PROCEEDINGS OF THE MERCHANT MARINE COUNCIL UNITED STATES COAST GUARD

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Proceedings of the

MERCHANT MARINE COUNCIL

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The

Merchant Marine Council of the United States Coast Guard

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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—C3 Cargo Ship Frederick Lykes, Courtesy Maritime Commission.

Line Sketch Page 85, Courtesy Maritime Commission.

COUNCIL ACTIVITIES

The Commandant approved the recommendations of the Merchant Marine Council and the new regulations for liquefied petroleum gases on vessels other than passenger vessels for cooking and heating purposes were published in the Federal Register on April 24, 1937. The Commandant also approved the changes in the regulations regarding transportation of liquid chlorine in bulk. These regulatons will be in effect on and after July 24, 1947.

The Merchant Marine Council conducted a hearing on March 28, 1947, regarding the use of liquefied petroleum gases for cooking and heating. The regulations are based on the comments and suggestions received at this public hearing and the public hearing held October 22, 1946. The purpose for the regulations on liquefied petroleum gases for cooking and heating purposes on vessels other than passenger vessels is to provide minimum safety and fire prevention requirements. Because of the rapid increase in the use of liquefied petroleum gases the recommendations received at the October 22, 1946, meeting were considered and action by the Council postponed until its first semiannual meeting held in 1947. The regulations in 46 CFR 32.9-11, 61.25, 77.24, 95.24, and 114.25 are reprinted in the appendix of this issue.

The amendments to the dangerous cargo regulations in 46 CFR 146.24–15 regarding the transportation of liquid chlorine in bulk are to provide for customary operational practices followed by carriers. The revised regulation will permit the relief valve or valves to be dismantled, overhauled, and reset at such times other than the biennial inspection as the carrier may desire with the proviso that such dismantling, overhauling, and resetting are made with the cognizance of and under such conditions as are agreed upon with the Officer in Charge, Marine Inspection. In addition when a carrier finds it necessary to replace a relief valve, he shall report such 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 requirements for sea valves of sufficient capacity when opened to sink a barge carrying liquid chlorine in bulk were deleted. It is felt that requiring such action in emergency may be more hazardous than attempting other methods to control any leaks which may develop.

The regulations for licensing and certificating merchant seamen which were published in the March 7, 1947, Federal Register and referred to briefly in the April 1947 PROCEEDINGS will become effective on and after May 1, 1947. All Coast Guard actions on applications, examinations, tests, or other matters pending before the Coast Guard on the effective date of the new regulations in Subchapter B—Merchant Marine Officers and Seamen will be in accordance with the regulations under which the actions were initiated. All persons who were qualified under the regulations which were canceled but who were unable to submit applications for licenses for certificates before the effective date of the regulations in subchapter B may submit such applications until June 30, 1947, and all actions by the Coast Guard with respect to such applications will be in accordance with the regulations in effect before subchapter B became The canceled regulations effective. were set forth in 46 CFR, Parts 25, 36, 62, 78, 96, 115, 138, and 155. These regulations were published in a pamphlet entitled "Rules and Regulations for Licensing and Certificating of Merchant Marine Personnel,

The Oakey L. Alexander was carrying a load of coal from Norfolk, Va., to Portland, Maine. A severe storm lashed the Atlantic coast. The heavy seas caused distress to shipping and was too much for the 31-year-old ship. Two huge waves boarded the ship from the starboard quarter. dated February 1945. A revised edition of the pamphlet entitled, "Rules and Regulations for Licensing and Certificating of Merchant Marine personnel" is being printed and will be available for distribution within approximately 4 months.

The general waivers which were issued under the authority of section 501 of the Second War Powers Act were continued in effect by the Commandant in an order dated April 1, 1947, under the authority of Public Law No. 27, E'ghtieth Congress. All the general waivers are being studied and will be modified to comply with

the new statutory requirements set forth in Public Law No. 27, Attention is called to the fact that Public Law No. 27 restricts the authority of the Commandant to the extent that after June 1, 1947, the Commandant cannot waive compliance with those sections of the navigation and vessel inspection laws requiring the employment of American citizens as officers and crew members and limiting the employment of aliens except insofar as such employment shall be in the steward's department of vessels authorized to carry in excess of 12 passen-TOPS

Structural Failure of a Riveted Ship

washed overboard the port lifeboat, damaged the starboard lifeboat and the boat deck, besides bashing in the oak doors in the deck house. The load of the seas was too heavy. The bow broke off. Her captain grounded her on the rocky coast near Portland, Maine. When the seas had calmed the ship was boarded to investigate the structural failure and compare it with structural failures of welded ships.

During the last 4 years, the problem of structural failures in welded merchant ships was the subject of an intensive investigation. Studies



Damaged freighter Oakey L. Alexander grounded at Cape Elizabeth, Maine.

were made of all phases of ship construction procedures and a thorough research program was carried out in an attempt to discover the basic cause of hull fractures.

Some of the more common questions that have been asked concern the difference in the relative performance of ships constructed by means There are of riveting or welding." some facts which throw light on this difference. The following data form the basis for a partial answer to the question: "Were similar difficulties experienced on riveted ships?" Structural failures are not unknown on riveted shins. Such famous shins as the Leviathan and Majestic cracked their main decks. In other cases, such as the Oklahoma and Mielero. the ships broke in two.

These cases are well known in marine circles but the numerous lesser fractures have gone unheralded and without record. Attempts to compile statistics based on such minor failures are thwarted by the lack of evidence. On the other hand, for the last 4 years, the structural-failure data on welded ships were kept in a single central record where they were tabulated and analyzed.

During the last war, great numbers of nearly identical welded ships were constructed. Upon the basis of the service records of these similar structures, it was possible to prepare statistical studies. No similar volume of production of riveted ships ever took place. Even the ship-building program of Hog Island ships during World War I did not approach the production volume of Liberty ships and T-2 tankers during World War The large volume of production of II. welded ships and the broad survey of structural failures made during the



Starboard side looking forward at edge of curled-up deck plating. The cleavage fracture turns to shear in the vicinity of riveted seam and then back to cleavage beyond the seam.

last 4 years permitted a complete statistical analysis which was presented in the final report of the board to investigate the design and methods of construction of welded steel merchant vessels. Since similar records are not available with respect to riveted ships, the exact answer to the question of their relative performance will never be obtained.

Even before the Oakey L. Alexander broke in two, many people asked the question: "Were the structural failures of welded ships similar to those which occurred on riveted ships?" This question could not be answered for a long time because few facts were available for detail study or ready comparison.

The many investigations made on the structural failures of welded ships, broadened the knowledge of fracture characteristics of steel plates and of typically sensitive design features.

When the Oakey L. Alexander was boarded by structural experts, they applied the knowledge gained in 4 years of investigation and analysis of welded-ship structural failures. It was possible to survey this ship and compare the findings with the results of investigations of other ship failures. All the phases of the hull structural failure were carefully photographed, sketched, and measured, Various samples were removed and forwarded to the National Bureau of Standards for analysis. The final results of this survey will not be available for many months. The general observations made at the survey are very interesting and will in part answer the question quoted above.

The fractures were found to have started at the square corners of the hatches. In addition to the main fractures which broke the ship in two, two minor fractures were found at other hatch corners. These fractures, however, did not continue to spread.

The fracture of the plates was classified as "cleavage." The term cleavage is applied to a crystalline-appearing fracture which is square to the plate surface, exhibits little reduction in thickness or stretching of the ma-



Coaming of No. 4 hatch, starboard side looking outboard, showing the main deck curled up under the force of damage.

terial, and which usually has a discernible herringbone pattern pointing toward the starting point of the fracture.

In the way of the starboard deck seam and at certain other locations. It was found that the mode of separation changed from "cleavage" to "shear." A "shear" fracture is silky in appearance, occurs at 45" to the plate surface and is usually accompanied by considerable stretching of the plate. Such fractures were rarely found in the welded ship failures except where a fracture terminated. In this ship, it would appear that the fractures had run from the hatch corners to the riveted seams where a slight pause took place and the fracture changed to "shear." The pause was only temporary, however, as the load on the riveted seams was more than the plating could stand and ultimate failure of the entire hull resulted.

All characteristics of the welded steel ship failures were present. Certainly, it can be said that the structural failures of the two types of ship are essentially the same. The presence of the riveted seams undoubtedly arrested the spread of cracks in numerous cases of riveted ship failures. It is likely that this resistance to the continuation of cracks is the one real difference between the two types of structures. Cracking of one or two plates is not spectacular and would not be expected to attract broad interest. Certainly, the modes of fracture are not fundamentally different and it is likely that the more Illusive features attributed to the riveted structure are due to nothing more than lack of detailed facts regarding structural failures in the riveted hulls.

INTERNATIONAL MEETING OF RADIO AIDS TO NAVIGATION

An International Meeting on Marine Radio Aids to Navigation was held in New York and New London, Conn., beginning April 28, 1947, and ended May 9, 1947. The meeting was attended by representatives of the Coast Guard. Delegates were invited from 57 maritime nations of the world. Registration, opening ceremonies and presentation of papers were held in the Roosevelt Hotel in New York and lasted the entire first week.

During the second week of the meeting 3 days were consumed demonstrating shipboard equipment and 2 days of final discussion and closing ceremonies. New London was selected for shipboard demonstrations because of good permanent radio aids to navigation and the installation of special radar beacon and radar reflector buoy equipment. Headquarters for the demonstrations and closing discussions was at the Coast Guard Academy.

The basic purpose of the meeting was the presentation of broad and objective views of the world radio aids to marine navigation problems and suggested solutions to the problems. American manufacturers exhibited Loran, radar, radio beacon timers, VHF radio telephone, fathometers and other marine navigational equipment which was exhibited in New York. In New London, the Coast Guard cutter Campbell, the United States Maritime Service training vessel American Sailor and the Coast and Geodetic Survey vessel Lydonia proceeded to and from sea with demonstrative equipment and guests.

