PROCEEDINGS OF THE
MERCHANT MARINE COUNCIL
UNITED STATES COAST GUARD

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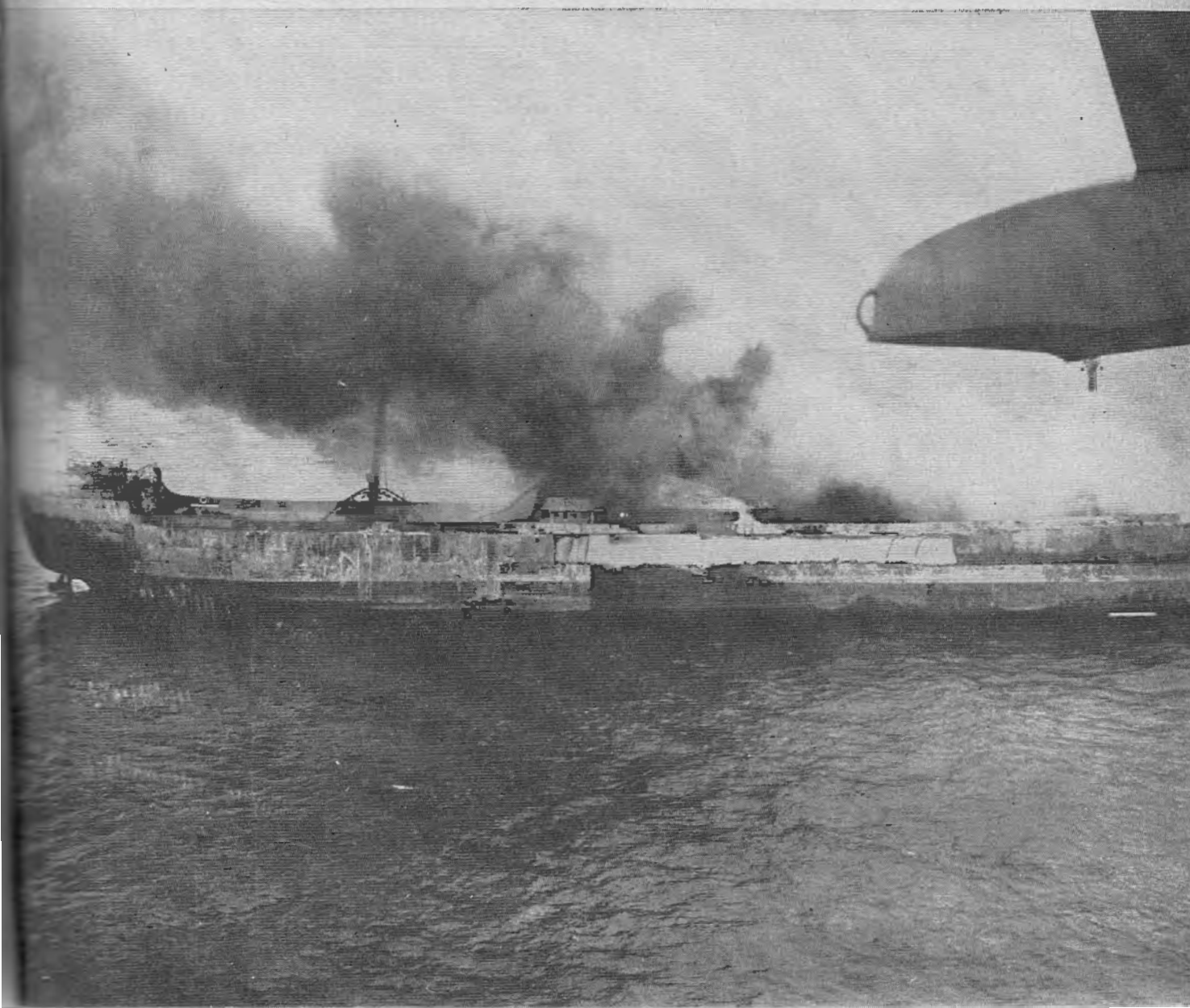

Proceedings of the

MERCHANT MARINE COUNCIL

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The Merchant Marine Council of the United States Coast Guard

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PROCLAMATION 3063

FIRE PREVENTION WEEK, 1954
BY THE PRESIDENT OF THE UNITED STATES OF AMERICA
A PROCLAMATION

WHEREAS during the past year preventable fires have taken thousands of lives; and

WHEREAS destruction of property by fire results in an annual loss of nearly a billion dollars, of an untold number of jobs, and of an irreplaceable amount of production; and

WHEREAS safety of life and property and conservation of natural resources are of primary importance to every citizen of the Nation; and

WHEREAS the effectiveness of sound fire-prevention programs has been demonstrated in communities throughout the land:

NOW, THEREFORE, I, DWIGHT D. EISENHOWER, President of the United States of America, do hereby designate the week beginning October 3, 1954, as Fire Prevention Week.

I call upon all citizens to initiate a year-round campaign against the waste caused by preventable fires, and I urge State and local governments, the American National Red Cross, the National Fire Waste Council, the Chamber of Commerce of the United States, and business, labor, and farm organizations, as well as schools, civic groups, and public information agencies, to cooperate in the observance of Fire Prevention Week. I also direct the appropriate agencies of the Federal Government to assist in this national campaign against the loss of life and property resulting from fires.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the Seal of the United States of America to be affixed.

DONE at the City of Washington this Fourth day of August in the year of our Lord nineteen hundred and fifty-four, and of the Independence of the United States of America the one hundred and seventy-ninth.

[SEAL] DWIGHT D. EISENHOWER

By the President:
JOHN FOSTER DULLES,
Secretary of State.

[F. R. Doc. 54–6188; Filed, Aug. 6, 1954; 1:23 p. m.]

FRONT COVER PICTURE

The freighter shown on the front cover was reduced to a floating hazard to navigation by a destructive cargo fire. In addition to the damage evident from the picture, four seamen lost their lives in this casualty. What stronger reasons for adequate fire-prevention practices aboard merchant vessels can be advanced?

GLOBAL MARINE COMMUNICATIONS[1]

The marine global communication system had its inception shortly after Marconi obtained the first patent for wireless telegraphy in 1896. In the following year he established what was probably the first communication radio circuit when he linked together two lighthouses off the North Irish coast which were separated by a distance of 7½ miles.

