Regular.
	0420, 1620	2698	A-3	Do.
	Upon receipt and on even hour intervals	425	A-1	Emergency.
	Upon receipt and on odd hour intervals	2698	A-3	Do.
New York, N. Y. (NMY)	0420, 1620	480	A-1	Regular.
	0450, 1650	2698	A-3	Do.
	Upon receipt and on odd hour intervals	480	A-1	Emergency.
	Upon receipt and on even hour intervals	2698	A-3	Do.
Philadelphia, Pa. (NMK)	0550, 1750	2698	A-3	Regular.
	Upon receipt and on even hour intervals	2698	A-3	Emergency.
Baltimore, Md. (NMN-7)	1630	2698	A-3	Regular.
	Upon receipt and on odd hour intervals	2698	A-3	Emergency.
Norfolk, Va. (NMN)	0450, 1650	410	A-1	Regular.
	0520, 1720	2698	A-3	Do.
	Upon receipt and on even hour intervals	410	A-1	Emergency.
	Upon receipt and on odd hour intervals	2698	A-3	Do.
Fort Macon, N. C. (NMN-37).	1700	2698	A-3	Regular.
	Upon receipt and on even hour intervals	2698	A-3	Emergency.
Charleston, S. C. (NMB)	0420, 1620	2698	A-3	Regular.
	Upon receipt and on even hour intervals	2698	A-3	Emergency.
Jacksonville Beach, Fla. (NMV).	0550, 1750	464	A-1	Regular.
	0620, 1820	2698	A-3	Do.
	Upon receipt and on even hour intervals	464	A-1	Emergency.
	Upon receipt and on odd hour intervals	2698	A-3	Do.
Miami, Fla. (NMA)	0420, 1620	425	A-1	Regular.
	0450, 1650	2698	A-3	Do.
	Upon receipt and on odd hour intervals	425	A-1	Emergency.
	Upon receipt and on even hour intervals	2698	A-3	Do.
Key West, Fla. (NOK)	0430, 1630	2698	A-3	Regular.
	Upon receipt and on odd hour intervals	2698	A-3	Emergency.
St. Petersburg, Fla. (NOF)	0420, 1620	2698	A-3	Regular.
	Upon receipt and on odd hour intervals	2698	A-3	Emergency.
Mobile, Ala. (NOQ)	0550, 1750	2698	A-3	Regular.
	Upon receipt and on even hour intervals	2698	A-3	Emergency.
	Upon receipt and on odd hour intervals			
New Orleans, La. (NMG)	0520, 1720	425	A-1	Regular.
	Upon receipt and on even hour intervals	425	A-1	Emergency.
Galveston, Tex. (NOY)	0520, 1720	2698	A-3	Regular.
	Upon receipt and on even hour intervals	2698	A-3	Emergency.
	Upon receipt and on odd hour intervals	425	A-1	Do.
San Juan, P. R. (NMR)	0300, 1500	2698	A-3	Regular.
	0330, 1530	127, 4795	A-1	Do.
	Upon receipt and on odd hour intervals	2698	A-3	Emergency.
	Upon receipt and on even hour intervals	127, 4795	A-1	Do.
Long Beach, Calif. (NMQ).	0430, 1630	425	A-1	Regular.
	0500, 1700	2698	A-3	Do.
	Upon receipt and on odd hour intervals	425	A-1	Emergency.
	Upon receipt and on even hour intervals	2698	A-3	Do.
San Francisco, Calif. (NMC).	0400, 1600	425	A-1	Regular.
	0430, 1630	2698	A-3	Do.
	Upon receipt and on even hour intervals	425	A-1	Emergency.
	Upon receipt and on odd hour intervals	2698	A-3	Do.
Seattle, Wash. (NMW)	0500, 1700	425	A-1	Regular.
	0530, 1730	2698	A-3	Do.
	Upon receipt and on odd hour intervals	425	A-1	Emergency.
	Upon receipt and on even hour intervals	2698	A-3	Do.
Ketchikan, Alaska (NOL)	0530, 1730	410	A-1	Regular.
	0600, 1800	2698	A-3	Do.
	Upon receipt and on even hour intervals	410	A-1	Emergency.
	Upon receipt and on odd hour intervals	2698	A-3	Do.
Honolulu, T. H. (NMO)	0900, 2100	425	A-1	Regular.
	0930, 2130	2698	A-3	Do.
	Upon receipt and on local odd hour intervals.	425	A-1	Emergency.
	Do	2698	A-3	Do.

located on a flat aft of the main propulsion unit. Each boiler will have furnace water walls, convection type superheater, desuperheater, economizer, air heater, mechanical atomizing oil burners, smoke indicator, air operated feed water regulators, combustion control, air puff type soot blowers and other accessories required for economical operation.

There will be a main condenser serving the main propulsion unit and turbo generators and capable of maintaining a vacuum of 28.25" Hg, located under the main low pressure turbine. An auxiliary condenser is provided to condense the exhaust steam from the two turbo generators, cargo pump turbines and other steam actuated auxiliary machinery units. The auxiliary machinery which has been arranged to ensure reliable and economical operation includes three steam turbine actuated rotary feed pumps, main and auxiliary circulating and condensate pumps, main and auxiliary condenser air ejectors, lubricating oil service pumps in association with a gravity type lubricating oil system for the main propelling machinery, a steam turbine actuated fire and Butterworth pump with heater and drain cooler, a reciprocating general service steam piston type bilge and ballast pump, an electric motor actuated centrifugal fire pump, sanitary pump, two wash water pumps, two drinking water pumps, two Freon refrigerating machinery units, complete with condensers and cooling water pump, and engine room bilge pump, reciprocating type.

The feed heating system will be provided with four stages of feed water heating including a deaerating feed water heater. The evaporating plant will include two salt water evaporators and one make up feed evaporator and two distillers.

The boiler forced draft system will include two electric blowers equipped with vane control. Each boiler will have four fuel oil burners, served by two fuel oil service pumps and heaters in conjunction with Bailey combustion control equipment. Air puff type automatic control boiler soot blowers will be supplied with air from two large air compressors; a small compressor will furnish air to the combustion control system and feed water regulators.

Electrical Installation

The electrical installation will include two 400-kilowatt, 450-volt, 60-cycle, 3-phase, alternating current, steam turbine generators on a flat at the starboard side of the engine room. These generators will operate on a steam condition, same as that of the main propulsion turbines. In addition, there will be transformers for the lighting services and galley ranges and two motor generators for supplying direct current service. A 60-kilowatt Diesel generator, 450-volts, alternating current, will be provided for emergency lighting services and for use with the boiler cold starting system, having emergency forced draft blower, fuel oil service pump and feed pump.

A lathe, drill press, and grinder will be provided in the workshop which is located aft on the boiler flat.

The deck machinery will include an electro-hydraulic steering gear of the two ram type, a steam windlass and five steam winches.