The chairman of the United States delegation was Mr. John S. Cross, United States State Department. The presiding chairman was Dr. William L. Everitt, University of Illinois. Capt. Harold C. Moore, U. S. C. G., was the Coast Guard delegate to the United States delegation, and the program coordinator was Lt. Comdr. Loren E. Brunner, U. S. C. G. In addition to leading scientists and engineers who were selected as key lecturers, a number of Coast Guard officers from the fields of communications, aids to navigation, and electronics presented some of the practical aspects of the installation and operation of equipment and systems.

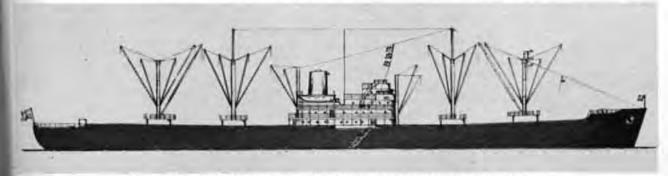
THE REDESIGNED STANDARD C3 CARGO SHIP

The redesign of the standard C3 cargo ship for increased speed, carrying capacity and economy of operation was announced by the United States Maritime Commission as a step in its plans to improve the competitive position of the American Merchant Marine in postwar international trade.

The new design, designated C3-S-DB3, will have more horsepower, a speed of about 18³/₄ knots compared to the 16¹/₂ knots of the present C3, and will carry 12 passengers. It will also feature rearrangement of the hull structure and cargo gear for more economical handling and stowage of cargo. Six holds will be provided instead of five as in the present design, and the midship holds will have twin hatches side by side for quicker and easier placement of cargo.

Basically the new design is the same as the present C3 as to cargo capacity and stowage. The standard "C" ships were all designed as shelter deck type and the new C3-S-DB3 conforms to this practice, meeting the high standards for subdivision that has featured Maritime Commission vessels. Its scantlings and structural design will, however, permit utilization as a full scantling type vessel, thereby obtaining minimum freeboard and maximum draft under load line requirements, and a consequent increase of cargo deadweight of about 1,900 tons.

Provision of the sixth hold permits equalization of cargo cubic per unit of cargo handling gear. With the additional length of the vessel it has been possible to maintain an adequate length of holds. The twin hatches of the midship holds will reduce cargo handling time by permitting more direct placement of loads in proper stowage space. This is accomplished partly by an increase of 50 percent of area of holds and 'tween decks directly open for loading, and by great reduction of distance over which cargo must be dragged for stowage at the sides.



Line sketch of the new C3-S-DB-3 design Maritime Commission ship.

The principal feature of the newly designed gear is the use of a double topping lift arrangement and topping lift winches. This arrangement requires only a single vang for each boom, which decreases the time required for set up and the labor incident to rigging for cargo handling.

The line sketch below will give an idea of the over-all appearance of the new C3-S-DB3. Specifications of the modified design are as follows:

1

1

1

Length between perpendic-

ulars	489 feet.
Beam	70 feet.
Depth, molded	45 feet.
Normal horsepower	12,500.
Bale capacity730.000 c	ubic feet.

HEARING UNITS

Coast Guard Merchant Marine Hearing Units and Merchant Marine Details investigated a total of 1,055 cases during the month of February 1947. From this number hearings resulted involving 39 officers and 148 unlicensed men. In the case of officers 1 license was ordered revoked. 12 were suspended, 18 were suspended on probation, 3 were voluntarily surrendered, 2 were closed with admonition and 5 cases were dismissed. Of the unlicensed personnel, 5 certificates were revoked, 71 were suspended, 73 were suspended on probation, 27 were voluntarily surrendered, 1 was closed with admonition and 6 were dismissed after hearing.

HELICOPTER SUBSTITUTES FOR LINE-THROWING GUN

During recent towing operations by a Coast Guard cutter, the vessel in tow went adrift due to the hawser parting. Both vessels were a short distance off shore at the time and heavy weather presented difficulties in putting another hawser on board. The cutter advised the District Commander of the situation and a helicopter with made-up lines for running between the cutter and distressed vessel was dispatched, and in addition a lifeboat station in the vicinity of the distressed vessel was notified. and not equipped for lifesaving duty. arrived a short time before the crew from the lifeboat station with their breeches buoy and line-throwing equipment. Upon arrival the steamer was grounded about 125 yards from the beach. Although the breeches buoy apparatus would have been adequate to handle the job, the helicopter, being on the scene, ran a line from the grounded vessel to shore, in about 5 minutes. Had the helicopter been provided with an elevator or other suitable means for picking up persons from the deck, the entire crew could have been removed from the vessel

NUMBERING OF 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, 1947. Generally speaking, undocumented vessels are those of less than 5 net tons engaged in trade and those of less than 16 gross tons used exc. usively as pleasure vessels. 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. (1) Portland, Maine. (2) St. Albans. (5) Providence. 	13, 180 9, 775 2, 662 3, 644	29, 26
2 (St. Louis)	(45) St. Louis. (12) Pittsburgh. (34) Pembina (35) Minneapolis (46) Indhanapolis (47) Louisville (48) Memphis (part) (44) Vacant (Des Moines) (46) Omaha (part)	$19,766\\4,072\\121\\8,642\\5,065\\3,859\\8,926\\107\\761$	51, 32
3 (New York)	(10) New York (6) Bridgeport	41,292 7,679	
4 (Philadelphia)	(11) Philadelphia	19,467	48,971
δ (Norfolk).	(14) Norfolk (13) Baltimore (15) Wilmington, N. C	14, 155 20, 198 7, 608	41, 96
7 (Miami)	(16) Charleston (17) Savanmah (18) Tampa (part)	$1,649 \\ 3,844 \\ 18,922$	
s (New Orleans)	(20) New Orleans (18) Tampa (pari). (19) Mobile (21) Port Arthur (22) Galveston. (23) Laredo. (24) El Pasa. (24) Memphis (part).	17, 146 856 6, 595 3, 686 9, 130 1, 741 6 76	24, 41
9 (Cleveland)	(41) Cleveland. (7) Ogdensburg (8) Rochester (9) Buffalo	14, 163 6, 539 8, 386 8, 409 3, 987 12, 534	39, 29
10 (San Juan)	(49) San Juan	289 69	88, 84
II (Long Beach)	(27) Los Angeles	7,079 1,455 63	35
12 (San Francisco)	(28) San Francisco. (47) Denver	18,753	8, 59
13 (Seattle)	(30) Seattle. (20) Portland, Oreg. (33) Great Falls. (46) Omaha (part).	30, 382 9, 416 966 2	18,75
14 (Honolulu)	(32) Honolulu	3,411	40,76
17 (Ketchikan)	(31) Juneau	6,054	3,41
Grand total	****		421, 41

and transported to the mainland in about the same time that was necessary for the breeches buoy and other gear to arrive at the scene and be set up; or had all persons on board been disabled, medical assistance as well as assistance for rigging the breeches buoy could have been landed on the stranded vessel without too much difficulty. This is believed to be the first such incident of its kind, and has again proven the value of the helicopter in lifesaving work.

ALL-PURPOSE HIGH-VELOCITY FOG NOZZLE

In the March issue of PROCEEDINGS OF THE MERCHANT MARINE COUNCIL there appeared an article describing the installation and use of the allpurpose high-velocity fog nozzle in the control and extinguishment of fires on board ships.

Since that article was prepared there has come to the attention of the Council a report of a cargo fire on board an American ship while making port at Belem (Para) Brazil. A summary of the report covering this fire is as follows:

"Smoke detector gave alarm at 8:30 p. m. while proceeding from anchorage to pier. Vent blowers were shut down, vent dampers closed, hatch tarpaulins replaced, battened down and wetted. Contents of eight cylinders of CO₂ were released into hold. Vessel anchored until seriousness of fire was determined. Cooling of deck and absence of fumes prompted decision to proceed to pier to expedite discharge of cargo from other hatches. Ship tied up at pier, deck, shell of ship, and boundary bulkheads of hold kept under observation for increase of temperature. Four hours after first CO, was released into hold, contents of four additional CO: cylinders were released into hold. Four hours later the contents of two additional CO_i cylinders were released into hold. At 8:00 a.m. the following day preparations were made to open the hatch and investigate the status of the fire as lack of heat and smoke made it appear the fire was extinguished. One section of hatch pontoon cover removed. Evidence of dense sulfur gas. Chlef officer, wearing fire-protective clothing and oxygen-breathing apparatus, attempted to enter hold. Increasing volume of flames, smoke and gas prevented entry into hold. Hatch again battened down. At 10:30 a.m. the contents of six cylinders of CO: were released into the hold. An hour later the contents of two additional bottles were released into hold. Paint was peeling from bulkheads, decks and the skin of the ship; although there was no evidence of fire spreading to adjacent holds. Foamite fire equipment was brought to ship's side. Four fire trucks of city fire department arrived on pier. Hatch was reopened. Dense smoke and gas poured forth, apparently emanating from port side of hold. Attempted to extinguish fire by use of portable extinguishers and foamite; the latter was used to prevent excessive damage to cargo. Effort futile and abandoned. Ship given 7° list to prevent water running into lower hold. Two hose fitted with all-purpose fog nozzles brought into use. Fire extinguished in short order."