The potentialities of radio, or wireless as it was more commonly called in those days, as a means of communication between ships was obvious. However, it was not until the Spring of 1899, when a wireless equipped lightship near Dover, England, was rammed by a freighter, that public attention was focused on the vital role that wireless telegraphy could assume in the event of a marine disaster. From then on the evolution of marine radiocommunication has followed the lessons learned from the marine disasters in which radio has played a part, and in which the romance of the sea and the pride and exploits of the seagoing operator have become legendary. The world now had at its disposal one of the greatest contributions to marine safety since the first ship ventured out on the great oceans. Accordingly, the whole history of global marine radiocommunications stems from radio in connection with "safety of life at sea."

Shortly after the turn of the century, when maritime nations of the world began putting radio to its first practical use as a means of communicating between ships and between ships and shore stations, administrative problems born of experience and the need for uniformity of systems became evident. The absence of uniformity and control was accentuated by one situation in particular. Numerous radio companies throughout the world were formed to install and operate radio stations on board ships as well as on shore. These companies engaged in a ruthless commercial competitive warfare with each other. Operators of one company were forbidden to carry on any communication whatsoever with the ships of a competitor. This, more than any other problem, prompted the early international radio conferences because it was recognized that without complete freedom of intercommunication between ships and between ships and shore without regard to particular systems employed, radio could not fulfill its purpose to ships where there was no alternate means of communication.

The principle of intercommunication without regard to systems employed became a fundamental cornerstone of all international radio agreements to this day. It was apparent that, in order to have a uniform, world-wide maritime radio system which would permit ships of all nations to communicate freely with each other as well as with shore stations of all nations, an international understanding would have to be reached with respect to operating frequencies, operating procedures, operator qualifications, and intercommunication between stations of different administrations. Accordingly, as a step in that direction, the first International Wireless Conference was held in Berlin in 1903.

An important result of the conference, which was exploratory in nature, was the recognition of the need for a common international signal of distress. While all delegates agreed that a distress signal should have precedence over all other forms of wireless communication, they were unable to agree on a specific signal.

It was not until 1906, at the Second Wireless Conference held in Berlin, that an international distress signal was adopted. However, even though the signal SOS was agreed upon and included in the Berlin Wireless Telegraph Convention, 1906, the signal CQD continued to be used for some time and, as late as 1912 when the TITANIC foundered, both SOS and CQD were used.

The necessity for the establishment of uniform methods and standard procedures for handling the international problem of radiocommunication, from the point of view of safety as well as traffic handling, has been recognized by the several international safety and telecommunications and radio conferences, the most recent of which were the International Radio Conference of Atlantic City, 1947, and the International Safety of Life at Sea Conference, London, 1948. The agreements resulting therefrom have provided for the following essentials to a successful system: standard operating procedures which are uniform throughout the world; intercommunication without regard to equipment belonging to any one company; the designation of specific radio frequencies for the purpose of making universal contact and for the transmission and reception of distress messages; and standard qualifications for radio operators so that those entrusted with this important link in the communication system will be competent to maintain their equipment and carry out the established procedures.

The raising of safety standards and the expansion of a universal communication system in the marine field has usually been brought about through the impetus of some sea disaster. This is well illustrated by the case of the TITANIC disaster in 1912. The investigation which followed the sinking of that vessel brought to light many defects relating to such matters as the structure of the ship, aids to navigation, safety precautions and communications.

As a consequence, on June 28, 1912, Congress adopted a joint resolution proposing an international maritime conference to be held to study means for preventing similar disasters in the future. In response to world-wide sentiment, the United Kingdom called such a conference in London in 1914, which was attended by thirteen of the principal maritime nations.

This was the first International Conference on Safety of Life at Sea. It required, among other things, the installation of radio equipment on board certain ships. However, the outbreak of the first World War and other causes prevented the 1914 Convention from coming into world-wide force although parts of it were enacted nationally.

Congress had previously enacted the Ship Act of June 24, 1910, which forbade any "ocean-going" steamer carrying or licensed to carry fifty or more persons to leave any port of the United States unless equipped with efficient apparatus for radiocommunications, in charge of a skilled person, and capable of communication over a distance of 100 miles. This Act was amended July 23, 1912, to include all vessels navigating the ocean or Great Lakes carrying or licensed to carry fifty or more persons, including passengers or crew or both.

After the termination of World War I, consideration was given to the holding of a second international conference to carry forward the work commenced in 1914. The Second International Conference on Safety of Life at Sea convened in London on April 16, 1929. For years prior to 1929 the entire world had recognized the growing importance radioteleg-

[1] This article contains abstracts from a speech given by Commissioner E. M. Webster, Federal Communications Commission, Commodore, USCG (Ret.) before The Institute of Radio Engineers, Professional Group on Communications Systems, IRE Symposium on Global Communications, at Washington, D. C., on June 23, 1954.

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raphy had played in the safety of life at sea. While improvements were being made in the radio art and more sea-going ships were being equipped with apparatus, it was apparent that some method had to be devised to increase the overall number of radio-equipped vessels if maximum safety were to be realized.

The 1929 Convention, too, was influenced by a marine disaster. In November, 1928, six months before the Conference convened, the SS VESTRIS went down about 100 miles off the east coast of the United States under mysterious circumstances. The shortcomings and failures surrounding the radiocommunications were so glaring that critical studies were undertaken to determine what changes were desirable to improve and enhance the reliability of marine communications and the safety of life at sea.

The subject of safety of life at sea can be divided into four categories: one, the ship must be structurally safe and must be properly equipped and manned for safe navigation and internal protection; two, there must be provided the necessary aids to navigation external to the ship to assist the navigator; three, some method must be provided on board the ship to permit the summoning of aid and the reception of distress calls; and four, an adequate system for the search and rescue of ships and their survivors when in distress is essential. Communications, in some form or degree, are involved in all categories.

The Conference of 1929 quickly recognized that the maximum safety would be attained when all vessels, large and small, were equipped with radio installations and a continuous watch by operator was maintained throughout the entire period of navigation. However, it was also realized that such a situation, while highly desirable, was impracticable, and any attempt to require more than one operator aboard a cargo ship certainly would be resisted.

It was concluded that the underlying principle was to provide a continuous radio watch by operators for all ships, but economic considerations would prevent the adoption of such a principle without certain exceptions. It was further concluded that if limited exemptions could be made with respect to the continuous watch principle, a substantial increase could at least be made in the total number of radio-equipped ships and in the number of hours of radio watch maintained at sea throughout the world.