The engine and boiler room will be ventilated by eight supply and exhaust propeller type fans located in the ventilators.

Pumping Equipment

The cargo pumproom located between the aftermost cargo tank and the engine room will contain four two-stage centrifugal cargo pumps, driven by steam turbines located in the engine room; these four pumps will be capable of discharging about 22,000 barrels per hour of 30° A. P. I. crude oil. Also in the main pumproom will be two steam reciprocating stripper pumps, and one rotary type stripper pump driven by an electric motor located in the engine room; each stripping pump has a capacity of 1,000 barrels per hour against a discharge pressure of 125 pounds per square inch at the pump. In the main cargo tanks there will be four 14-inch O. D. fore and aft cargo suction lines and a 6-inch stripping line which is connected into one of the main cargo lines in No. 1 tank.

The stripping pumps are arranged to take suction from the vapor space of the main cargo pumps, the main lines, stripper line or sea, and discharge into No. 10 center tank, the main suction and discharge cross-overs in the pumproom and to a 6-inch discharge line cross-over on the upper deck. The four main cargo pumps are arranged to discharge to four cross-overs located on the upper deck aft of the amidship house.

A steam actuated reciprocating bilge ballast pump and a like type fuel oil transfer pump, with the customary suction and discharge connections, are to be provided in the forward pumproom.

The cargo piping and cargo tank venting system are arranged to permit the carriage of grade A petroleum products.

The aids to navigation include radio receiver and transmitters, radio direction finder, radar, echo sounding equipment, gyrocompass and gyropilot automatic steering.

From the Ships' Bulletin

LESSONS FROM CASUALTIES

SHIFTING OF PHOSPHATE ROCK

The following is an exemplary incident of near-disaster at sea averted by outstanding cooperation between master and crew working in the interests of mutual safety.

The vessel, a Victory-type freighter, was listing precariously in heavy Atlantic seas some 300 miles off the Carolina coast. Her cargo of phosphate rock had shifted to a point where the starboard boat deck was rolling under. Prompt and continued action by master, chief engineer, and entire crew resulted in the successful return to a United States port without a single person lost or injured. However, matériel damage was unavoidably extensive.

The vessel loaded in a Gulf coast port for a voyage to Northern Europe. The cargo, phosphate rock, was loaded and stowed in the customary manner, with the approval of the underwriters, stevedores, and shipper. Chutes were used to spread it around in the lower holds and bring it up in cone fashion, thus filling the square of the hatch. With hatch covers off, the process was repeated in the 'tween and upper 'tween decks. The preponderance of weight was toward the midship lines, allowing considerable space in No. 1 and No. 5 holds. By such method, no previous difficulty of shifting had been experienced.

Moderate weather prevailed at the time of departure, but 3 days later the wind increased to force 5, rough seas and swell with vessel rolling heavily. At about 0400 of the fourth day, the vessel began rolling extremely heavy. This awakened the master who reduced speed and hauled southerly to take the seas slightly on the starboard quarter. Inspection showed that the vessel had approximately a 15° list to starboard, with heavy water coming aboard the starboard weather deck. Examination of

cargo holds by the chief mate and carpenter revealed that the cargo had shifted to starboard in all decks.

The chief engineer on orders from the master began transferring fresh water and fuel oil from starboard to port tanks. In the meantime the wind had increased to force 7–8. Officers and crew were turned to shoveling and plowing cargo over to the port side. At about noon, the list increased to 18° to 20° and the starboard boat deck was rolling under.

Apprehensive of the situation, the master sent an SOS for all vessels in the vicinity to stand by. Concurrently, all remaining water and fuel in the starboard tanks was pumped overboard and the port forward deep tanks were filled with sea water by fire hoses. Lifeboats were uncovered and made ready for lowering, and all crew warned to get life jackets and prepare to abandon ship if necessary.

At about 1600, the sea began to moderate and by 1800 it had moderated sufficiently for all hands to go to work with plows and shovels shifting the cargo back to the port side. By such efforts and ballasting the list was reduced to 12° to 14°.

By 0400 on the fifth day, with continued moderating weather, the list was reduced to 8° with only an occasional sea coming aboard. All hands were completely exhausted and were told to turn in. The vessel was then brought around on a return course to the States for trimming of the cargo.

Due to ballasting and transfer operations, the fuel oil became contaminated. This caused major difficulties with the main engine plant and auxiliaries. Twice the entire plant, including the fires in the boilers, went dead. The whole engine department was on duty, and because of inoperative diesel generators, flashlights had to be used. By 1400, the engines were readied and the vessel proceeded at 17 knots.

During the sixth day, the starboard boiler was cut out. Soot had accumulated around the superheater header and caught fire. This heated the casing to a cherry red. After cooling off for 5 hours, the boiler was cut in, thus enabling the vessel to reach port on high water.

In an east coast port, a survey of the cargo was conducted. The cargo was then restowed in such manner as to best prevent shifting. It was trimmed out to the wings in all decks and the 'tween deck hatch boards were put on and secured. Additional precautions consisting of well secured fore and aft shifting boards were constructed in the 'tween decks having the greater volume of cargo. The vessel then resumed her voyage.

The events of this incident indicate that the cargo shifted as the result of improper stowage. Despite the fact that no previous shifting difficulties had been experienced by the "customary" method of stowage, safe practice dictates that phosphate rock be stowed in the same manner as bulk ore. This means that it should be well trimmed out to the wings and bulkheads in each compartment, so as to avoid any possibility of settling down as would occur if the greater volume were left in the square of the hatch. It is believed that the original failure to put on hatch boards in the 'tween decks was largely responsible for the excessive shift of cargo to the void spaces in the wings directly under the 'tween decks.

The master in this case demonstrated keen consideration for the safety of his vessel. Prior to departure, however, he should have insisted that the phosphate rock be adequately trimmed out with the 'tween deck hatches secured in place.

SAFE MOTORBOATING

The motorboat season is fast approaching and it would be beneficial if the owners and operators of these craft paused to take stock. Each motorboat owner might well ask himself, "Is my boat ready to run and be navigated with safety to *myself?*"

You operators may think your boats are safe, and the majority of you are right. However, every season the usual quota of accidents occur, the greater part of which might have been avoided if a little foresight had been used.

The following questions that you might ask yourselves, are made with the hope that they may be instrumental in saving life.

(*a*) Are the bilges of my boat clean and are they adequately ventilated? This question should be answered in the affirmative because it is an uncontrovertable fact that more accidents are caused by gas fumes from the bilges becoming ignited than from any other cause.

(*b*) Are my gasoline tanks tight and free from corrosion?

(*c*) Are my gasoline tanks in a compartment separated from the machinery space by a gas-tight bulkhead? Are there drip pans under my fuel tanks? Attention to these items often prevent inflammable gases from entering the engine space where sources of vapor ignition are present.