The effectiveness of the cooling spray of the fog nozzles was fully demonstrated in combatting a stubborn chemical fire. The shutting down of ventilator fans, the closing of vent duct dampers, the battening down of cargo hatches, the initial use of CO₂ gas to check and prevent the spread of fire, and the final use of the fog equipment were direct factors in the extinguishment of a difficult fire with little damage to surrounding cargo or to the vessel. Fourteen drums of sodium hydrosulphite were involved in the fire. Many firemen and members of the ship's crew were affected by the gases evolved in the fire. Some "passed out" but were given immediate medical attention by a doctor previously summoned to the ship. There were no fatalities.

The vessel involved was the M. V. Mormacdale in command of Capt.

C. B. Hamblett, with Courtney N. Swenson as chief officer. This incident is an outstanding example of the control and extinguishment of a cargo fire. Each move was made in proper sequence. The report contains no evidence of excitement, confusion, or fear. It is a pleasure to note the conduct of the officers and crew of this vessel, and to recommend to officers and crew members of other ships a study of this report. Every fire will have different conditions associated with its behavior but basic controls are demonstrated in the summary of the control and extinguishment of this fire on the Mormacdale.

Fog nozzles, strainers, and applicators are not required equipment on board ships. This equipment was developed during the war and used with considerable success on Navy and Coast Guard combatant and cargo ships. Some shore fire departments are experimenting with this type equipment for fighting certain types of fires encountered on land. The Council wishes to emphasize that the fog nozzle is not a cure-all for all fire problems, but it has been demonstrated to be so effective in extinguishing fires on board ships that every officer should study its installation, become familiar with its use, and instruct crewmen in its advantages.

Captain Hamblett, Chief Officer Swenson, the other officers and the crew of the *M. V. Mormacdale* are commended for the efficient and intelligent manner in which they conducted themselves in this emergency.

LESSONS FROM CASUALTIES

EXHAUST GASES TAKE THEIR TOLL

As all too frequently happens, failure to maintain machinery in a safe operating condition and failure to provide proper ventilation in the closed cabins of small motorboats results in the death of the people on board.

In the latest incident to come to the attention of the Coast Guard, a 36-foot motorboat was cruising southward through the Inland Waterway. On board at the time were the owner and two friends, one of whom was operating the boat. While en route a stop was made to take on fuel and make minor repairs to the cooling water connection. The boat then proceeded on its voyage and the next morning was observed by fishermen with its bow against the bank of the waterway and its engine running.

The fishermen boarded the motorboat and found the forward and amidship cabins filled with thick exhaust fumes and all the windows and doors closed. In the amidship cabin the three men were found dead from asphyxiation.

An examination of the vessel and its engine was made and it was found that the exhaust manifold was water cooled, with the cooling water discharging through the exhaust line. At a point between the manifold and the cooling water connection with the exhaust pipe a hole approximately three-eighths of an inch in diameter

THE THREE MAIN CAUSES OF CCIDENTS:

I DIDN'T SEE. I DIDN'T THINK. I DIDN'T KNOW. was found rusted through the casting. Upon starting the motor it was discovered that the exhaust through this hole would fill the engine room with lethal fumes.

Between the engine room and the cabin was a small access door which was found open when the vessel was first boarded, and it is believed that with the aid of the port and starboard engine room ventilators a circulation of fumes from the engine room to the cabin was created. There appeared to be no provision for exhausting fumes from the engine by means of blowers or otherwise.

This instance is cited to again call to the attention of operators of small motorboats the fact that too much care cannot be exercised in maintaining the engine and propelling equipment in the best possible condition, and that positive means for providing fresh air in the inclosed living spaces of motorboats should always be present.

READ RECOMMENDED PRAC-TICES FOR THE CARE AND SAFE OPERATION OF MOTORBOATS, published in the back of MOTOR-BOAT REGULATIONS.

COMPRESSED HYDROGEN GAS IS DANGEROUS

A merchant vessel was recently being stripped of its equipment by employees of a shore contractor. Among the items to be removed were several hydrogen cylinders. During the operation one man was killed and another seriously injured because they were not aware of the dangers involved when handling compressed hydrogen gas under certain conditions. Publicity is given to this casualty, while it did not involve seamen, directly, yet it may be possible to avert similar accidents.

Included in the equipment that the two men were engaged in removing from the vessel were several hydrogen cylinders (so-called bottles). The hydrogen gas in these cylinders was used during the war to inflate barrage balloons. Apparently the men were not acquainted with all the hazards of hydrogen gas and insofar as the report throws any light on the subject, no one instructed them with reference to these hazards.

The report states that inasmuch as the caps protecting the valves of the cylinders were found to have rusted to such an extent that they could not be unscrewed, the men were bleeding the gas from the cylinders by drilling a small hole in each cylinder and this had been successfully accomplished to one or two bottles prior to the accident. The size of the drilled hole was five thirty-seconds inch. An electric hand drill plugged into the socket of a nearby cluster light using current from the ship's supply was the means used to drill the hole. Care was taken to pour water on the drill to prevent it from overheating. On the particular cylinder involved in the accident the drill had apparently just pierced the shell of the cylinder, the gas shot out of the drilled hole with considerable force, instantly ignited, and the man operating the drill was hit by the jet of burning gas, his clothing was ignited and he was enveloped in flames. Two officers of the ship came to his assistance, extinguished his blazing clothing by smothering the fire with blankets. Every possible first aid was given by the ship's officers. The second man was also burned by the gas but not so severely. The two injured men were removed to the hospital, where the man operating the drill subsequently died.

Hydrogen, if on ships, will be stored

in cylinders, and is classified as an inflammable, compressed gas. In peacetimes it is used on some ships to inflate weather observation balloons. It constantly moves in cargo and when so moving is required to carry the red compressed gas label.

When released into the atmosphere hydrogen forms an inflammable and violently explosive mixture with a range from about 4 to 75 percent in air. This range is one of the widest of all the inflammable gases. Most men respect the inflammable and explosive nature of the vapors of gasoline. probably because gasoline is a common inflammable liquid with which almost everyone has had considerable experience, yet the inflammable and explosive range of the vapors of gasoline is limited to between 1.4 to 6 percent in air, a very narrow range when compared with hydrogen gas. When compressed in the cylinder, hydrogen will be under a pressure of approximately 1,800 pounds per square inch at normal temperatures. If exposed to the heat of the sun's rays or to artificial sources of heat, the pressure within the cylinder will increase to about 2,300 pounds per square inch at 130° F. Exposure to higher temperatures would result in higher pressures and cause the safety plug on the cylinder to blow; thus releasing the contents into the atmosphere and create a very dangerous vapor which is readily ignitible and probably explosive. This vapor can be ignited by open flame, static, or metallic spark.

The report states the electric drill was provided with a ground wire but in this instance it was not connected to a ground, and in fact lacked the usual clip for this purpose. It notes the precaution taken to pour water on the drill to keep it cool, the no smoking rule was strictly enforced, and a number of no smoking signs were posted in the immediate vicinity. It also emphasized that the cylinder did not explode and the subsequent examination showed no cracks or breaks in the cylinder and that the point of the drill had not broken entirely through the wall of the cylinder. These are all very important points bearing on safety when conducting operations in atmospheres possible of ignition. However, they were of no avail in the existing circumstances for the following reasons:

 The procedure of exhausting the gas from the cylinders by men inexperienced and unacquainted with the hazards of this operation, and the carrying on of such an operation on

THE BIG DIFFERENCE BETWEEN SAFETY AND DISASTER IS FORE-THOUGHT. board a ship was a violation of common sense and never should have been undertaken.

2. While the report does cite the number of precautions that were taken to prevent ignition and further theorizes that it is possible that sparking brushes on the commutator of the drill could have ignited the gas at the time the tip of the drill actually pierced the wall of the cylinder, which possibility is agreed with, it is nevertheless a known phenomenon that hydrogen gas escaping under pressure through a small opening is capable of self-ignition so, regardless of any precautions taken, the gas can by its own characteristics ignite under these conditions.

As previously stated, the report emphasized the cylinder did not explode. No credit is due any individual for this fact. The only observation that might be made in connection with the nonexplosion of the cylinder is that "Lady Luck" was riding on the shoulders of everyone within range of that cylinder. Under similar circumstances cylinders have been known to explode, and with results surpassing any shrapnel barrage that was ever laid down in war.

LESSONS TO BE LEARNED

HANDLING COMPRESSED GASES

 Never open the valve of any compressed gas cylinder on a ship, unless the cylinder is hooked up to the equipment or system it is intended for.

2. Check hose piping and valves of systems using compressed gas to be certain they are tight.

3. Under no circumstances should cylinders of compressed gas be used in any manner on board a ship except that for which they were designed and built. This applies to whether the cylinders are filled with an inflammable or a noninflammable gas.

4. If the valve mechanism of a cylinder seizes or otherwise becomes inoperative, do not attempt to force the valve open. If the valve is stuck open and cannot be closed and the contents of a cylinder should escape into a compartment or into the atmosphere on deck, immediately extinguish all sources of ignition, vent the compartment, or if on deck, wait sufficient time for the gases to diffuse before resuming operations. Hydrogen is very much lighter than air; therefore check topside areas for presence of gas.

 Do not apply oil to any valve mechanism, couplings or piping of a system using a compressed gas.

6. Do not expose cylinders to abnormal heat either from the sun's rays or sources of artificial heat. Men have been known to apply a blowtorch to a nearly empty cylinder of compressed gas to expand the residue in the cylinder and thus secure the maximum amount of gas on the theory that they paid for that gas; therefore it belongs to them. This is a very risky practice and instead of saving money by exhausting the last ounce of gas the person who insists on doing this may pay considerable more money in hospital bills and lost wages.

7. Under circumstances similar to

those recited herein it is recommended the cylinder be turned over to a compressed gas filling plant, or better still secure permission to dump at sea. In the latter case such disposition should be made in deep water; preferably beyond the continental shelf.