In searching for a solution it was therefore necessary to strike a balance between the ideal on the one side and the practical and economic features on the other. Too stringent requirements involving prohibitive costs might jeopardize universal acceptance of the treaty and thus be responsible for the failure of the Conference to meet its objective.

The Conference was faced with three major problems: first, what ships or classes of ships should be compulsorily fitted with radiotelegraph apparatus; second, what radio watches, or hours of operation, should be maintained aboard those ships; and third, what should be the technical requirements of the apparatus installed. Because of the conflict of interests and the tendency of each participating nation to view the problems from the standpoint of its own laws and practices, the first two problems were most difficult of solution.

There was no disagreement with the philosophy that all passenger ships on international voyages should be equipped with radio installations and maintain a continuous watch by operator. However, in the sphere of cargo ships such unanimity did not exist and a compromise solution was reached whereby all cargo vessels over 1600 gross tons must be equipped with radio and must maintain a continuous watch. The watch requirement, however, was modified to the extent that a continuous watch could be maintained by one or more operators, supplemented by a suitable automatic alarm device as necessary.

The third and last question for solution was that of the type of apparatus to be installed, together with the technical requirements which it must meet. There was reluctance on the part of some participants to replace the radio installations already on board and in operation with equipment of modern design. However, the advocates of higher standards were successful in outlawing the old shipboard spark transmitting equipment which was obsolete and which was retarding the development of a good, efficient marine radiocommunication system. While the resulting Convention, the final act of which was signed by all eighteen participating nations on May 31, 1929, may have fallen short of the ultimate in some respects, it was a major step forward in the direction of safety of life at sea and the establishment of a sound maritime communication system.

Beginning with the use of high frequencies the complexion of the marine communication system began to change. Ships at the four corners of the earth were no longer dependent upon landwire and cable connections to contact their home countries. The necessity for communication with the coast station nearest the ship no longer existed. Now the ship could communicate with the coast station nearest the message destination. The marine communication system had truly reached the stature of a global communication system.

Following World War I, radiotelephony began to be used for marine communications in several regions of the world. Because the communication requirements were generally limited to relatively short distances within limited geographical areas and because of the low power requirements, compact equipment and ease of operation by non-professional operators, radiotelephony was particularly adaptable to the needs of small boats.

Various regions of the world adopted their own frequency plans within the band 1600 to 3000 kc. For example, the marine radiotelephone service in the waters of Western Europe, i. e., the Baltic Sea, North Sea, English Channel, etc., centered on 1650 kc. as a calling and distress frequency, was established some years ago. Today the marine radiotelephone service is in extensive use in that area.

In about 1931 a small beginning was made in the United States toward the establishment of a radiotelephone service along our coasts, using frequencies between 2 and 3 Mc. but without the use of a common calling frequency as in Europe. The expansion of this service has been rapid, and today there are approximately 40,000 small boats equipped with radiotelephony operating in American waters.

As the radiotelephone system grew within the various regions and radiotelephone equipped boats began operating in more than one region, it became evident that this system, like the radiotelegraph system, had certain problems which must be considered on an international basis. The most pressing matter, that of an international calling and distress frequency was recognized and resolved at the International Radio Conference at Atlantic City in 1947 by the adoption of the frequency 2182 kc. as the world-wide marine radiotelephone calling and distress frequency.

The establishment of an international calling and distress frequency for radiotelephony was followed by the requirement included in the International Conference on Safety of Life at Sea, 1948, that ocean-going cargo vessels between 500 and 1600 gross tons must be equipped with radio installations, either radiotelegraph in the 500 kc. band or radiotelephone in the 2 Mc. band. Thus, for the first time, radiotelephony was

(*Continued on page 163*)

RELIEF OFFICERS

When discussing the duties and responsibilities of mates and engineers aboard merchant vessels it is generally taken for granted these officers are thoroughly familiar with their vessels and the owners' operational procedures. One exception to this rule, however, are the Relief Officers, often referred to as "Night Mates" and "Night Engineers."

These officers come aboard a great many ships to relieve the regular officers of the vessel at night or on Saturdays, Sundays and holidays in port. They may be aboard a particular vessel for one watch or several, and then they are off to another ship, which is probably operated by a different steamship company. One night they may stand a watch on a tanker, the next on a Liberty-type cargo vessel, and possibly the next watch may be on a passenger vessel.

It is evident therefore that these officers must familiarize themselves with the vessel and the owner's policies in a minimum of time. There is not time to go over all the ship's gear, nor to go over every detail an officer coming aboard for the next voyage would be expected to check prior to sailing. Still there are many items which must be checked, records to be kept: and above all the Relief Officer must be prepared to handle effectively any emergency which may arise.

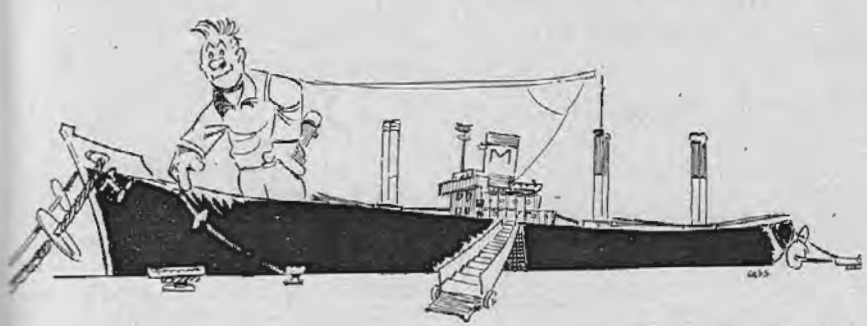
One of the most practical solutions we have seen to this problem is that employed by the Matson Navigation Company. This company provides each vessel with a looseleaf booklet containing instructions for Relief Officers concerning their duties, company policies and emergency procedures. In addition, this booklet has a diagram of the particular vessel with all the emergency equipment and other facilities clearly marked. Since all vessels have certain characteristics which are different from others, these diagrams are not placed aboard the vessel ready-made. Rather each diagram has attached to it a series of headings on gummed paper which are cut out when the pamphlet comes aboard and are pasted at the appropriate spot on the diagram to indicate where a particular facility is located, such as the controls for the various fire-fighting equipment, emergency-gear locker, etc. This booklet is printed in large type, with illustrations, and is compact enough that it can be read in a short period of time. There is also a space provided for the Night Orders for the Mate, and also the telephone numbers of all agents and shoreside operation officials to be called in an emergency.