(*d*) Is my carburetor fitted with a flame arrester and has it a drip pan thereunder? This precaution may prevent a fire in the event of a backfire from your motor and the drip pan will prevent gasoline from reaching the bilges. These devices are required by law.

(*e*) Is my galley stove properly connected? When butane gases are used for cooking purposes care must be taken against leakage as these gases are heavier than air and will settle in pockets about the decks.

(*f*) Are my life preservers and buoyant cushions in good repair and sufficient in quantity for all hands?

(*g*) How about my navigation lights? Do they all light and comply with the law?

(*h*) Is my bell working? Also how about my whistle or horn?

(*i*) Is my mooring cable made fast to my anchor?

The foregoing are a few reminders, which as previously stated may save your life. Don't fail to become familiar with the pilot rules for the waters upon which you navigate and by all means obtain a copy of the motorboat regulations and study them.

The attached picture illustrates the results of carelessness in handling gasoline so take heed and enjoy your summer boating with safety.

This was the funeral pyre of two men.

APPENDIX

Amendments to Regulations

TITLE 46—SHIPPING

Chapter 1—Coast Guard: Inspection and Navigation

Subchapter A—Procedures Applicable to the Public

NAVIGATION AND VESSEL INSPECTION LAWS, AND SHIPMENT AND DISCHARGE OF SEAMEN

By virtue of the authority vested in me by section 101, Reorganization Plan No. 3 of 1946 (11 F. R. 7875); Public Law 404, 79th Congress (60 Stat. 237); Public Law 27, 80th Congress, approved March 31, 1947; Public Law 293, 80th Congress, approved July 31, 1947; and Public Law 423, 80th Congress, approved February 27, 1948; the following amendments to the regulations are prescribed and shall be effective on and after July 15, 1948.

PART 2—VESSEL INSPECTIONS

Section 2.50–1 (a) is amended to read as follows:

§ 2.50–1 *Waivers*—(a) *Authority for and limitations on issuance.* Compliance with certain of the navigation and vessel inspection laws may be waived by the Commandant under authority of the act of March 31, 1947, as amended (Public Laws 27, 293, and 423, 80th Congress), in any case where such waiver is deemed necessary in the orderly reconversion of the merchant marine from wartime to peacetime operations. By the terms of Public Law 27, as amended, this authority to grant waivers expires March 1, 1949. The Commandant is specifically prohibited from granting waivers for the employment of alien seamen except for those who served between December 7, 1941 and September 2, 1945, aboard vessels operated by the War Shipping Administration, the United States Maritime Commission, or the Army Transport Service. This includes foreign flag vessels operated by these agencies.

(Public Laws 27, 283, and 423, 80th Congress)

PART 3—MERCHANT VESSEL PERSONNEL

Section 3.13–25 is amended by changing paragraphs (a), (b), and (c) to read as follows:

§ 3.13–25 *Crew deficiencies*—(a) *Authority for making crew substitutions.* The 3 waiver orders dated April 12, 1948, identified as documents CGFR 48–18 (13 F. R. 2070), CGFR 48–19 (13 F. R. 2071), and CGFR 48–21 (13 F. R. 2072), and published in the FEDERAL REGISTER dated April 17, 1948, are conditional waivers of manning requirements which permit masters who cannot obtain the quality of crew required to make substitutions therefor subject to certain restrictions.

(b) *Restrictions on substitutions.* (1) The waivers referred to in paragraph (a) of this section are applicable only to merchant cargo and tank vessels and do not authorize substitutions which would cause the statutory citizenship requirements for licensed officers and certificated crew members to be violated. These general waivers are intended to simplify to the utmost degree consistent with safety the procedure necessary when the required crew complement of a merchant cargo or tank vessel cannot be obtained by every reasonable effort up to the time of signing on. These waivers have the effect of relaxing the complement requirements of R. S. 4463, insofar as the quality of the crew is concerned by permitting substitutions in the filling of complements. Thus, if all the conditions of these waivers are met, a vessel may be navigated with rated positions occupied by men of lower ratings than the complement calls for, but all positions specified in the complement must be occupied. In other words, while these waivers permit particular positions to be filled by men who do not hold the certificates contemplated by the complement for such positions, it does not permit a vessel to be navigated with less than the total number of crew members specified in the complement. These waivers have no application to the navigation of a vessel where vacancies in the complement occur after the filling of the complement but during the period for which the full crew has been signed on. That situation continues to be governed by R. S. 4463.

(2) The waiver order dated April 12, 1948, identified as document CGFR 48–18, permits conditionally the employment of holders of limited able seamen certificates to the extent of one-half the total number of able seamen required on cargo and tank vessels other than those navigating the Great Lakes. The waiver orders dated April 12, 1948, in document CGFR 48–19 and CGFR 48–21 are conditional general waivers permitting a relaxation in the able seamen and qualified members of the engine department requirements on Great Lakes vessels.

(c) *Reports of substitutions.* No reports of substitutions made in the crew of a vessel pursuant to the general waivers referred to in paragraph (a) of this section are required of a vessel's master, owner, or operator. The requirement in these waiver orders that reasonable efforts be made to secure properly certificated able seamen and qualified members of the engine department is to be literally construed and the Coast Guard may require an explanation in the form of a justification for substitutions in specific cases, especially those where it appears that there has been a violation of the intent and purpose of the waiver authority. The waiver orders contain a penalty provision for their misuse.

Section 3.13–26 is amended to read as follows:

§ 3.13–26 *Employment of aliens as unlicensed crew members*—(a) *Authority for employment.* The order dated April 12, 1948, identified as document CGFR 48–20 (13 F. R. 2071), published in the Federal Register dated April 17, 1948, is a conditional waiver of certain navigation and vessel inspection laws and permits the employment of aliens in the unlicensed crew of subsidized United States vessels subject to certain restrictions. Aliens eligible for employment under this waiver are those who served between December 7, 1941, and September 2, 1945, aboard vessels operated by the War Shipping Administration, the United States Maritime Commission, or the Army Transport Service. This waiver is effective on and after July 15, 1948.

(b) *Restrictions on employment.* (1) The waiver referred to in paragraph (a) of this section is a general waiver and requires no forms or other reports of aliens employed under its provisions. It does, however, limit the number of aliens who may be employed under its provisions to 15 percent of the total unlicensed crew of the particular vessel and provides that aliens may be employed only if citizen seamen with appropriate ratings are not available for employment in the unlicensed crew as determined after reasonable efforts made by the master, or owner, or others concerned with supplying crews. Aliens claiming to have the required service be-

tween December 7, 1941, and September 2, 1945, must present to the shipping commissioner or master at the time of employment evidence in the form of certificates of discharge or other properly authenticated record of service showing the name of the vessels and dates served thereon. The employment of aliens to serve as watch officers on United States vessels is not allowed and nothing in this waiver permits such employment.