 Never stow hydrogen cylinders below the weather deck. Proper stowage is in vented cabinets or "on



Amendments to Regulations

Waivers

TITLE 46-SHIPPING

Chapter I—Coast Guard: Inspection and Navigation

Appendix A—Waivers of Navigation and Vessel Inspection Laws and Regulations

CONTINUATION IN EFFECT OF CERTAIN ORDERS WAIVING COMPLIANCE WITH NAVIGATION AND VESSEL INSPECTION LAWS AND REGULATIONS

Pursuant to the authority vested in the Commandant, U. S. Coast Guard, by the act of March 31, 1947 (Pub. Law No. 27, 80th Cong.), I hereby find that the continuation of all currently effective waiver orders, including regulations and instructions relating thereto, which were issued pursuant to Title V, Second War Powers Act (50 U. S. C. 635), as amended and extended, affecting laws and regulations relating to navigation and vessel inspection administered by the Coast Guard, is presently necessary in the orderly reconversion of the merchant marine from a wartime to a normal peacetime basis. Accordingly, all such orders, regulations, and instructions are hereby ratified, affirmed and continued in force until modified, superseded or rescinded. (Pub. Law 27, 80th Cong.)

Dated: April 1, 1947.

J. F. FARLEY, Admiral, U. S. C. G., Commandant,

Chapter I—Coast Guard: Inspection and Navigation

Subchapter B—Merchant Morine Officers and Seamen

By virtue of authority vested in me by section 101 of the Reorganization Plan No. 3 of 1946, I declare that the amendments to the regulations contained in document numbered CGFR-47-10 (F. R. Doc. 47-2103), and published in the Federal Register, dated March 7, 1947, 12 F. R. 1549, shall be in effect on and after May 1, 1947. All Coast Guard actions on applications, examinations, tests, or other matters pending before the Coast Guard on the effective date of the new regulations in Subchapter B-Merchant Marine Officers and Seamen will be in accordance with the regulations under which the actions were initiated. All persons who were qualified under the regulations which were canceled but who were unable to submit applications for licenses or certificates before the effective date of the regulations in Subchapter B-Merchant Marine Officers and Seamen may submit such applications until June 30, 1947, and all actions by the Coast Guard with respect to such applications will be in accordance with the regulations in effect before Subchapter B became effective.

As the licenses issued to officers and certificates issued to seamen do not generally distinguish between service on merchant tank vessels and on other merchant vessels, and in order that the reconversion of the merchant marine from a wartime to a peacetime basis can be accomplished without confusion, I find that these are good causes for declaring that the rules and regulations promulgated under the authority of R. S. 4417a (46 U. S. C. 391a) shall become effective before 90 days have elapsed after their promulgation and publication in the Federal Register, March 7, 1947 (12 F. R. 1549). (12 F. R. 2632, April 24, 1947.)

PART 10—LICENSING OF DECK AND EN-GINEER OFFICERS AND MOTORBOAT OPERATORS AND REGISTRATION OF STAFF OFFICERS

The regulations in this part as published in the Federal Register, March 7, 1947, 12 F. R. 1550, shall be in effect on and after May 1, 1947. (12 F. R. 2632, April 24, 1947.)

PART 12-CERTIFICATION OF SEAMEN

The regulations in this part as published in the Federal Register, March deck" in the shelter of bridge structure, open forecastle or open poop deck. Do not stow in a location where the rays of the sun will shine on the cylinder.

9. Do not subject a cylinder to shock.

 Never use any compressed gas cylinder as a roller to move heavy weights.

7, 1947, 12 F. R. 1566, shall be in effect on and after May 1, 1947. (12 F. R. 2632, April 24, 1947.)

Subchapter C—Motorboats, and Certain Vessels Propelled by Machinery Other Than by Steam More Than 65 Feet in Length

PART 24-GENERAL PROVISIONS

By virtue of the authority vested in me, the following amendments to the regulations are prescribed and shall become effective upon the date of publication of this document in the Federal Register.

It is hereby found that compliance with the notice, public rule making procedure, and effective date requirements of the Administrative Procedure Act (Pub. Law 404, 79th Cong.; 60 Stat. 238) is unnecessary.

These amendments make editorial changes in the regulations in accordance with Reorganization Plan No. 3 of 1946, and state the purpose for motorboat regulations.

1. Section 24.1 is amended to read as follows:

§ 24.1 Basis and purpose of regulations. By virtue of the authority vested in the Commandant of the Coast Guard under section 101 of the Reorganization Plan No. 3 of 1946 (11 F. R. 7875) and the act of April 25, 1940 (54 Stat. 163-167; 46 U. S. C. 526-526t), the regulations in Parts 24 to 28, inclusive, are prescribed to provide minimum safety requirements for both motorboats and certain motor vessels while operating on the navigable waters of the United States in accordance with the intent of the statute and to obtain its correct and uniform administration.

2. Section 24.2 Application is amended in paragraph (e) by changing the phrase "a board of local inspectors" to "the Coast Guard."

(R. S. 4405, as amended, 54 Stat. 163-167; 46 U. S. C. 375, 526-526t; sec. 101, Reorganization Plan No. 3 of 1946; 11 F. R. 7875; 12 F. R. 2435, April 15, 1947.)

- Subchapter C—Motorboats, and Certain Vessels Propelled by Machinery Other Than by Steam More Than 65 Feet in Length
- PART 25-REQUIREMENTS FOR ALL MO-TORBOATS EXCEPT THOSE OF OVER 15 GROSS TONS CARRYING PASSENGERS FOR HIRE

The cancellation of regulations in this part as published in the Federal Register, March 7, 1947, 12 F. R. 1572, shall be effective on and after May 1, 1947, subject to the conditions set forth in this document.

PART 27-REQUIREMENTS FOR MOTOR-BOATS AND MOTOR VESSELS OF MORE THAN 15 GROSS TONS CARRYING PAS-SENGERS FOR HIRE

The cancellation of regulations in this part as published in the Federal Register, March 7, 1947, 12 F. R. 1572, shall be effective on and after May 1, 1947, subject to the conditions set forth in this document.

(12 F. R. 2632, April 24, 1947.)

PART 29-NUMBERING OF UNDOCUMENTED VESSELS

DOCUMENTS AND NAME: CANCELLATION

Section 29.7 Documents and name is canceled effective upon the date of publication of this document in the Federal Register.

This section is canceled because the regulation is misleading and the correct requirements are published in the Customs Regulations of 1943 as § 3.4 Yachts entitled to documents (19 CFR, Cum. Supp. 3.4). It is hereby found that compliance with the notice, public rule making procedure, and effective date requirements of the Administrative Procedure Act (Pub. Law 404, 79th Cong.; 60 Stat. 238) is impracticable and contrary to the public interest in that no benefit would be gained by following such procedures.

(Sec. 101, Reorg. Plan No. 3 of 1946, 11 F. R. 7875; 12 F. R. 2201, April 3, 1947.)

Subchapter D-Tank Vessels

A notice regarding the proposed changes in the dangerous cargo regulations governing the transportation of chlorine in bulk and in the regulations for the use of liquefied petroleum gases for cooking and heating on vessels other than passenger vessels was published in the Federal Register, dated February 18, 1947 (12 F. R. 1109), and a public hearing was held by the Merchant Marine Council on March 27 and 28, 1947, at Washington, D. C.

The purpose for the amendments to dangerous cargo regulations in 46 CFR 146.24-15, regarding the transportation of liquid chlorine in bulk, is to provide for customary operational practices followed by carriers. The general basis, purpose and application of dangerous cargo regulations are set forth in 46 CFR Cum. Supp. 146.01-1 to 146.01-12, inclusive. All the written and oral comments and suggestions were considered by the Merchant Marine Council and where practicable incorporated into the amendments to the regulations.

The purpose for the regulations for using liquefied petroleum gases for cooking and heating purposes on vessels other than passenger vessels is to provide minimum safety and fire preventions requirements. The Merchant Marine Council at a public hearing held October 22, 1946, in accordance with the announcement published in the Federal Register dated September 27, 1946 (11 F. R. 11014), postponed, because of the rapid increase in the use of liquefied petroleum gases, final recommendations until further study of the subject was made and additional suggestions could be received. The regulations in 46 CFR 32.9-11, 61.25, 77.24, 95.24, and 114.25, as set forth in this document, are based on the comments and suggestions made at the public hearings held October 22, 1946, and March 28, 1947.

By virtue of the authority vested in me the following amendments to the regulations are prescribed, which shall become effective on the ninetyfirst day after the date of publication of this document in the Federal Register: (12 F. R. 2632, April 24, 1947.)

PART 30-GENERAL PROVISIONS

Section 30.1 is amended to read as follows:

§ 30.1 Basis and purpose of regulations. By virtue of authority vested in the Commandant of the Coast Guard under section 101 of the Reorganization Plan No. 3 of 1946 (11 F. R. 7875), R. S. 4405 and 4417a, as amended, and section 5 (e) of the act of June 6, 1941 (46 U. S. C. 375, 391a, 50 U. S. C. 1275), the rules and regulations in this subchapter are prescribed for all tank vessels in accordance with the intent of the various statutes and to obtain their correct and uniform administration. (R. S. 4405, 4417a, as amended, sec. 5 (e), 55 Stat. 244; 46 U. S. C. 375, 391a, 50 U. S. C. 1275; sec. 101, Reorganization Plan No. 3 of 1946; 11 F. R. 7875; 12 F. R. 2632, April 24, 1947.)