With information such as this at his finger tips the Relief Officer is better prepared to perform his duties, particularly those of the Relief Mate.

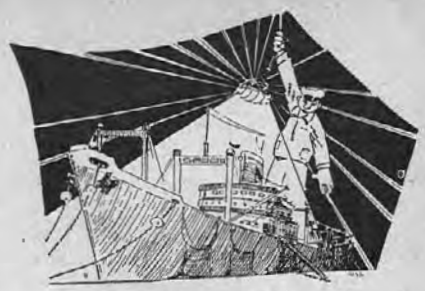
The Relief Engineer as a rule knows the type of plant with which a particular vessel is equipped before he comes aboard. With the assistance of the unlicensed personnel he therefore generally does not require additional instructions.

The booklet referred to above, although brief, is quite comprehensive. Many items are merely touched upon, since they are somewhat routine in nature. Functions such as log entries, checking drafts, keeping cargo plans, etc., are often overlooked, however, and for this reason a reminder serves a useful purpose.

Relief Mates are also cautioned to give attention to the gangway, especially during the night. Slack hand lines give little protection to someone using the gangway; when they are too tight there is danger of these lines snapping. The gangway itself may be damaged if the roller is not kept clear of the dock fittings.



Courtesy Matson Nav. Co.



Courtesy Matson Nav. Co.

Since the cargo operations and tidal conditions will also have an effect on mooring lines, Relief Mates are also cautioned to check them at frequent intervals. These and many other such activities come under the heading of seeing that the vessel is shipshape. They are routine, it is true, but very essential. For example, the value of instructing the Relief Mate to see that adequate lighting is available, especially during cargo operations, or to see that cargo gear is operating safely and properly is easily seen. By locating spare cargo equipment, such as cargo lights, winch runners, tarpaulins, etc., before it is needed, the Relief Mate may easily prevent delay in operations.

Since fire-fighting equipment differs on merchant ships the Relief Officer should be familiar with the type in use on board the vessel on which he is serving. One vessel may have a carbon dioxide smothering system in the holds, and another may use steam. This is where the book of instructions and the diagram serve their intended purpose best. A short explanation on the operation and location of fire-detecting, fire-alarm, and fire-extinguishing equipment aboard the vessel is invaluable to the Relief Mate.

One point which the Relief Mate must keep constantly in mind is that he may have little assistance from anyone familiar with the vessel's fire-fighting equipment should an emergency arise, since it is quite likely most of the crew will be ashore. For this reason he must rely to a great extent on shoreside assistance. No time can be wasted in sounding the alarm both on the vessel and ashore. Knowledge of how to go about this before a crisis arises is a valuable asset. Steps then can be taken to locate and isolate the fire and at the same time make sure no one is in the affected areas. The shoreside fire department will probably rely on the Relief Mate for information concerning the cargo, location of the fire, fire-fighting equipment available, etc. Here is where advance knowledge regarding these factors will pay off.

(Continued on page 171)

COUNTRIES WHICH HAVE ACCEPTED THE 1948 CONVENTION TO DATE

The Government of the United Kingdom extended the International Convention for the Safety of Life at Sea, signed at London on June 10, 1948, to the Colony of Singapore and to the Federation of Malaya. These extensions took effect on August 5 and October 21, 1953, respectively.

Instruments of Acceptance by the Governments of Panama and Greece of the aforementioned Convention were deposited in the Archives of the Government of the United Kingdom on January 8 and 21, 1954, respectively. In accordance with the provisions of the Convention these Acceptances became effective three months after deposit. Therefore, the Panamanian Acceptance took effect on April 8, 1954, and the Greek Acceptance took effect on April 21, 1954.

Instruments of Acceptance by the Governments of Cambodia, Union of Soviet Socialist Republics, Switzerland, and Haiti of this 1948 Convention were deposited in the Archives of the Government of the United Kingdom on March 2, May 10, 19, and 26, 1954, respectively, and in accordance with the provisions of Article XI (c) of the Convention, the respective acceptances took effect on June 2, August 10, 19, and 26, 1954.

Instruments of Acceptance by the Governments of Egypt and the Polish People's Republic of the aforementioned Convention were also deposited in the archives of the Government of the United Kingdom on June 11, 1954, and in accordance with the provisions of the Convention, the Egyptian and Polish acceptances took effect on Sept. 11, 1954.

Countries which have accepted the International Convention for the Safety of Life at Sea, 1948, and the Territories to which the Convention has been extended are shown in the table on this page.

LIST OF COUNTRIES WHICH HAVE ACCEPTED THE INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1948, AND OF TERRITORIES TO WHICH THE CONVENTION HAS BEEN EXTENDED

ACCEPTANCES DEPOSITED		
COUNTRY	DATE OF DEPOSIT	EFFECTIVE DATE
United Kingdom	Sept. 30, 1949	Nov. 19, 1952
New Zealand	Dec. 29, 1949	
United States of America	Jan. 5, 1950	
France	Feb. 8, 1950	
Netherlands	Apr. 18, 1950	
Sweden	May 16, 1950	
Norway	June 12, 1950	
Union of South Africa	Aug. 18, 1950	
Iceland	Oct. 19, 1950	
Portugal	Nov. 30, 1950	
Canada	Feb. 1, 1951	
Pakistan	Feb. 1, 1951	
Denmark	Oct. 15, 1951	
Yugoslavia	Nov. 13, 1951	
Italy	Nov. 19, 1951	
Belgium	Dec. 5, 1951	
Israel	July 2, 1952	
Japan	July 23, 1952	
Philippines	Oct. 2, 1952	
India	Nov. 19, 1952	
Spain	Dec. 26, 1952	Mar. 26, 1953
Liberia	Jan. 13, 1953	Apr. 13, 1953
Chile	June 5, 1953	Sept. 5, 1953
Finland	Aug. 13, 1953	Nov. 13, 1953
Irish Republic	Aug. 19, 1953	Nov. 19, 1953
Viet Nam	Sept. 12, 1953	Dec. 12, 1953
Panama	Jan. 8, 1954	Apr. 8, 1954
Greece	Jan. 21, 1954	Apr. 21, 1954
Nicaragua	Feb. 19, 1954	May 19, 1954
Cambodia	Mar. 2, 1954	June 2, 1954
U. S. S. R.	May 10, 1954	Aug. 10, 1954
Switzerland	May 19, 1954	Aug. 19, 1954
Haiti	May 26, 1954	Aug. 26, 1954
Egypt	June 11, 1954	Sept. 11, 1954
Poland	June 11, 1954	Sept. 11, 1954