(2) This waiver does not permit aliens to serve as watch officers on United States vessels and the procedure set up by the Coast Guard for approving aliens to serve under waiver as watch officers is inoperative and all outstanding lists of approved aliens and individual letters of approval are without force and effect.

Dated: May 4, 1948.

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

[F. R. Doc. 48-4143; Filed, May 7, 1948; 8:49 a. m.; 13 F. R. 2477, May 8, 1948]

Subchapter K—Seamen

PART 138—SHIPMENT AND DISCHARGE OF SEAMEN

CITIZENSHIP OF SEAMEN

In the manning of merchant vessels of the United States the provisions of R. S. 4131 and 4551, as amended by the acts of June 25, 1936, and June 29, 1936, require that officers and certain percentages of seamen be citizens of the United States, either native born or naturalized. Since the effective date of section 5 of the act of June 25, 1936, and section 302 of the act of June 29, 1936, it has been the practice of shipping commissioners and others concerned with enforcing the citizenship requirements for the manning of merchant vessels to regard seamen holding documents whereon question marks have been placed to indicate that satisfactory proof of citizenship has not been presented as not meeting the citizenship requirements imposed by the statutes. In addition this provision is stated on Form CG 735T for the information of masters who do not employ their crews under supervision of shipping commissioners. In accordance with the Administrative Procedure Act (Public Law 404, 79th Congress, 60 Stat. 237, 5 U. S. C. 1001 et seq.) notice of proposed rule making, public procedure thereon, and publication 30 days prior to its effective date are found impracticable and contrary to the public interest in that this regulation imposes no new requirement on the industry since it states a practice which has been followed for many years.

By virtue of the authority vested in me as Commandant by R. S. 4551 and the act of June 25, 1936, as amended (46 U. S. C. 643, 639), and section 101 of Reorganization Plan No. 3 of 1946 (11 F. R. 7875), the following amendments to the regulations are prescribed which shall become effective on the date of publication of this document in the FEDERAL REGISTER:

The heading for Part 138 is changed from "Rules and Regulations for Issuance of Certificates and Continuous Discharge Books" to "Shipment and Discharge of Seamen."

Part 138 is amended by adding a new § 138.8, reading as follows:

§ 138.8 *Employment of seamen whose citizenship has not been established.* Seamen whose continuous discharge books, certificates of identification or merchant mariner's documents show question marks with reference to place of birth and/or citizenship shall not be considered as citizens of the United States in computing the number of citizens required by statute to be employed in the crew of a vessel.

Dated: May 3, 1948.

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

[F. R. Doc. 48-4139; Filed, May 7, 1948; 8:48 a. m.; 13 F. R. 2477, May 8, 1948]

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 2-48

UNITED STATES COAST GUARD,
Washington 25, D. C., February 25, 1948.

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, United States Coast Guard, Commandant.

MASTER, MATE, PILOT, OR ENGINEER OF VESSELS OPERATING IN HAWAIIAN WATERS

1. Notice is hereby given that the United States Coast Guard is considering amendments to 46 CFR 10.05-11, which will have the effect of placing applicants for licenses as master or mate of vessels navigating exclusively in the Coast Guard district covering the Hawaiian Islands in the same category as applicants for licenses for other ocean or coastwise waters; and to 46 CFR 10.10-25, which will have the effect of placing applicants for licenses as engineer of seagoing vessels propelled by internal combustion engines navigating exclusively in the Coast Guard district covering the Hawaiian Islands in the same category as applicants for licenses of motor vessels which are not restricted as to waters. This notice is made pursuant to the authority contained in R. S. 4405, 4417a, 4426, 4427, 4438, 4438a, 4439, 4440, 4441, 4442, sec. 2, 29 Stat. 188, 49 Stat. 1544, sec. 5 (e), 55 Stat. 244 and 60 Stat. 238, as amended, (5 U. S. C. 1001, et seq., 46 U. S. C. 214, 224, 224a, 225, 226, 228, 229, 367, 375, 391a, 404, 405, 50 U. S. C. 1275), and sec. 101, Reorganization Plan No. 3 of 1946 (11 F. R. 7875).

2. A public hearing will be held on June 15, 1948, in Room 201, Federal Building, Honolulu, Territory of Hawaii, at 1:30 p. m., to consider all the comments, data, and views of persons having an interest in the professional requirements of masters, mates, pilots, or engineers of vessels operating exclusively in Hawaiian waters. All persons who desire to submit written

comments, data, and views prior to the hearing for consideration in connection with the proposed regulations shall file the same in duplicate with and for receipt prior to June 15, 1948, by the Commander, 14th Coast Guard District, Post Office Box 4010, Honolulu, T. H. All matters presented orally or in writing at the public hearing or in writing before the hearing will be given due consideration.

3. The proposed amendment to present § 10.05–11 will cancel paragraph (g) and revise the heading and paragraph (a) to read as follows:

§ 10.05–11 *Master, mate, or pilot of steam or motor vessels operating under special conditions.* (a) This section shall apply to every applicant for a license as master, mate, or pilot, of steam pilot boats or seagoing motor pilot boats of 300 gross tons or over; or of steam vessels navigating the waters of the whaling grounds in the Alaskan seas; or of steam vessels engaged exclusively in the business of whale fishing; or of steam vessels engaged in the Atlantic, Pacific, or Gulf coast fisheries; or of steam or sail vessels or seagoing motor vessels of 300 gross tons or over, navigating exclusively in Puerto Rican waters.

4. Comment: This amendment to § 10.05–11 revises paragraph (a) and deletes paragraph (g) of the present regulation. The text of paragraphs (b) to (f), inclusive, will remain in effect without any changes. The proposed amendment has the effect of placing every applicant for license as master or mate of vessels navigating between ports of the Hawaiian Islands in the same category as every applicant for license as master or mate of vessels navigating other ocean or coastwise waters. This will require each applicant in Hawaii to pass a written examination and in the case of an original examination he must present a certificate from the United States Public Health Service attesting to competence in ship sanitation and first aid. In addition each applicant will have to obtain the minimum sea service required for the type of license desired which may or may not be more than is presently required under the existing provisions in § 10.05–11. These changes will not affect the continuing validity of licenses issued prior to the effective date of the amendments, which authorize the holders to operate motor or steam vessels navigating between ports of the Hawaiian Islands.

5. The proposed amendment to take the place of the present § 10.10–25 reads as follows:

§ 10.10–25 *Engineers of motor vessels operating in Puerto Rican waters.* (a) An applicant for an engineer's license of seagoing vessels propelled by internal combustion engines navigating exclusively in Puerto Rican waters shall submit with his application statements duly executed and certified by reputable citizens qualified to judge the character and ability of the applicant. The Officer in Charge, Marine Inspection, shall make a diligent inquiry as to the applicant's character and merits and, if satisfied by the oral examination or practical demonstration, and the proof of requisite knowledge and skill offered, the Officer in Charge, Marine Inspection, shall issue the license. No certificate from the United States Public Health Service based upon the subject of ship sanitation and first aid shall be required of such applicant.