PART 32—REQUIREMENTS FOR HULLS, MACHINERY AND EQUIPMENT

EQUIPMENT AND MISCELLANEOUS

Part 32 is amended by adding a new § 32.9-11, reading as follows:

§ 32.9-11 Liquefied petroleum gases for cooking and heating_TB/ALL_ (a) Liquefied petroleum gas (definition). For purposes of this section "liquefied petroleum gas" shall be defined as any liquefied inflammable gas which is composed predominantly of hydrocarbons or mixtures of hydrocarbons, such as propane, propylene, butanes, butylenes, and butadienes, and which has a Reid ' vapor pressure exceeding 40 pounds per square inch absolute or a vapor pressure exceeding 25 pounds per square inch gage at 100° F., as determined by the Natural Gasoline Association of America's² method or other recognized test method.

(b) Approvals. Liquefied petroleum gas may be used on inspected vessels, except passenger vessels, Provided:

(1) Gas consuming appliances are approved for use of liquefied petroleum gas by the American Gas Association Testing Laboratories (as indicated by label or seal of approval for liquefied petroleum gas on stationary installations) and are also approved by the Commandant.

(2) Cylinders or drums in which liquefied petroleum gas is stored and handled shall comply with Interstate Commerce Commission specifications and retest requirements for the specific gas filled therein.

(3) The relief valves, shut off valves, excess flow valves, pressure regulators, and vaporizer, when used, shall conform to the requirements of and bear the label of the Underwriters Laboratories, Inc., or other recognized testing laboratory.

(4) The location and installation of gas burning appliances, gas cylinders and regulating equipment, together with all piping must be approved by the Commandant.

(c) Odorization of gas. All liquefied petroleum gas used on vessels shall be effectively odorized by an agent of such character as to indicate positively by a distinctive odor the presence of gas down to a concentration in air of not over ½ the lower limit of combustibility.

(d) Location and securing of containers. (1) Cylinders shall be located in a substantially constructed and firmly fixed metal inclosure located on or above the weather deck level. Access to this inclosure shall be from the weather deck only. This inclosure shall be so constructed that when the access opening is closed any

¹American Society for Testing Materials Standard Method of Test for Vapor Pressure of Petroleum Products (Reid Method) (D-323), most recent revision.

^{*}Natural Gasoline Association of America Tentative Standard Method for Determination of Vapor Pressure of Liquefied Petroleum Gas Products, most recent revision.

gas leakage can escape only through a top and bottom ventilating system which shall consist of a fresh air inlet pipe and an exhaust pipe both entering the inclosure from above.

(2) Cylinders or drums located within the metal inclosure shall be suitably secured in place.

(3) Storage of spare and empty cylinders must be within the metal inclosure or they must be properly chocked on the weather deck.

(e) Valves and regulators. (1) A spring loaded relief valve shall be incorporated in the system, its size and pressure setting to be according to Interstate Commerce Commission's requirements, and it shall be located and vented within the metal inclosure. This relief valve must be located on or between the cylinder and the pressure regulator.

(2) The low pressure side of all pressure regulators shall be protected against excessive pressure by means of a suitable relief valve which shall discharge into the metal inclosure.

(3) All regulator vents must discharge into the metal inclosure.

(4) All valves and regulators embodied in the system for the purpose of pressure relief, regulation, and control of gas pressure and flow rates, shall be securely mounted in positions readily accessible for inspection, maintenance, and testing.

(5) Valves in the assembly of multiple cylinder systems shall be so arranged that the change of cylinders may be made without shutting down the system.

(6) A shut-off valve shall be installed in each branch connection.

(f) Vaporizers. Where a vaporizer is required approval shall be obtained from the Commandant.

(g) Piping and fittings. (1) All piping shall be installed so as to provide minimum interior runs with adequate flexibility.

(2) The piping between the cylinders and the appliances shall be seamless annealed copper tubing or any other tubing approved by the Commandant. The tubing connections shall be flared and the number held to a minimum.

(3) All piping or tubing shall be tested (such as with a manometer employing water) after assembly and at each annual inspection and proved free from leaks at not less than normal operating pressures. Tests may be made by qualified persons acceptable to the Officer in Charge, Marine Inspection, and one copy of a report of such test shall be posted and another copy forwarded to the Officer in Charge, Marine Inspection, in the district in which the test was made.

(h) Ventilation of compartments having gas appliances. (1) Compartments which are located above the weather deck and which contain gas consuming devices shall be ventilated by openings to the outside near the deck level and by openings overhead or near the overhead in the compartment. Mechanical ventilators may also be provided.

(2) Where compartments in which gas consuming devices are located are entirely below the weather deck, mechanical ventilation shall be provided with sufficient capacity to effect a change of air at least once every six minutes.

 Identification and instructions.
 The outside of metal inclosure housing liquefied petroleum gas cylinders, valves and regulators shall be marked;

> Liquefied Petroleum Gas Keep Open Fires Away Operating Instructions Inside and In.....

(2) Operating instructions shall be framed under glass and shall be posted prominently, both in the interior of the metal inclosure and near the most frequently used gas consuming device, so they may be easily read.

 (j) Operating instructions. (1) Before opening a cylinder valve, the outlet of cylinder shall be connected tightly to system; and, in the case where only a single cylinder is used in the system, all appliance valves and pilots must be shut off before the cylinder valve is opened.
 (2) Before opening cylinder valve

(2) Before opening cylinder valve after connecting it to system, the cylinder shall be securely fastened in place.

 (3) When cylinders are not in use their outlet valves shall be kept closed.
 (4) Cylinders when exhausted shall

have their outlet valves closed.

(5) Nothing shall be stored in the metal inclosure except liquefied petroleum gas cylinders and permanently fastened parts of the system.

(6) Valve protecting caps if provided shall be firmly in place on all cylinders not attached to the system. Caps for cylinders in use may remain in metal inclosure if rigidly fastened to the metal inclosure structure.

(7) The opening into the metal inclosure must be closed at all times except when access is required to change cylinders or maintain equipment.

(8) Gas pressure to consuming devices should be approximately eleven inches water column (6.4 oz. per square inch).

(9) No smoking should be permitted in the vicinity of the metal inclosure when access to inclosure is open.

(10) If electric connections are made within the metal inclosure they must be installed in strict accordance with the requirements of the National Electrical Code ' for Class I, Group D, Hazardous Locations.

(11) Tests for gas leaks should be made with a soap solution or low freezing point liquids but in no case shall a flame be used.

(12) Report any presence of gas odor to ______ (R. S. 4405, 4417a, as amended, sec. 5 (e), 55 Stat. 244; 46
U. S. C. 375, 391a, 50 U. S. C. 1275; sec.
101, Reorganization Plan No. 3 of 1946; 11 F. R. 7875) (12 F. R. 2632, April 24, 1947)

PART 36-LICENSED OFFICERS AND CER-TIFICATED MEN

The cancellation of regulations in this part as published in the Federal Register March 7, 1947, 12 F. R. 1572, shall be effective on and after May 1, 1947, subject to the conditions set forth in this document. (12 F. R. 2632, April 24, 1947)

Subchapter G—Ocean and Coastwise: General Rules and Regulations

PART 61-FIRE APPARATUS; FIRE PREVENTION

Section 61.25 is amended to read as follows:

§ 61.25 Liquefied petroleum gases for cooking and heating-(a) Liquefied petroleum gas (definition). For purposes of this section "liquefied petroleum gas" shall be defined as any liquefield inflammable gas which is composed predominantly of hydrocarbons or mixtures of hydrocarbons, such as propane, propylene, butanes, butylenes, and butadienes, and which has a Reid ² vapor pressure exceeding 40 pounds per square inch absolute or a vapor pressure exceeding 25 pounds per square inch gage at 100° F., as determined by the Natural Gasoline Association of America's * method or other recognized test method.

(b) Approvals. Liquefied petroleum gas may be used on inspected vessels, except passenger vessels: Provided,

(1) Gas consuming appliances are approved for use of liquefied petroleum gas by the American Gas Association Testing Laboratories (as indicated by label or seal of approval for liquefied petroleum gas on stationary installations) and are also approved by the Commandant.

⁴ A copy of this Code, National Board of Fire Underwriters' pamphlet No. 70, has been filed with this document in the Division of the Federal Register. Copies are also on file with the various Coast Guard District Commanders for reference purposes.

⁴ American Society for Testing Materials Standard Method of Test for Vapor Pressure of Petroleum Products (Reid Method) (D-323), most recent revision.

¹ Natural Gasoline Association of America Tentatize Standard Method for Determination of Vapor Pressure of Liquefied Petroleum Gas Products, most recent revision. (2) Cylinders or drums in which liquefied petroleum gas is stored and handled shall comply with Interstate Commerce Commission specifications and retest requirements for the specific gas filled therein.

(3) The relief valves, shut-off valves, excess flow valves, pressure regulators, and vaporizer, when used, shall conform to the requirements of and bear the label of the Underwriters Laboratories, Inc., or other recognized testing laboratory.

(4) The location and installation of gas burning appliances, gas cylinders and regulating equipment, together with all piping must be approved by the Commandant.

(c) Odorization of gas. All liquefied petroleum gas used on vessels shall be effectively odorized by an agent of such character as to indicate positively by a distinctive odor the presence of gas down to a concentration in air of not over ½ the lower limit of combustibility.

(d) Location and security of containers. (1) Cylinders shall be located in a substantially constructed and firmly fixed metal inclosure located on or above the weather deck level. Access to this inclosure shall be from the weather deck only. This inclosure shall be so constructed that when the access opening is closed any gas leakage can escape only through a top and bottom ventilating system which shall consist of a fresh air inlet pipe and an exhaust pipe both entering the inclosure from above.

(2) Cylinders or drums located within the metal inclosure shall be suitably secured in place.

(3) Storage of spare and empty cylinders must be within the metal inclosure or they must be properly chocked on the weather deck.