EXTENSIONS NOTIFIED	
TERRITORY	EFFECTIVE DATE
Alaska, Hawaii and Puerto Rico	Nov. 19, 1952
Spanish Protectorate of Morocco and the Spanish Colonies	Mar. 26, 1953
Hong Kong	Apr. 7, 1953
Somaliland	July 6, 1953
Singapore	Aug. 5, 1953
Malaya	Oct. 21, 1953

DENUNCIATION OF 1929 CONVENTION

The Government of the United Kingdom received a notification of denunciation of the International Convention for the Safety of Life at Sea, signed at London on May 31, 1929, from the Government of Greece on January 21, 1954, and from the Government of Poland on June 11, 1954. In accordance with Article 66 of the Convention, the Greek denunciation will take effect on January 21, 1955, and the denunciation by Poland will take effect on June 11, 1955.

SPARE PARTS SHOP

If you do not like to wear your safety goggles when you are engaged in hazardous work, follow this suggestion: Next time you are in port, spend an hour or so shopping around for an extra eye.

Side Lights on the Rules

In this article, the 13th in the Sidelights on the Rules series, we shall continue the comparison of the International Rules with the corresponding provisions in the local rules applicable to the Inland Waters, Western Rivers, and the Great Lakes by turning to Rule 16, International Rules.

The first part of this rule requires vessels and seaplanes to proceed at moderate speed in restricted visibility in the following terms:

Rule 16 (a) Every vessel, or seaplane when taxi-ing, on the water, shall, in fog, mist, falling snow, heavy rainstorms or any other condition similarly restricting visibility, go at a moderate speed, having careful regard to the existing circumstances and conditions.

Similar provisions are to be found in Article 16, Inland Rules, and Sec. 80.13 (c), Pilot Rules for Inland Waters, insofar as vessels are concerned. However, both are silent as to seaplanes. Another difference is that neither Article 16 nor Sec. 80.13 (a) refers to "other conditions similarly restricting visibility."

Article 16, Inland Rules, states:

Art. 16. Every vessel shall, in a fog, mist, falling snow, or heavy rainstorms, go at a moderate speed, having careful regard to the existing circumstances and conditions. . . .

Section 80.13 (a), Pilot Rules for Inland Waters, which is almost identical, in turn, provides that:

80.13 Speed in fog; posting of rules; diagrams—(a) Moderate speed in fog.—Every steam vessel shall, in a fog, mist, falling snow, or heavy rainstorms, go at a moderate speed, having careful regard to the existing circumstances and conditions. . . .

Corresponding Rule Numbered 16, Western Rivers Rules, though similar, in addition to being silent as to seaplanes, omits the phrase "having careful regard to the existing circumstances and conditions," and fails to provide for vessels other than steam vessels. It also contains the phrase "whether by day or by night:"

RULE NUMBERED 16. Every steam vessel shall, in fog, mist, falling snow, heavy rainstorms, or any other condition similarly restricting visibility, whether by day or night, go at a moderate speed. . . .

Rule 15, Great Lakes Rules, on the other hand, is worded still differently:

Rule 15. Every vessel shall, in thick weather, by reason of fog, mist, falling snow, heavy rainstorms, or other causes, go at moderate speed. . . .

The last part of Rule 16, International Rules, which requires a power-driven vessel to stop her engines when a fog signal is heard from what appears to be forward of the beam, states:

(b) A power-driven vessel hearing, apparently forward of her beam, the fog-signal of a vessel the position of which is not ascertained, shall, so far as the circumstances of the case admit, stop her engines, and then navigate with caution until danger of collision is over.

IT IS SUGGESTED THE READER REFER TO CG–169, "RULES TO PREVENT COLLISIONS OF VESSELS AND PILOT RULES FOR CERTAIN INLAND WATERS OF THE ATLANTIC AND PACIFIC COASTS AND OF THE COAST OF THE GULF OF MEXICO;" CG–172, "PILOT RULES FOR THE GREAT LAKES AND THEIR CONNECTING AND TRIBUTARY WATERS AND THE ST. MARYS RIVER;" AND CG–184, "PILOT RULES FOR THE WESTERN RIVERS AND THE RED RIVER OF THE NORTH;" WHICH CONTAIN THE LOCAL RULES TO PREVENT COLLISIONS BETWEEN VESSELS ON THE LOCAL WATERS OF THE UNITED STATES. REFERENCES TO RULES AND ARTICLES THROUGHOUT THIS SERIES MAY BE FOUND THEREIN.

Aside from the fact a power-driven vessel is termed a steam vessel in inland waters, Art. 16, Inland Rules, and Sec. 80.13 (a), Pilot Rules for Inland Waters, are worded identically:

Art. 16. . . . A steam vessel hearing, apparently forward of her beam, the fog signal of a vessel the position of which is not ascertained shall, so far as the circumstances of the case admit, stop her engines, and then navigate with caution until danger of collision is over.

80.13 Speed in fog; posting of rules; diagrams—(a) Moderate speed in fog. . . . A steam vessel hearing, apparently forward of her beam, the fog signal of a vessel the position of which is not ascertained shall, so far as the circumstances of the case admit, stop her engines and then navigate with caution until danger of collision is over.

Corresponding Rule Numbered 16, Western Rivers Rules, not only is worded differently, but merely requires a steam or other power-driven vessel hearing another vessel's fog signal from what appears to be forward of the beam to reduce speed to bare steerageway:

RULE NUMBERED 16. . . . A steam vessel hearing, apparently forward of her beam, the fog signal of another vessel shall at once reduce her speed to bare steerageway, and navigate with caution until the vessels shall have passed each other.

The term bare steerageway is commonly held to be the slowest possible speed a vessel can make and still maintain rudder control.