(b) An applicant for an engineer's license of motor vessels operating exclusively in Puerto Rican waters shall present evidence of a minimum of 3 years' service on such vessels.

6. Comment: This amendment to § 10.10–25 will have the effect of placing every applicant for license as engineer of seagoing vessels propelled by internal combustion engines navigating exclusively in the Coast Guard district covering the Hawaiian Islands in the same category as every applicant for license as engineer of motor vessels which are not restricted as to waters. This will require each applicant in Hawaii to pass a written examination and in the case of an original license he must present a certificate from the United States Public Health Service attesting to competence in ship sanitation and first aid. In addition each applicant will have to meet the minimum sea service required for the type of license desired which may or may not be more than is presently required under the provisions of the existing § 10.10–25. These changes will not affect the continuing validity of licenses issued prior to the effective date of the amendments, which authorize the holders to act as engineers on motor vessels navigating exclusively in Hawaiian waters.

Dated: May 14, 1948.

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

[F. R. Doc. 48–4497; Filed, May 18, 1948; 8:49 a. m.; 13 F. R. 2699, May 19, 1948]

Equipment Approved by the Commandant

APPROVAL OF EQUIPMENT

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

BUOYANT CUSHIONS, STANDARD

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

Approval No. 160.007/65/0, standard kapok buoyant cushion, U. S. C. G. Specification 160.007, manufactured by the Wawasee Boat Company, Syracuse, Ind.

Approval No. 160.007/66/0, standard kapok buoyant cushion, U. S. C. G. Specification 160.007, manufactured by Gordon-Edwards Co., Inc., 121 Northeast 9th Street, Miami 36, Fla.

BUOYANT CUSHIONS, NONSTANDARD

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

Approval No. 160.008/378/1, 15" x 15" x 2" rectangular buoyant cushion, 20 oz. kapok, plastic film cover, plastic straps, heat-sealed seams, specification dated 24 March 1948, manufactured by the Watertight Slide Fastener Corp., 15 Whitehall Street, New York 4, N. Y. (This approval modifies Approval No. 160.008/378/0 published in the FEDERAL REGISTER of October 31, 1947.)

SAFETY VALVES

Approval No. 162,001/84/0, Model No. WTN–L, Lonergan pop safety valve, cast steel body and bonnet, enclosed spring, single lifting lever, flanged inlet and outlet, Dwg. No. B–1640–S dated 15 March 1948, approved for sizes 1½", 2", 2½", 3", 3½", and 4" diameters, maximum working pressure 250 p. s. i., maximum temperature 450° F., manufactured by J. E. Lonergan Co., 211 Race Street, Philadelphia 6, Pa.

BOILERS, HEATING

Approval No. 162.001/84/0, Model 8150, Way-Wolff hot water heating boiler, welded steel plate construction, vertical fire tube, oil fired, Dwg. Nos. H–110, revised 29 March 1948, H–110–D, revised 29 March 1948, and H–110–E dated 25 March 1948, approved for sizes 3824, 3830, 5730, and 5736, maximum working pressure 30 p. s. i., manufactured by Way-Wolff Associ-

ates, Inc., 33 Fulton Street, New York 7, N. Y.

(R. S. 4417a, 4418, 4426, 4433, 4434, 49 Stat. 1544, 54 Stat. 346, and sec. 5 (e), 55 Stat. 244, as amended; 46 U. S. C. 367, 391a, 392, 404, 411, 412, 1333, 50 U. S. C. 1275; 46 CFR Part 52)

Dated: April 23, 1948.

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

[F. R. Doc. 48-3878; Filed, Apr. 30, 1948; 9:00 a. m.; 13 F. R. 2386, May 1, 1948]

APPROVAL OF EQUIPMENT AND CORRECTION OF PRIOR DOCUMENT

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

BUOYANT CUSHIONS, STANDARD

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

Approval No. 160.007/67/0, standard kapok buoyant cushion, U. S. C. G. Specification 160.007, manufactured by the Murray and Spavin Co., 422 N. E. Sixth Avenue, Fort Lauderdale, Fla.

Approval No. 160.007/68/0, standard kapok buoyant cushion, U. S. C. G. Specification 160.007, manufactured by Gilbert Auto Trim Company, 6420 East Vernor Highway, Detroit, Mich.

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

BUOYANT CUSHIONS, NON-STANDARD

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

Rectangular buoyant cushions, U. S. C. G. Specification 160.008, manufactured by Merit Manufacturing Corp., 225-27 Powell Street, Brooklyn 12, N. Y., in the following sizes:

Approval No.	Size (inches)	Kapok (ounces)	Dwg. No. (dated Apr. 15, 1948)
160.008/387/0	13 x 18 x 2	22	101
160.008/388/0	13 x 25 x 2	30	102
160.008/389/0	16 x 18 x 2	26	103
160.008/390/0	14½ x 25¾ x 2	35	104
160.008/391/0	14½ x 29¾ x 2	40	105
160.008/392/0	23½ x 16 x 2	36	106

LIFE PRESERVERS, KAPOK, ADULT AND CHILD (JACKET TYPE)

Approval No. 160.002/35/0, Model 2, adult kapok life preserver, U. S. C. G. Specification 160.002, manufactured by Burlington Mills, Inc., Burlington, Wis.

(R. S. 4417a, 4426, 4488, 4492, 35 Stat. 428, 49 Stat. 1544, 54 Stat. 164, 166, 346, and sec. 5 (e), 55 Stat. 244, as amended)

GAS MASKS AND OTHER BREATHING APPARATUS

Approval No. 160.011/10/1, Bullard Ammonia gas mask, Type 42CM-3, Bureau of Mines Approval No. BM-1425, consisting of BM-1425 canister, BM-1423 facepiece, and BM-1423 canister harness, manufactured by E. D. Bullard Co., 275 Eighth Street, San Francisco 3, Calif. (This approval supersedes Approval No. 160.011/10/0 published in the FEDERAL REGISTER dated July 31, 1947.)

Approval No. 160.011/20/1, Bullard Multi-gas Universal gas mask, Type 31-MG, Bureau of Mines Approval No. 1432, consisting of BM-1432 canister, BM-1432 timer, BM-1432 canister harness, and BM-1423 facepiece, manufactured by E. D. Bullard Co., 275 Eighth Street, San Francisco 3, Calif. (This approval supersedes Approval No. 160.011/20/0 published in the FEDERAL REGISTER dated July 31, 1947.)

Approval No. 160.011/21/1, Bullard Smoke-Eater Universal gas mask, Type 31-SE, Bureau of Mines Approval No. 1433, consisting of BM-1433 canister, BM-1432 timer, BM-1432 harness, and BM-1423 facepiece, manufactured by E. D. Bullard Co., 275 Eighth Street, San Francisco 3, Calif. (This approval supersedes Approval No. 160.011/21/0 published in the FEDERAL REGISTER dated July 31, 1947.)