(e) Valves and regulators. (1) A spring loaded relief valve shall be incorporated in the system, its size and pressure setting to be according to Interstate Commerce Commission's requirements, and it shall be located and vented within the metal inclosure. This relief valve must be located on or between the cylinder and the pressure regulator.

(2) The low pressure side of all pressure regulators shall be protected against excessive pressure by means of a suitable relief valve which shall discharge into the metal inclosure.

(3) All regulator vents must discharge into the metal inclosure.

(4) All valves and regulators embodied in the system for the purpose of pressure relief, regulation, and control of gas pressure and flow rates, shall be securely mounted in positions readily accessible for inspection, maintenance, and testing.

(5) Valves in the assembly of multiple cylinder systems shall be so ar-

ranged that the change of cylinders may be made without shutting down the system.

(6) A shut off valve shall be installed in each branch connection.

(f) Vaporizers. Where a vaporizer is required approval shall be obtained from the Commandant.

(g) Piping and fittings. (1) All pipings shall be installed so as to provide minimum interior runs with adequate flexibility.

(2) The piping between the cylinders and the appliances shall be seamless annealed copper tubing or any other tubing approved by the Commandant. The tubing connections shall be flared and the number held to a minimum.

(3) All piping or tubing shall be tested (such as with a manometer employing water) after assembly and at each annual inspection and proved free from leaks at not less than normal operating pressures. Tests may be made by qualified persons acceptable to the Officer in Charge, Marine Inspection, and one copy of a report of such test shall be posted and another copy forwarded to the Officer in Charge, Marine Inspection, in the district in which the test was made.

(h) Ventilation of compartments having gas appliances. (1) Compartments which are located above the weather deck and which contain gas consuming devices shall be ventilated by openings to the outside near the deck level and by openings overhead or near the overhead in the compartment. Mechanical ventilators may also be provided.

(2) Where compartments in which gas consuming devices are located are entirely below the weather deck, mechanical ventilation shall be provided with sufficient capacity to effect a change of air at least once every six minutes.

 (i) Identification and instructions.
 (1) The outside of metal inclosure housing liquefied petroleum gas cylinders, valves and regulators shall be marked:

> Liquefied Petroleum Gas Keep Open Fires Away Operating Instructions Inside and In_____

(2) Operating Instructions shall be framed under glass and shall be posted prominently, both in the interior of the metal inclosure and near the most frequently used gas consuming device so they may be easily read.

(j) Operating instructions. (1) Before opening a cylinder valve, the outlet of cylinder shall be connected tightly to system; and, in the case where only a single cylinder is used in the system, all appliance valves and pilots must be shut off before the cylinder valve is opened.

(2) Before opening cylinder valve after connecting it to system, the cylinder shall be securely fastened in place.

(3) When cylinders are not in use their outlet valves shall be kept closed.

(4) Cylinders when exhausted shall have their outlet valves closed.

(5) Nothing shall be stored in the metal inclosure except liquefied petroleum gas cylinders and permanently fastened parts of the system.

(6) Valve protecting caps if provided shall be firmly in place on all cylinders not attached to the system. Caps for cylinders in use may remain in metal inclosure if rigidly fastened to the metal inclosure structure.

(7) The opening into the metal inclosure must be closed at all times except when access is required to change cylinders or maintain equipment.

(8) Gas pressure to consuming devices should be approximately eleven inches water column (6.4 oz. per square inch).

(9) No smoking should be permitted in the vicinity of the metal inclosure when access to inclosure is open.

(10) If electric connections are made within the metal inclosure, they must be installed in strict accordance with the requirements of the National Electrical Code³ for Class I, Group D, Hazardous Locations.

(11) Tests for gas leaks should be made with a soap solution or low freezing-point liquids, but, in no case shall a flame be used.

(12) Report any presence of gas odor to ______ (R. S. 4405, 4426, 4470, 447, 4477, and 4479, as amended, 49 Stat. 1544, sec. 2, 54 Stat. 1028, sec. 5 (e).

PART 62-LICENSED OFFICERS AND CERTIFICATED MEN

The cancellation of regulations in this part as published in the FEDERAL REGISTER, March 7, 1947, 12 F. R. 1572, shall be effective on and after May 1, 1947, subject to the conditions set forth in this document. (12 F. R. 2632, April 24, 1947.)

Subchapter H—Great Lakes: General Rules and Regulations

PART 77-FIRE APPARATUS; FIRE PREVENTION

Section 77.24 is amended to read as follows:

§ 77.24 Liquefied petroleum gases for cooking and heating. (See § 61.25

^{&#}x27;A copy of this Code, National Board of Fire Underwriters' pamphlet No. 70, has been filed with this document in the Division of the Federal Register. Copies are also on file with the various Coast Guard District Commanders for reference purposes.

of this chapter, as amended, which is identical with this section.) (R. S. 4405, 4426, 4470, 4471, 4477 and 4479, as amended, 49 Stat. 1544, sec. 2, 54 Stat. 1028, sec. 5 (e), 55 Stat. 244; 46 U. S. C. 367, 375, 404, 463, 463a, 464, 470, 472; 50 U. S. C. 1275; sec. 101, Reorganization Plan No. 3 of 1946; 11 F. R. 7875) (12 F. R. 2632, April 24, 1947.)

Subchapter H—Great Lakes: General Rules and Regulations

PART 78-LICENSED OFFICERS AND CERTIFICATED MEN

The cancellation of regulations in this part as published in the FEDERAL REGISTER, March 7, 1947, 12 F. R. 1572, shall be effective on and after May 1, 1947, subject to the conditions set forth in this document. (12 F. R. 2632, April 24, 1947.)

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

PART 95-FIRE APPARATUS; FIRE PREVENTION

Section 95.24 is amended to read as follows:

§ 95.24 Liquefied petroleum gases for cooking and heating. (See § 61.25 of this chapter, as amended, which is identical with this section.) (R. S. 4405, 4426, 4470, 4471, 4477 and 4479, as amended, 49 Stat. 1544, sec. 2, 54 Stat. 1028, sec. 5 (e), 55 Stat. 244; 46 U. S. C. 367, 375, 404, 463, 463a, 464, 470, 472; 50 U. S. C. 1275; sec. 101, Reorganization Plan No. 3 of 1946; 11 F. R. 7875) (12 F. R. 2632, April 24, 1947.)

PART 96-LICENSED OFFICERS AND CERTIFICATED MEN

The cancellation of regulations in this part as published in the FEDERAL REGISTER, March 7, 1947, 12 F. R. 1572, shall be effective on and after May 1, 1947, subject to the conditions set forth in this document. (12 F. R. 2632, April 24, 1947.)

Subchapter J—Rivers: General Rules and Regulations

PART 114-FIRE APPARATUS; FIRE PREVENTION

Section 114.25 is amended to read as follows:

§ 114.25 Liquefied petroleum gases for cooking and heating. (See § 61.25 of this chapter, as amended, which is identical with this section.) (R. S. 4405, 4426, 4470, 4471, 4477 and 4479.

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as amended, 49 Stat. 1544, sec. 2, 54 Stat. 1028, sec. 5 (e), 55 Stat. 244; 46 U. S. C. 367, 375, 404, 463, 463a, 464, 470, 472; 50 U. S. C. 1275; sec. 101, Reorganization Plan No. 3 of 1946; 11 F. R. 7875). (12 F. R. 2632, April 24, 1947.)

PART 115-LICENSED OFFICERS

The cancellation of regulations in this part as published in the FEDERAL REGISTER, March 7, 1947, 12 F. R. 1573, shall be effective on and after May 1, 1947, subject to the conditions set forth in this document.

Subchapter K-Seamen

PART 138-RULES AND REGULATIONS FOR

ISSUANCE OF CERTIFICATES AND CON-TINUOUS DISCHARGE BOOKS

The cancellation of regulations in this part as published in the FEDERAL REGISTER, March 7, 1947, 12 F. R. 1573, shall be effective on and after May 1, 1947, subject to the conditions set forth in this document. (12 F. R. 2632 April 24, 1947.)

- 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 COM-BUSTIBLE LIQUIDS ON BOARD VESSELS

Section 146.24-15 is amended by deleting paragraph (k) and by changing paragraph (j) to read as follows:

§ 146.24-15 Liquid chlorine in bulk.

(j) Cargo tanks shall be examined and retested every two years in the presence of an inspector of the Coast Guard. The examination shall consist of a thorough internal and external inspection. The hydrostatic test shall be at a pressure of 450 pounds per square inch. The relief valve or valves shall be dismantled, overhauled. and reset at the time of this biennial inspection. Said valve or valves may be dismantled, overhauled, and reset at such other times as is the desire of the carrier; provided such dismantling, overhauling, and resetting are made with the cognizance of and under such conditions as are agreed upon with the Officer in Charge, Marine Inspection. Upon satisfactory conclusion of test at the time of the biennial 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 relief valves. When a carrier finds it necessary to replace

a 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 the safe working pressure of the tank.

(R. S. 4472, as amended; 46 U. S. C. 170; and Reorganization Plan No. 3 of 1946; 11 F. R. 7875) (12 F. R. 2632, April 24, 1947.)

- Subchapter O—Regulations Applicable to Certain Vessels and Shipping During Emergency
- PART 155—LICENSED OFFICERS AND CER-TIFICATED MEN; REGULATIONS DURING EMERGENCY

The cancellation of regulations in this part as published in the Federal Register, March 7, 1947, 12 F. R. 1573, shall be effective on and after May 1, 1947, subject to the conditions set forth in this document. (12 F. R. 2632, April 24, 1947.)

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

ITEMS SUITABLE FOR MERCHANT MARINE USE

AFFIDAVITS

The Marine Engineering Regulations and Material Specifications require that manufacturers submit affidavits prior to the manufacture of pipe, tubes, valves, fittings, flanges, and materials, for use on vessels subject to inspection by the Coast Guard. The following affidavit was accepted during the period from March 15, 1947, to April 15, 1947:

Chas. M. Bailey Co., 661-669 Folsom St., San Francisco 7, Calif. Fittings.