Further differences in wording and meaning are to be found in Rule 15, Great Lakes Rules, which contains the corresponding provisions for the Great Lakes and their connecting and tributary waters. In these waters, a steam or other power-driven vessel must reduce speed to bare steerageway upon hearing a fog signal of another vessel from what appears to be not more than four points from right ahead:

Rule 15. . . . A steam vessel hearing, apparently not more than four points from right ahead, the fog signal of another vessel shall at once reduce her speed to bare steerageway, and navigate with caution until the vessels shall have passed each other.

These differences are not particularly critical as long as vessels remain within their respective waters. However, the trend today is away from localized shipping, and that often makes the differences critical.

In the next issue, the series will go on to the clear weather steering and sailing rules. Here, too, critical differences will be found in the meeting, crossing, and overtaking rules.

Global Marine Communications

(Continued from page 160)

officially recognized as an instrument capable of being used effectively in a marine communication system.

The marine radiotelephone subject would not be complete without mention of the so-called high-seas or long-distance radiotelephone system. This system is comparable to the long-range marine radiotelegraph system employing high frequencies, and provides ships with a facility to communicate by radiotelephone directly with the country with which communication is desired. At present you will find these installations confined generally to the large passenger vessels making overseas voyages, principally as a convenience to passengers.

Any discussion of the global marine communications system must include mention of the associated coastal stations. Such stations are located throughout the world to provide

interconnection between landline facilities and ships at sea for the exchange of both safety and commercial messages. Coastal stations in most foreign countries are maintained and operated by their respective governments. In the United States, while Coast Guard and Navy stations maintain safety watches on the distress frequencies, privately owned commercial stations are operated to provide both safety and general communication service. To give the maximum of service and the greatest protection to ships at sea, most coastal telegraph stations throughout the world maintain watch on high frequencies as well as on the international calling and distress frequency of 500 kilocycles.

Beginning in about 1921 and up to World War II, radio navigation centered around the use of radio direction finders either at shore-based radio compass stations on the frequency 375 kc. or on board ship in conjunction with shore-based radio beacon stations operating in the 290–320 kc. band. While radio direction finders and radio beacons still are useful navigating tools, the wartime developed radar and loran are of great assistance in navigating under conditions of poor visibility because of radar's ability to detect objects without dependence upon a signal being radiated by the object and loran's extension of the useful range of radio navigation facilities.

The International Convention on Safety of Life at Sea requires that the contracting governments undertake to provide for the rescue of persons in distress at sea. The Convention on International Civil Aviation contains similar provisions with respect to rendering assistance to aircraft in distress. While the wording of the two conventions is different, the objective is the same, namely, to provide greater safety and security for the passengers and crew of surface ships and aircraft. The basis for a successful search and rescue agency is an adequate communication system properly used. The global marine communications system furnishes the necessary link for surface craft, and through the provisions of various international treaties, is integrated with the communication system of aircraft to form the combined network upon which the search and rescue agency is dependent.

This briefly traces the history of maritime communications. Through the joint efforts of the maritime nations, a successful global marine communications system has been developed. Moreover, through the machinery established by international agreements, future progress toward the improvement of the world-wide system is assured.

Your Fact Forum

Q. When must the steering gear be tested by a licensed officer?

A. On all vessels making a voyage of more than 48 hours duration, the entire steering gear should be examined and tested by an officer of the vessel within a period of not more than twelve (12) hours prior to departure. On other vessels similar examinations and tests should be made at least once each week.

Q. When running well off the wind or running free in a sailboat, how can a sudden gust of wind be met which threatens to capsize the boat?

A. Slack the sheet to spill the wind out of the sail and luff the boat up into the wind at the same time.

Q. Before painting canvas, what should be done, and why?

A. Canvas should be wet before painting; some advocate soapy water, others plain fresh water. This keeps the canvas fairly pliable as it thus takes much less paint than when dry.

Q. Explain the purpose of extraction, or bleed, steam, and how it is obtained.

A. Extraction steam is used to augment the auxiliary exhaust or back pressure steam which serves to heat the feed water and low pressure distilling plants, seal the shaft glands, and cushion auxiliary machinery. It is extracted during near full load conditions from the later stages of the main turbine via bleeder connections in the casings. Some approved means must be provided to prevent steam from entering the turbine via the bleeder connections.

Q. What is a cross-compound turbine?

A. A cross-compound turbine is a form of compound turbine in which the steam passes successively through two separate high and low pressure casings or turbines, each turbine driving separate pinions of a reduction gear.

Q. When a vessel is moored to two anchors, what is the most advantageous position for the cable shackles or detachable links in event of a foul hawse?

A. When moored to two anchors the most advantageous position for the shackles or detachable links is on deck forward of the windlass wildcat, so that in the event of foul hawse they are readily available for detaching in order to take the turns out of the chain.

Q. What precaution is necessary in taking a twin screw vessel away from a wharf?

A. The inside propeller should not be used until the stern is well clear.

Q. What precautions must be borne in mind by ships' officers when maneuvering vessels powered with a geared turbine drive?

A. Vessels powered with geared turbines usually require separate turbines for backing purposes and generally do not have the same amount of power that is available for forward drive.

Q. What is the purpose and order of application of the two types of paints used on a ship's bottom?

A. Anticorrosive paint is applied first to prevent corrosion of the steel surface, and then an antifouling paint to prevent or discourage fouling of the ship's bottom.

Q. What is the purpose of loadlines on vessels?

A. Loadlines are assigned to vessels with the purpose of affording a positive means for the ship's personnel, law enforcement agencies, and other interested parties to determine if the vessel has been loaded in excess of the limitations. These limitations are placed on the ship by law for the various combinations of route, season, cargoes, and water densities that may be encountered. The loadline markings are so placed that they assure the vessel has sufficient reserve buoyancy, compartmentation, and strength, as well as ample freeboard so that in combination with the other factors involved, she possesses reserve stability. Sufficient freeboard is required so that the deck provides a safe working platform for the crew, and the hatches and other openings are high enough above the water to be secure from seas that may be encountered.

Q. Explain why throttling of an engine in which saturated steam is used may produce superheated steam in the valve chest? Why is this undesirable?

A. In a throttling process the steam passes from a higher pressure to a lower pressure, at approximately the same total heat. As the steam at the lower pressure still has the same total heat, it is superheated proportionately with the pressure drop. Therefore, when steam passes through a steam admission valve, there is a drop in pressure without performance of work, which is not economical.