(R. S. 4417a, 4426, 49 Stat. 1544, 54 Stat. 1028, and sec. 5 (e), 55 Stat. 244, as amended)

LIFEBOATS

Approval No. 160.035/187/0, 26.0' x 9.0' x 3.83' steel, oar-propelled lifeboat, 53-person capacity, identified by construction and arrangement Dwg. No. 3201, dated November 13, 1944, and revised March 23, 1948, submitted by the Welin Davit and Boat Division of the American Steel & Copper Industries, Inc., Perth Amboy, N. J.

Approval No. 160.035/208/0, 12.0' x 4.42' x 1.92' steel, oar-propelled lifeboat, 6-person capacity, approved for service on vessels other than ocean and coastwise, identified by construction and arrangement Dwg. No. 12-1, dated November 5, 1947, and revised April 6, 1948, submitted by the Marine Safety Equipment Corp., Point Pleasant, N. J.

Approval No. 160.035/216/0, 14' x 5' x 2.17' steel, oar-propelled lifeboat, 9-person capacity, approved for service on vessels other than ocean and coastwise, identified by construction and arrangement Dwg. No. 14-1, dated January 26, 1948, and revised March 31, 1948, submitted by the Marine Safety Equipment Corp., Point Pleasant, N. J.

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

SOUND POWERED TELEPHONE EQUIPMENT

Approval No. 161.005/36/0, sound powered telephone handset, Type 333, Dwg. No. A-257, Alt. 0, manufactured by United States Instrument Corp., Summit, N. J.

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

STRUCTURAL INSULATION

Approval No. 164.007/21/0, "Fiberglas Marine Insulation PF 625." Glass wool type structural insulation identical to that described in National Bureau of Standards Test Report No. TG3610-1512: FP2612 dated April 12, 1948, bats and blankets approved for use without other insulating material to meet Class A-60 requirements in a 4-inch thickness and 6 pounds per cubic foot density, manufactured by Owens-Corning Fiberglas Corp., Toledo 1, Ohio.

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

CORRECTION OF PRIOR DOCUMENT

The following corrections shall be made in Coast Guard document CGFR 47-38, F. R. document 47-7118, filed July 30, 1947, and published in

the FEDERAL REGISTER dated July 31, 1947, 12 F. R. 5185 et seq.:

1. Under the heading "Buoyant Apparatus," 12 F. R. 5197, Approval No. 160.010/10/0 is corrected to read as follows:

Approval No. 160.010/10/0, Buoyant apparatus, spruce with copper air tanks, 20-person capacity, Dwg. No. 1840 dated June 14, 1940, manufactured by Welin Davit and Boat Division of the American Steel & Copper Industries, Inc., Perth Amboy, N. J.

2. Under the heading "Hatchets, Lifeboat and Life Raft," 12 F. R. 5199, Approval No. 160.013/3/0 is corrected to read as follows:

Approval No. 160.013/3/0, No. 0 size hatchet, No. 425-C Bridgeport Belt Ax, Dwg. No. D-674, dated February 15, 1945, and U. S. C. G. Specification dated August 24, 1944, manufactured by Bridgeport Hardware Manufacturing Co., Bridgeport 5, Conn.

3. Under the heading "Fire Extinguishers, Hand, Portable, Carbon Tetrachloride Type," 12 F. R. 5226, Approval No. 162.004/44/0 is corrected to read as follows:

Approval No. 162.004/44/0, Wilbur, 2-quart carbon tetrachloride hand portable fire extinguisher, assembly Dwg. No. FE 226, revised January 24, 1946, name plate Dwg. No. FE 53, revised September 20, 1945, manufactured by Wil-X-M'F'G Corp., 29 Ryerson Street, Brooklyn 5, N. Y.

4. Under the heading "Deck Covering," 12 F. R. 5235, Approval No. 164.006/22/0 is corrected to read as follows:

Approval No. 164.006/22/0, "Kompodek Type CU Light Weight" magnesite type deck covering in accordance with the manufacturer's letter of June 2, 1945, approved for use without other insulating material as meeting Class A-60 requirements in a 1¾-inch thickness, manufactured by Kompolite Co., Inc., 111-115 Clay Street, Greenpoint, Brooklyn, N. Y.

CHANGE IN MANUFACTURER'S NAME

The manufacturer's name "Welin Davit and Boat Division of the Robinson Foundation" is changed to "Welin Davit and Boat Division of the American Steel & Copper Industries, Inc." in applicable approvals listed under the headings "Buoyant Apparatus," "Winches, Lifeboat," "Davit, Lifeboat," "Mechanical Disengaging Apparatus (for Lifeboats)," "Hand Propelling Gear, Lifeboat," and "Lifeboats."

Dated: May 11, 1948.

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

[F. R. Doc. 48-4407; Filed, May 14, 1948; 8:48 a. m.; 13 F. R. 2662, May 15, 1948]

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 March 31, 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)	(1) Portland, Maine	10,231	
	(2) St. Albans, Vt	2,731	
	(4) Boston	14,075	
	(5) Providence, R. I	3,930	
			30,967
2. (St. Louis)	(12) Pittsburgh	2,578	
	(34) Pembina	70	
	(35) Minneapolis	7,331	
	(40) Indianapolis	4,216	
	(42) Louisville	3,803	
	(43) Memphis (part)	8,355	
	(44) Vacant (Des Moines)	108	
	(45) St. Louis	17,260	
	(46) Omaha (part)	459	
			44,180
3. (New York)	(10) New York	43,949	
	(6) Connecticut	8,149	
	(11) Philadelphia, Pa	20,417	
			72,515
5. (Norfolk)	(13) Baltimore	21,200	
	(14) Norfolk	14,925	
	(15) Wilmington, N. C	7,948	
			44,073
7. (Miami)	(16) Charleston	1,732	
	(17) Savannah	3,076	
	(18) Tampa (part)	21,199	
			26,007
8. (New Orleans)	do	838	
	(19) Mobile	7,140	
	(20) New Orleans	18,176	
	(21) Port Arthur	3,782	
	(22) Galveston	9,658	
	(23) Laredo	1,817	
	(24) El Paso	6	
	(43) Memphis (part)	76	
			41,493
9. (Cleveland)	(7) Ogdensburg	6,519	
	(8) Rochester	8,476	
	(9) Buffalo	8,084	
	(36) Duluth	3,975	
	(37) Milwaukee	12,313	
	(38) Detroit	27,591	
	(39) Chicago	7,742	
	(41) Cleveland	13,901	
			88,601
10. (San Juan)	(49) San Juan	356	
	(51) St. Thomas	65	
			421
11. (Long Beach)	(25) San Diego	1,584	
	(26) Nogales	72	
	(27) Los Angeles	7,825	
			9,481
12. (San Francisco)	(28) San Francisco	19,454	
	(47) Denver		
			19,454
13. (Seattle)	(29) Portland, Oreg	9,172	
	(30) Seattle	31,059	
	(31) Juneau	6,292	
	(33) Great Falls	998	
	(46) Omaha (part)		
			47,521
14. (Honolulu)	(32) Honolulu	3,882	
			3,882
Grand total			428,595

CERTIFICATION OF ARTICLES OF SHIPS' STORES AND SUPPLIES

Articles of ships' stores and supplies certificated from April 25, 1948, to May 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:

Pennsylvania Salt Mfg. Co., 2901 Taylor Way, Tacoma, Wash., Penco Desooter, Certification No. 249, May 10, 1948.