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 March 15, 1947, to April 15, 1947, is as follows:

The Lunkenheimer Co., P. O. Box 360, Annex Station, Cincinnati, Ohio. Heat Nos. 272 to 285, inclusive.

M. Greenberg's Sons, 765 Folsom Street, San Francisco, Calif. Heat No. 158.

Equipment Approved by the Commandant

By virtue of the authority vested in the Commandant by R. S. 4405, 4417a, 4418, 4426, 4429, 4433, 4470, 4488, 4491, as amended, 49 Stat. 1334, 1544, 54 Stat. 163-167, 1028, sec. 5 (e), 55 Stat. 244 (46 U. S. C. 367, 369, 375, 391a, 392, 404, 407, 411, 463, 463a, 481, 489, 526-526t, 50 U. S. C. 1275), sec. 101, Reorganization Plan No. 3 of 1946 (11 F. R. 7875), the following approvals and termination of approvals are prescribed:

BOILERS

A notice regarding the proposed termination of approval of the York-Shipley heating boilers, Models M-500, M-800, M-1200, M-1500, and HW-250, was published in the Federal Register, dated February 18, 1947 (12 F. R. 1109), and a public hearing was held by the Merchant Marine Council on March 27, 1947, at Washington, D. C.

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Termination of approval of the York-Shipley heating boilers, Models M-500, M-800, M-1200, M-1500, and HW-250, marine type vertical boilers, manufactured by York-Shipley, Inc., York, Pa. (approved December 13, 1944, 9 F. R. 14571). (12 F. R. 2501 April 17, 1947.)

BUOYANT CUSHIONS FOR MOTORBOATS

Approval No. B-373-15" x 15" x 2" seat, 20 ounce kapok, 15" x 15" x 2" back, 20 ounce kapok, double kapok buoyant cushion, Dwg. Nos. 4014-A, dated March 15, 1947, and 4014–S, dated March 14, 1947; Approval No. B-374–15" x 15" x 2" seat, 20 ounce kapok, 15" x 20" x 2" back, 27 ounce kapok, double kapok buoyant cushion, Dwg. Nos. 4013-A. dated March 14, 1947, and 4013-S. dated March 14, 1947; Approval No. B-375-19" x 21" x 2" fishing chair design, kapok buoyant cushion, 36 ounce kapok, Dwg. Nos. 4010-A, dated March 10, 1947, and 4010-S, dated March 10, 1947; Approval No. B-376-15" x 20" x 2" rectangular kapok buoyant cushion, 27 ounce kapok, Dwg. Nos. 4012–A, dated March 14, 1947, and 4012–S, dated March 13, 1947; Approval No. B-377–12" x 20" x 2" rectangular kapck buoyant cushion, 22 ounce kapok, Dwg. Nos. 4011-A, dated March 13, 1947, and 4011-S, dated March 13, 1947; Approval No. B-378-12" x 14" x 2" seat, 15 ounce kapok, 12" x 18" x 2" back, 20 ounce kapok, double kapok buoyant cushion, Dwg. Nos. 4015-A, dated March 16, 1947, and 4015-S. dated March 16, 1947; for use on motorboats of Classes A, 1, and 2 not carrying passengers for hire, manufactured by Trojan Marine Mfg. Co., Inc., 273-81 State St., Brooklyn 2, N. Y. (12 F. R. 2501, April 17, 1947.)

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.

5. C	Locati	on appara	tus may l	be used	
Manufacturer and description of equipment	Passen- ger and crew quarters and public spaces	Machin- ery cargo and work spaces	Open decks	Pump rooms of tank vessels	Date of section
Crouse-Hinds Co., Syracuse, N. Y .:	1.000	1			
Arkite receptacle, 3 wire, 2 pole, grounded, 60 amperes, 250 volts D. C., 600 volts A. C., waterproof, Cat. Nos.		1.000	1000	1 2 1	
A RE 6383 and A RE 6384, drawings Nos. 5778-L, 10888-D, and 2769-L	x	8	x	· · · · · · · · ·	3/25/47
Hotpoint, Ine., Chicago, Ill.: Cooking range, Cat. No. R173, 230 volts maximum, draw- ings Nos. SH222-1, change 1; 11389-1C, change 1; 11389-2C/3C/4C/5C/6C/ and 7C, change 1;	P		1.1		
ings Nos. SH2922-1, change 1; 11389-1C, change 1;					1.1.1.2
11389-2C/3C/4C/5C/6C/ and 7C, change 1. Cooking top, Cat. No. R174, 230 volts maximum, draw-	.2	x	(section (a adalaha	4/2/47
ings Nos. 14257-1/2/3, change 1 Cooking range, Cat. No. R180, 230 volts maximum, draw-		x			4/2/47
ings Nos, 7721-9A/I0A/I0B, change 1	x	x		a dala lada	4/2/47
Cooking range Cat. No. R200 230 volts maximum draw-	x		1		4/2/47
Ings Nos, 13726-1B/2B/3B/1A/2A/3A, change 1 Cooking backshelf broiler, Cat. No. R161, 230 volts maxi-			-	1100000000	1.1.1.1.1.1
mum, drawing No. 11389-14, change 1. Cooking broilers, Cat. Nos. B19 and B21, 230 volts maxi- mum, drawings Nos. B19P1, change 0; WD2728, change	x	x	114414.041	+1+1114	4/2/47
mum, drawings Nos. B19P1, change 0; WD2726, change					
 WD2388, change 8: WD2756, change 3; WD2787, change 4; WD2906, change 2 		x			4/2/47
 Cooking griddle, Cat. No. G47, 230 volts maximum, drawings Nos. G47-1/2/2A, change 1. Cooking griddle, Cat. No. G48, 230 volts maximum, 		x			4/2/47
Cooking griddle, Cat. No. G48, 230 volts maximum,	x	x			4/2/47
Cooking grindle, Cut. Vol. 605, 250 volts maximum, drawings Nos. 7721-1A/2A, change 1. Cooking griddle, Cat. No. G28, 230 volts maximum, G28-1/2/4, change 1. Cooking fry kettle, Cat. No. K32, 230 volts maximum, drawings Nos. K32-1/2/3/5, change 1. Crossing fry kettle, Cat. No. K32, 230 volts maximum, drawings Nos. K32-1/2/3/5, change 1.	1.3	1.1			12.00
G28-1/2/4, change 1. Cooking fry kettle, Cat. No. K32, 230 volts maximum,	x	x			4/2/47
drawings Nos. K32-1/2/3/5, change 1	x	2			4/2/47
Cooking ovens, Cat. Nos. N162, N166, and N167, 230 volts maximum, drawings Nos. 167–1B/2B/3B/4B/5B/6B/7B/	1.57	122			in
SR ehande I	x	x	*******	1102	4/2/47
Cooking ovens, Cat. Nos. N221 to N229, inclusive, 230 volta maximum, drawings Nos. 14182-3/4/5/6, change 1. Cooking ovens, Cat. Nos. N241, N242, and N243, 230 volta	x	x			4/2/47
maximum, drawings Nos. 13726-10/11/12/13, change 1	x	8		().e)	4/2/47
Cooking ovens, Cat. Nos. N241, 3726-10(11/12/13, change 1, Cooking ovens, Cat. Nos. N261, N262, and N263, 230 volts maximum, drawing Nos. 15670-1/2, change 1, Cooking ovens, Cat. No. N140, drawings Nos. 17659-	x				4/2/47
Cooking ovens, Cat. No. N140, drawings Nos. 17659-	x				4/2/47
1A/2A/3A/4A, change 1. Cooking oven. Cat. No. N141, drawings Nos. 17039- 1B/2B/3B/4B, change 1. Cooking oven, Cat. No. N180, drawings Nos. 9711-10B,					
1B/2B/3B/4B, change 1 Cooking oven, Cat. No. N180, drawings Nos. 9711-10B,	x	A	P + + + + + + + + + + + + + + + + + + +		4/2/47
	x	x	1+++=====)	1	4/2/47
Cooking fry kettle, Cat. No. K46, 230 volts maximum, drawings Nos. 17319-1/2/3, change 1 Rambusch Decorating Co., New York, N. Y.:	8	x			4/2/47
Rambusch Decorating Co., New York, N. Y.: Lighting fixture, ceiling, nonwatertight, 1 60-watt lamp		1 1			
maximum, drawing No. LC-31-60W, Alt. 0					3/07/97
Rambusen Decorating Co., New Yok, N. 1. Lighting fixture, ceiling, nonwatertight, 1 60-watt lamp maximum, drawing No. LC-31-60W, Alt. 0. Lighting fixture, ceiling, nonwatertight, 1 100-watt lamp maximum, drawing No. LC-31-100W, Alt. 0. Hos Sime Co. Ino. New York N Y:		-		-	3/17/47
					-
Table lamp, type L1-A, nonwatertight, 1 150-watt lamp maximum, drawing No. 43570, revision 2/21/47 Table lamps, types L1-B1 and L1-B2, nonwatertight, 1	8		****		4/7/47
150-watt lamp maximum, drawing No. 43071, revision					
					\$/17/47
 Table lamp, type L0-A, nonwatertight, 1 150-watt lamp maximum, drawing No. 43572, revision 2/21/47. Table lamps, types L0-B1 and L0-B2, nonwatertight, 1 150-watt lamp maximum, drawing No. 43573, revision 	× .		(second s		4/7/47
150-watt lamp maximum, drawing No. 43573, revision	1.4				
2/21/47 Table lamp, type L1-C, nonwatertight, 1 150-watt lamp			eesinenen)	******	4/7/47
maximum, drawing No. 43574, revision 0	8	(Second)	********		4/7/47
maximum, drawing No. 43591, revision 2/21/47	×.				4/7/47
Table lamp, type L9-C, nonwatertight, 2 75-waft lamps maximum, drawing No, 43583, revised	arizzariez				4/9/47
 2/21/47. Table lamp, type L1-C, nonwatertight, 1 150-watt lamp maximum, drawing No. 43574, revision 0. Desk lamp, type L9-B, nonwatertight, 4 40-watt lamps maximum, drawing No. 43591, revision 2/21/47. Table lamp, type L9-C, nonwatertight, 2 75-watt lamps maximum, drawing No. 43583, revised. Edgelite sign, type LG-3, nonwatertight, 1 25-watt lamp maximum, drawing No. 43584, acvised. 	x	1			4/9/47
Mirror tamp, type L-1-D, nonwatertight, 1 100-watt	1.1.1				
Mirror lamp, type L-1-D, nonwatertight, 1 100-watt lamp maximum, drawing No. 43569, revision 2/18/47 Mirror light, type LC-10, nonwatertight, 2 25-watt lamps	x	11-117114	*******	+++++++++++++++++++++++++++++++++++++++	4/9/47
maximum, drawing No. 43451, revision 10/28/46.	× .	في ال			4/9/47