LESSONS FROM CASUALTIES

COTTON WASTE

The inherent hazard and persistent nature of fire in a cargo of cotton aboard ship were dramatically emphasized last spring when a foreign freighter burned for three days in a Southern port of the United States. While bulk sulphur and other materials which may have been combustible were near the area of the fire, it was determined that these materials had not contributed to the origin of the fire, and the cotton cargo was the principal agent. Fortunately there were no lives lost and injuries were minor, although there was considerable damage to the vessel and to the cargo.

Five hundred bales of cotton had been loaded in the bottom of No. 5 hold at one port eleven days before the fire. The remainder of No. 5 hold was loaded at another port with about 1400 bales of cotton linters and 55 large sealed drums of a commercial petroleum additive named Lubrisol. The flash point of this petroleum additive was about 430 degreees F, which is well above and beyond the flash point range of inflammable liquids prohibited by the Dangerous Cargo regulations from being loaded in the same hold as baled cotton.

While this vessel was loading bulk sulphur in No. 4 hold at still another port, smoke was seen issuing from the goose-neck ventilator on deck, which was the common ventilator for No. 4 and No. 5 holds. No fire was seen in No. 4 hold where the bulk sulphur was being piled, but men in No. 4 hold reported that the after bulkhead next to No. 5 hold was unusually hot. Within one-half hour, the Master felt certain that there was definitely a fire in the cotton with which No. 5 hold was completely loaded. He ordered the discharge of 1,500 lbs. of CO_2 gas into No. 5 hold. No immediate effects of the CO_2 gas were apparent and a smoldering fire continued to discharge smoke from the ventilator.

About two hours after the first detection of smoke, it was definitely established that the seat of the fire was in No. 5 hold and it was decided to have the vessel proceed immediately to a large nearby port where proper facilities were available to discharge the cotton linters and properly combat the fire.

The foreign freighter arrived and berthed in the large nearby port about six hours later with the fire still in a smoldering state. A city fireboat was standing by as the discharge of linters began. Within another eight hours the square of the shelter deck was completely discharged of linters and upon removal of the hatch boards of the 'tween deck, it was found that the entire surface of the cotton linter bales in the 'tween deck was burning.

As many of the freighter's fire hoses as could be brought to bear and hoses from the fireboat were turned on the fire in No. 5 hold. Due to excessive fumes and smoke which hindered fire fighting personnel tremendously, the fire gained during the next half hour, and it was decided to flood the lower hold. Water was pumped in through ballast lines. As the flooding stage rose in the hold, it seemed that the fire was being brought under control.

However, about two hours after flooding began, an explosion occurred in the starboard refrigerated cargo boxes in No. 5 'tween deck followed by a violent flash which seemed to increase the intensity of and feed the fire in the cargo. Shore fire apparatus was now called. Since the continued efforts of fire fighters from the vessel's crew, from the fireboat, and from the shore brigade did not seem to be gaining control over the conflagration, the Captain of the Port and a Port Commissioner ordered the vessel to leave the wharf and proceed to an anchorage. It was feared that the fire might spread to the wharf. Fire fighting was continued at the anchorage using all hose lines available.

As a result of the flooding of No. 5 hold, from below and from above, the water level gradually rose above the shelter deck and overflowed into No. 4 hold. Water also made its way by devious routes into the shaft alley, evaporator room, and engine room. With the fireboat, assisted by three tugs, pouring water into the ship the amount of water in the lower holds was too great to be handled by the ship's pumps. Gradually the stern of the vessel settled until it was resting on the bottom at the anchorage, leaving only three feet of freeboard at the stern.

One drastic measure taken to enable the fire fighters to get at the heart of the fire was to cut 8-inch circular openings in various places in the main deck of No. 5 hold to allow water to be directed on the burning cotton in the shelter deck wings and onto the refrigerated cargo box in the forward end of the shelter deck.

Toward the evening of the second day, the fire was somewhat under control and a barge was brought alongside. Unloading of cotton linter bales and oil drums from the forward part of No. 5 shelter deck was begun by vessel's personnel and longshoremen in order to get at the refrigerator boxes which were burning with heavy smoke and acrid fumes. The intense difficulties of personnel working under these conditions prevented much headway in unloading and it was not until the following afternoon that access was gained to the refrigerator boxes. By the evening of the third day the fire had been completely extinguished.

While the partially burned and unburned cotton cargo was being unloaded the next day, a bale of cotton in the forward starboard corner of No. 5 lower hold was found to be burned and charred and the burlap covering on the immediately adjacent bales was also charred. The wooden battens on a trunk which led from the bilge valves in the lower hold up to the shelter deck next to the refrigerator boxes were also completely charred along their entire length.

It was concluded that the source of the fire was in this bale of cotton which was found to be most severely burned in the lower hold, and was due to spontaneous heating followed by ignition. Undoubtedly this original combustion was communicated upward on the wooden battens on the access trunk to the refrigerated cargo boxes. These boxes were insulated with cork covered by an asphalt sealing compound which, in burning, created dense smoke and biting acrid fumes. While at least one small fire, typical of the instantaneous type of ignition often encountered while loading bulk sulphur, had broken out in the sulphur in No. 4 hold before the fire in No. 5 hold was detected, this small fire was extinguished immediately, and no casual connection between this small fire and the later fire in No. 5 hold could be construed.

Bulk sulphur is permitted to be loaded in the same hold as baled cotton provided certain precautions are taken. If cotton is stowed over sulphur, the sulphur must be trimmed and leveled and the hold thoroughly cleaned of sulphur dust. A tight floor of two 1-inch crossed clean dunnage boards shall be laid on the sulphur before the cotton is stowed. If stowed alongside each other in the same hold, the cotton and sulphur

must be separated by a tight wooden bulkhead constructed dustproof. When bulk sulphur is loaded in a lower hold, cotton shall not be stowed in a 'tween deck hold over it until such hold has been thoroughly cleaned of all sulphur dust and the 'tween deck hatch covers are in place and covered with tarpaulins and dunnage. Bulk sulphur may not be loaded over cotton. There is no prohibition against stowing bulk sulphur and cotton in adjacent holds, as was the case in the above casualty, providing the bulkhead between them is tight. No connection was established between the presence of the drums of petroleum additive in the upper part of No. 5 hold and the origin of the fire in that hold, although some of this liquid, flowing from damaged drums during the latter stages of the fire, may have contributed to the combustion.