Elraco Engineering Co., 732 West Fifty-eighth Street, Los Angeles,

Calif., *Elraco Soot Remover*, Certification No. 250, May 10, 1948.

Elraco Engineering Co., 732 West Fifty-eighth Street, Los Angeles, Calif., *Elraco Soot and Sludge Remover*, Certification No. 251, May 17, 1948.

Mr. E. Arcieri, 135 Bleecker Street, New York 12, N. Y., *Conalene*, Certification No. 252, May 20, 1948.

Nu Steel Co., 1714 South Ashland Avenue, Chicago 8, Ill., *Alumin-Nu*, Certification No. 253, May 20, 1948.

AFFIDAVITS

The following affidavits were accepted during the period from April 15 to May 15, 1948:

The Yorkshire Copper Works, Ltd., Leeds, England, Nonferrous Piping and Tubing.

The National Radiator Co., 221 Central Avenue, Johnstown, Pa., Cast Iron Heating Boilers.

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 April 15 to May 15, 1948, is as follows:

M. Greenberg's Sons, 765 Folsom Street, San Francisco 7, Calif., Heat No. 161.

H. B. Sherman Mfg. Co., 22 Barney Street, Battle Creek, Mich., Heat Nos. 632 to 636, inclusive.

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	
Alco Valve Co., New York, N. Y.:					
Type 632 liquid solenoid stop valve, 115, 230, and 460 volts alternating current, 150 pounds per square inch maximum, drawing No. F 941, Alt. 0	x	x			4/28/48
Type 633 liquid solenoid stop valve, 115, 230, and 460 volts alternating current, 150 pounds per square inch maximum, drawing No. F 942, Alt. 0	x	x			4/28/48
Type 627 liquid solenoid stop valve, 115, 230, and 460 volts alternating current, 150 pounds per square inch maximum, drawing No. F 943, Alt. 0	x	x			4/28/48
Type 623 liquid solenoid stop valve, 115, 230, and 460 volts alternating current, 150 pounds per square inch maximum, drawing No. F 944, Alt. 0	x	x			4/28/48
Type M6N liquid solenoid stop valve, 115, 230, and 460 volts alternating current, 150 pounds per square inch maximum, drawing No. F 945, Alt. 0	x	x			4/28/48
Type S2N liquid solenoid stop valve, 115, 230, and 460 volts alternating current, 150 pounds per square inch maximum, drawing No. F 946, Alt. 0	x	x			4/28/48
Type M3N liquid solenoid stop valve, 115, 230, and 460 volts alternating current, 150 pounds per square inch maximum, drawing No. F 947, Alt. 0	x	x			4/28/48
Type S1N liquid solenoid stop valve, 115, 230, and 460 volts alternating current, 150 pounds per square inch maximum, drawing No. F 948, Alt. 0	x	x			4/28/48
Empire Switchboard Corp., New York, N. Y.:					
Switch, controller line disconnect and general use, enclosed, 125 and 250 volts, 2 and 3 pole, alternating current or direct current, 30 A, 60 A, 100 A, and 200 A, fused and unfused, drawing No. S-7128, Alt. 1		x			5/20/48
Henschel Corp., Amesbury, Mass.:					
Running light panel, nonautomatic, 5-circuit, combined with telltale and control switches for miscellaneous signal lights, 115 volts direct current, drawing No. 40-051, Sh. 1 and 2, Alt. 0	x	x			5/24/48
Running light panel, nonautomatic, 5-circuit, combined with telltale and control switches for miscellaneous signal lights, 115 volts alternating current, drawing No. 40-052, Sh. 1 and 2, Alt. 0	x	x			5/24/48
Justrite Mfg. Co., Chicago, Ill.:					
Model 44-SN, stock No. 21-44-SN, explosionproof hand lantern			x		5/24/48
Lamplighter Corp. of America, Brooklyn, N. Y.:					
Lantern, fluorescent, portable, battery operated, nonwatertight	x				5/5/48
Morlin Mfg. Co., Philadelphia, Pa.:					
Ceiling light, nonwatertight, 1 60-watt lamp maximum, drawing No. 572-A, Alt. 0	x				5/6/48
The Simes Co., Long Island, N. Y.:					
Berth light, type L-10, nonwatertight, 1 25-watt lamp maximum, drawing No. 43462-R3, change 1	x				5/ 5/48
Deck fixtures, watertight, type 3, keyless, type 4, key, 1 100-watt lamp maximum, drawing No. W-43735/W-43736, change 1	x	x	x		5/ 7/48
Ceiling light, type LC-2A, nonwatertight, 1 200-watt lamp maximum, drawing No. 43911, change 1	x				5/ 7/48
Deck fixture, watertight, with reflector, type 1, 1 100-watt lamp maximum, drawing No. W-43739, change 0	x	x	x		5/ 7/48
Ceiling light, type 5, nonwatertight, 1 300-watt lamp maximum, drawing No. 43844, change 1	x				5/ 7/48
Illuminated sign and desk light, type 17, nonwatertight, 3 40-watt lamps maximum, drawing No. 43812, change 1	x				5/ 7/48
Floodlight, ceiling mounted, nonwatertight, 1 100-watt lamp maximum, drawing No. 43860, change 1	x				5/ 7/48
Spot light, ceiling mounted, nonwatertight, 1 150-watt lamp maximum, drawing No. 43861, change 1	x				5/ 7/48
Standard Switchboard Co., Brooklyn, N. Y.:					
Lighting panel, type TC-2, direct current, 2/2 W, 125 volts, and lighting panel, type TC-3, direct current, 3/2 W, 250/125 volts, drawing No. CG-145, Alt. 1	x	x			5/ 3/48
Power distribution panels, type 2 CB, alternating current/direct current, 2/2 W, 125 volts, and 2/2 W, 250 volts; type 2 CB, alternating current/direct current, 3/2 W, 250/125 volts; type 3 CB, alternating current/direct current 3/3 W, 220 volts and 460 volts; drawing No. CG-141, Alt. 0	x	x			5/ 5/48
Power distribution panels, type 2 CB, alternating current/direct current, 125 volts, and 2/2 W, 250 volts; type 2 CB, alternating current/direct current, 3/2 W, 250/125 volts; type 3 CB, alternating current/direct current, 3/3 W, 220 volts and 460 volts; drawing No. CG-142, Alt. 0	x	x			5/ 5/48
Power distribution panels, type 2 SW-2 W, alternating current/direct current, 2/2 W, 250 volts and 600 volts; type 2 SW-3 W, alternating current/direct current, 3/2 W, 250/125 volts; type 3 SW-3 W, alternating current, 3/3 W, 250 volts and 600 volts, drawing No. CG-144, Alt. 0	x	x			5/ 7/48