May 1947

Merchant Marine Personnel Statistics

MERCHANT MARINE LICENSES ISSUED DURING MARCH 1947

DECK OFFICERS

																										_			
					Ma	ster								Ch	ief m	ate					-			Se	ceon	d mai	le		
Region	0.00	Deean		oast- wise	Great Lakes		B. S. & L.		Rivers		Oce	an	Coast- wise		Great	reat B. 1		s. & Riv		ers	0e	man	Coast- wise				B. S. & L.		River
	0	R	0	R	0	R	0	R	0	R	0	R	0	R		2	0	R	0	R	0	R	0	R	0	R	ø	R	OB
Atlantic coast. Gulf coast. Great Lakes and rivers Pacific coast.	55 8 23	75 17 1 32	4	4	4	3 35 2	12 2 5	54 1 13	2	7 5 18	34 19 18	17	3	2		-	2	8	12	1 12 1	76 32 25	14 3 1 4	1	2111	****	****	****	****	
Total	86	125	6	22	4	40	19	68	4	30	71	27	3	12		-	6	15	3	14	133	22	1	4	2			****	
R						Thir	d ma	te							1	llot	4			1	N	faster	r mat	e		Total			
Region	n Oeran			Coa			rent akes	1	3. S. d L.	å	Riv	ers	GL	reat	B	. S. L.	æ	R	vers	t	nins	spect	ed ver	ssels)rigi-		Re-	Grand
	0	1	R	0	R	0	R			R	0	R	0	R	0		R	0	R		0	R	0	R		nal	newal	total	
Atlantic coast Gulf coast Great Lakes and rivers Pacific coast	61 21 26		9514	*****									12	2	71	1	139 16 13 44	14 15 17	112	1	2					344 108 40 128		372 69 161 135	71 13 20 26
Total	108	1	19									-4-4	18	66	10	9	212	46	0	0	2	1	1			620	1	737	1,35
Region	-	-	cear	ef engin	neer,	Inla		-	-) assu	-	t eng	ineer	, steat	n p	9000	Ocean		ant engineer, stea Inland			m 1	Ocean			stant enginee In		, steam	
		-	T	_	-						r3		Ini	and			Oce	an			Inla	nd		- 9	Deen	n	Г	Inl	and
		0	1	R	1	2	R		0	1	R	-	Ini O	and		0	-1	an R		0	-	nd R	+	0	Deea	R	-	Inl O	and R
Atlantic coast Gulf coast Great Lakes and rivers Pacific coast		63 8 1 16		R 138 27 7 43		12 1 1 11	1	59 9 41 10	8	074	-			R	14 6 27		-1	R	35	0	19	R	1	0	593		+		1
Gulf coast		63 8 1		138 27 7		12		59 9 41	8	0746	R 33 4		0 2	B	14 6 27		73 24 3	R	35	0	19	R	13	0 758	5 9 3 1	R 19 5 2		0	1
Guif coast Great Lakes and rivers Pacific coast		63 8 1 16		138 27 7 43		12 1 11		59 9 41 10	8	0746	R 33 4 2 9 48		0 2 17	R	14 6 27		73 24 3 29	R	35 7 6 48	0	19	R 2 2		0 72 3 3 13	5 9 3 1	R 19 5 2 6		0	R
Guif coast Great Lakes and rivers Pacific coast		63 8 1 16		138 27 7 43 215	hief	12 1 11 24	1	59 9 41 10	8 2 11 Moto	0746	R 333 4 29 48 essels Sease		0 2 17 19	R	14 6 27	I	73 24 3 29	R	35 7 6 48	o	19	R 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	13	0 71 22 3 132 133	5931 8	R 19 5 2 6	T	0 9 9	Grane
Gulf coast Great Lakes and rivers Pacific coast Total		63 8 1 16		138 27 7 43 215	hief	12 1 11 24	1	59 9 41 10 19 Fin ssist ngín	8 2 11 Moto	0746	R 333 4 29 48 essels Sease	cond	0 2 17 19	R	14 6 27 47 47	I	73 24 3 29 29	R	35 7 6 48 U Chi ngin	o	10 19 spect	R 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	za cssels ssista	0 71 22 3 132 133	5931 8	R 19 5 2 6 32 0 7 82	T	0 9 9 otals Re-	Gran
Gulf coast Great Lakes and rivers Pacific coast Total		63 8 1 16 88		138 27 7 43 215 Cl eng	hief	12 1 11 24	1 n c	59 9 41 10 19 Fin ssist ngín	8 22 11 Moto st ant ceer R 3	0 7 4 6 7 0 7	R 333 4 2 9 48 essels Se ass en	econd sistar ginee	0 2 17 19		14 6 27 47 47 20 20	1 rd int cer	73 29 29 29	R	35 7 6 48 U	O Inim ef	iii iiii spect	R 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	23 cssels ssista nginee	0 72 3 130 130	59331	R 19 5 2 6 32 0 7 82	T	0 9 9 otals Re-	R

CREW SHORTAGE REPORTS FROM MARCH 1 TO MARCH 31, 1947

These Reports Submitted in Accordance With Navigation and Vessel Inspection Circular No. 34, Dated May 1, 1943

	Num- ber of vessels	Ratings in which shortages occurred												
Region		Chief	Second mate	Third mate	Radio	Able seamen	Ordi- nary seamen	Chief en- gineer	First en- gineer	Second en- gineer	Third en- gineer	Qualified member engine de- partment	Wiper or coal passer	Total
Atlantic coast Gulf coast Pacific coast Great Lakes	20 35 3	1	2	1 5	1	20 39 2	8 4 1	*******	1 3	6	3		4 6 1	41 13
Total	9 67	1	3	10	1	70	18		4	6	7	63	14	197

WAIVERS OF MANNING REQUIREMENTS FROM MARCH 1 TO MARCH 31, 1947

Authority for These Waivers Contained in Navigation and Vessel Inspection Circular No. 31, Dated March 13, 1943, and Navigation and Vessel Inspection Circular No. 37, Dated July 6, 1943

Region	Number of vessels	Deck officers substituted for higher ratings	Engineer officers sub- stituted for higher rat- ings	Able seamen substituted for deck offi- cers	Ordinary seamen sub- stituted for able seamen	Qualified members of engine depart- ment substi- tuted for en- gineer officers	Wipers or coal passers sub- stituted for qualified mem- bers of engine department	Wipers, coal passers or cadets sub- stituted for engineer officers	Ordinary seatmen or cadets sub- stituted for deck officers	Total
Atlantic coast Gulf coast Pacific coast Great Lakes	391 217 84	31 22	28 23 7	1 6	678 399 83	8 11 2	133 62 43			879 523 135
Total	692	53	58	7	1, 160	21	238			1, 537

ORIGINAL SEAMEN'S DOCUMENTS ISSUED, DURING MARCH 1947

Region	Contin- uous dis- charge book	Certifi- cate of iden- tity	A. B., green, 3 years 1	A. B., green, 9 months emer- gency 1	A. B., blue, 18 months, 12 months ¹	A. B., blue, 6 months emer- gency 2	blue, 6 months emer-	Life- boat, 12-24 months	U. S. Mer- chant Marine docu- ment	Q. M. E.D., 6 months	Q. M. E. D., emer- gency	Radio oper- ntors	Certifi- cate of service	Tanker man	Staff	Total
Atlantic coast Gulf coast Pacific coast Great Lakes and rivers	4 12 76	1 1	83 20 41 35	83 45 56 10	188 58 86 106	6 3 4 15	1	329 150 178 93	1, 720 775 623 1, 504	360 128 158 210	80 96 39 47	23 5 5 1	1, 398 575 423 1, 426	17 20 13 23	163 13 48	4, 456 1, 900 1, 675 3, 546
Total	92	2	179	194	438	28	1	750	4, 622	856	262	34	3, 822	73	224	11, 577

Unlimited.

^a Great Lakes, lakes, bays, and sounds.
 ^a Tugs and towboats and freight vessels under 500 tons (miscellaneous).
 ^a 12 months deek or 24 months other departments,

NOTE .- There were no Panamanian employment cards issued.

DIST:

A: b, e, i, (5 ea); i-l, j, m, r, (3 ea); remainder (1 ea).

B: COMNORLANTPAT (5); remainder (1 ea).

C: b-1, (14 ea); b-3, (5 ea); g, k, m, (3 ea); remainder (1 ea).