Merchant Marine Personnel Statistics

MERCHANT MARINE LICENSES ISSUED DURING APRIL 1948

DECK OFFICERS

REGION	Master										Chief mate										Second mate									
	Ocean		Coastwise		Great Lakes		B. S. & L.		Rivers		Ocean		Coastwise		Great Lakes		B. S. & L.		Rivers		Ocean		Coastwise		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	51	102	1	11	----	----	4	44	2	5	35	8	----	3	----	----	3	7	----	1	37	11	----	----	----	----	----	----	----	----
Gulf coast	11	38	1	4	----	----	----	4	2	8	11	5	----	1	----	----	----	----	----	1	12	7	----	----	----	----	----	----	----	----
Great Lakes and rivers	----	----	----	----	2	28	----	2	2	12	----	----	----	----	----	----	----	----	8	8	----	----	----	----	----	----	----	----	----	----
Pacific coast	13	43	2	2	----	----	4	15	----	----	13	6	----	----	----	1	2	2	----	----	16	11	----	----	----	----	----	----	----	----
Total	75	183	4	17	2	28	8	65	6	25	59	19	----	4	----	1	5	9	8	10	65	29	----	----	----	----	----	----	----	----

REGION	Third mate										Pilots						Master mate				Total		
	Ocean		Coastwise		Great Lakes		B. S. & L.		Rivers		Great Lakes		B. S. & L.		Rivers		Uninspected vessels, high seas				Original	Renewal	Grand total
	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R			
Atlantic coast	13	26	----	----	----	----	----	----	----	----	----	47	74	72	4	4	----	----	----	----	224	341	565
Gulf coast	4	5	----	----	----	----	----	----	----	----	----	1	5	29	21	11	----	----	----	----	67	114	181
Great Lakes and rivers	----	----	----	----	----	----	----	----	----	----	6	55	3	----	17	18	----	----	----	----	38	123	161
Pacific coast	6	9	----	1	----	----	----	----	----	----	----	1	17	40	2	----	3	4	----	----	78	135	213
Total	23	40	----	1	----	----	----	----	----	----	6	104	99	141	44	33	3	4	----	----	407	713	1,120

ENGINEER OFFICERS

REGION	Chief engineer, steam				First assistant engineer, steam				Second assistant engineer, steam				Third assistant engineer, steam				Chief engineer, motor			
	Unlimited		Limited		Unlimited		Limited		Unlimited		Limited		Unlimited		Limited		Unlimited		Limited	
	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R
Atlantic coast	27	116	9	72	31	32	1	5	33	34	----	----	9	40	----	----	3	26	8	34
Gulf coast	6	23	----	17	11	6	1	3	13	7	----	----	3	5	----	----	1	5	4	7
Great Lakes and rivers	----	4	3	42	1	1	----	12	----	2	----	7	----	3	----	----	----	1	5	10
Pacific coast	12	45	1	9	17	7	----	3	8	8	----	----	5	11	----	----	3	20	5	13
Total	45	188	13	140	60	46	2	23	54	51	----	7	17	59	----	----	7	52	22	64

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	Renewal	Grand total
	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R			
Atlantic coast	1	2	6	2	6	5	----	----	4	16	1	----	1	----	----	----	140	384	524
Gulf coast	1	----	2	----	----	----	1	----	----	5	----	----	----	----	----	----	43	78	121
Great Lakes and rivers	----	1	2	1	----	1	----	2	----	----	----	----	----	----	----	----	11	87	98
Pacific coast	1	----	----	1	2	2	----	----	2	9	----	----	2	----	1	----	59	128	187
Total	3	3	10	4	8	8	1	2	6	30	1	----	3	----	1	----	253	677	930

ORIGINAL SEAMEN'S DOCUMENTS ISSUED MONTH OF APRIL 1948

REGION	(1) Staff officer	(2) Continuous discharge books	(3) U. S. Merchant mariner's documents	(4) AB any waters unlimited	(5) AB any waters 12 months	(6) AB Great Lakes 18 months	(7) AB tugs and towboats any waters	(8) AB * bays and sounds	(9) AB seagoing	(10) Lifeboatman	(11) Q. M. E. D.	(12) Radio operators	(13) Certificate of service	(14) Tankerman
Atlantic coast	40	1	1,089	80	184	6	2	0	0	417	228	23	750	15
Gulf coast	11	18	368	33	60	14	0	0	0	102	126	8	271	35
Pacific coast	36	3	504	42	96	0	0	0	0	593	137	11	367	13
Great Lakes and rivers	5	4	1,307	36	157	83	0	0	0	193	113	2	1,156	24
Total	92	26	3,188	191	497	103	2	0	0	1,305	604	44	2,544	87

* 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 APRIL 1 TO APRIL 30 1948

Authority for These Waivers Contained in Navigation and Vessel Inspection Circular No. 8–47, Dated August 21, 1947

REGION	Number of vessels	Deck officers substituted for higher ratings	Engineer officers substituted for higher ratings	Able seamen substituted for deck officers	Ordinary seamen substituted for able seamen	Qualified members of engine department substituted for engineer officers	Wipers or coal passers substituted for qualified members of engine department	Wipers, coal passers or cadets substituted for engineer officers	Ordinary seamen or cadets substituted for deck officers	Total
Atlantic coast	196	2	8		267		68			345
Gulf coast	100	2	4		126	1	28	2		163
Pacific coast	48		2		48		15			65
Great Lakes	18		1		17		9			27
Total	362	4	15		458	1	120	2		600

CREW SHORTAGE REPORTS FROM APRIL 1 TO APRIL 30, 1948

These Reports Submitted in Accordance With Navigation and Vessel Inspection Circular No. 8–47, Dated August 21, 1947

REGION	Number of vessels	Ratings in which shortages occurred												Total
		Chief mate	Second mate	Third mate	Radio	Able seamen	Ordinary seamen	Chief engineer	First engineer	Second engineer	Third engineer	Qualified member engine department	Wiper or coal passer	
Atlantic coast	11	1			1	3	5					5		15
Gulf coast	3									1	1		1	3
Pacific coast	7					7					1	4		12
Great Lakes	22	1	1	6		6				2	6	8	2	32
Total	43	2	1	6	1	16	5			3	8	17	3	62

U. S. GOVERNMENT PRINTING OFFICE: 1948