While the exact cause of the spontaneous heating of a bale of cotton in the hold of this vessel will probably never be ascertained, there are several possibilities. The Dangerous Cargo Regulations contain many precautions concerning the loading of cotton aboard ship, several of which are intended, among other things, to prevent spontaneous heating. For example:

(1) All cotton (to be accepted for stowage aboard ship) shall be securely baled and bound and covered with bagging on at least three-fourths of its surface, including both ends of the bale. Poorly compressed bales shall not be accepted. Loose cotton shall not be accepted for transportation on board any vessel.

(2) Bales that are wet or have been wetted shall be stowed separate from dry cotton, preferably in a 'tween deck, not overstowed. Bales that are saturated shall not be accepted.

(3) Bales showing contact with oil or grease shall not be accepted.

(4) Cotton shall not be stowed in a hold lately used for oil cargo unless such hold has been steamed or otherwise cleaned so as to completely remove all traces of oil residue. Particular care shall be exercised if the recent cargo contained any vegetable or animal oils. Holds which have been recently painted shall not be utilized for cotton stowage unless thoroughly dry.

(5) Cotton may not be stowed in a hold having a division bulkhead which is also a boundary of a boiler room, engine room, coal bunker, or galley unless such cotton is adequately dunnaged off the bulkhead. If adjacent to a boiler room, the space between the cotton and the bulkhead must be at least 6 inches deep at all points; if adjacent to an engine room bulkhead, the space must be at least 2 inches deep at all points.

Cotton, like other fibrous or finely divided materials, when contaminated with drying or oxidizing oils, will heat spontaneously and under confined conditions where there is insufficient circulation of air to dissipate the heat as generated, ignition may occur. Such spontaneous heating in cotton stowed closely in bales in the hold of a ship is particularly dangerous due to the lack of air circulation which will encourage ignition, and due to the extreme difficulties of locating the source of a fire caused in this manner and in combatting it.

Due to the millions of fibres involved in baled cotton and the penetration-resistant characteristics of such baled material, the cooling and extinguishment of baled cotton by solid streams of water is doubly difficult. The addition to the fire-fighting water supply of various chemical wetting agents which serve to reduce the surface tension of the water in order to secure more rapid penetration of baled fibres, hay, loose waste materials, forest litter, etc. is a growing branch of the science of firefighting. However, such wetting agents are not usually available aboard ships nor would their use be possible in hose streams supplied by the ship's pumps from a sea suction. However, in case of a vessel fire involving fibrous materials in the cargo when the vessel is alongside a dock, every attempt should be made to obtain modern shore apparatus which is equipped with the so-called "wet water" system.

Any cargo fire is hazardous and destructive. Casualty records indicate that fire in a cargo of cotton is not only hazardous and destructive, but persistent to the point of utter frustration. "Keep your cotton dry, cool, and clean" is probably the simplest possible summation of advice on loading this harmless-looking staple fibre. For all ship's personnel who have taken part in a 3 or 4 day fight against fire in cotton, the above advice will not require repeating.

GAS FREE—BUT FOR HOW LONG?

The importance of gas freeing any compartment or tank of a vessel which has contained petroleum products, before hot work can be undertaken in the vicinity, was dramatically underlined by an explosion. A tank barge which had contained no cargo for at least 14 days was shattered by a devastating blast (see figure 1) and one man lost his life. The explosion was apparently caused by the ignition of gasoline-air vapors by the acetylene torch of a yard workman, although the gasoline cargo had been pumped out two weeks before and the barge had been certified gas free 7 days before the accident.

Having been brought to the shipyard with another barge for routine hull repairs, the tank barge which suffered the above fatality was the first to be ordered gas freed. During the course of an initial hull inspection, a strong smell of gasoline was detected and instructions were given the yard foreman to have the barge thoroughly cleaned out in order that a Gas Free Certificate could be obtained. At this time several damaged portions of the hull were marked out with chalk for repairs, in particular one spot on each deck margin or gunwale abreast No. 2 port and starboard tanks. Tank cleaning operations were begun two days later. Daytime temperatures were near 100° F.

Since Butterworth equipment and steam were not immediately available, the procedure used in cleaning tanks on this barge was to wash them out with a stream of cold water under pressure, until all gasoline in liquid form had been cleared out. The practice at this yard, apparently, was to wash out the entire barge for a period of about two hours, wait for an interval of several hours, and then start over and wash it out again and again until the yard foreman was satisfied all liquid petroleum product had been removed.

During the first round of washing, the men who went into the cargo tanks wore gas masks because of the gasoline fumes. On subsequent rounds the masks were found unnecessary. Normally the wash water would be pumped through the entire cargo pipe line while the cleaning process was under way. However, on this occasion, because proper hose connections could not readily be made, water used for washing was sucked directly from the harbor by a portable pump and into the hose. Thus the cargo pipe lines and the entire cargo pump assembly inside the barge were not flushed out properly, and may not have been flushed out at all.

Two days after the cleaning operation had been performed, a commercial chemist, who was properly certified by the American Bureau of Shipping for the purpose of testing vessels for gas, carried out an examination of this tank barge and issued a Gas Free Certificate indicating that the tanks were safe for men and safe for fire.

Soon afterward, all tank hatch covers were closed because of rain. The covers remained closed for the next few days while sandblasting operations were carried out on the deck and on the sides. The evidence indicates that these covers were not opened between the time of the gas free certification and the moment of explosion.

Following the completion of sandblasting, it was decided by the yard management to begin removing the damaged deck sections which had been marked up for repairs. Several air blowers were available for ventilation purposes but none was used to air out any of the tanks before starting burning operations. An explosion meter was also available but apparently nobody thought it was necessary to use it. The hatch covers to the two tanks where burning took place, and probably the covers to all cargo tanks, remained closed.

On the morning of the fatal day, a yard workman was assigned the job of burning out a section of plating in No. 2 port tank. This burning was carried out without any untoward development. The burner was then instructed to move his equipment over to the plate to be burned out on No. 2 starboard tank. He did this, lit his acetylene torch, stooped over and applied it to the deck; a violent explosion occurred immediately, killing him instantaneously. The explosion shook the area within a mile radius.

A detail from the local Coast Guard Port Security Unit, the City police emergency rescue squad, fire apparatus, and ambulances rushed to the scene. Several heavy steel members and other debris were strewn about the yard. The sister tank barge next to the one which had exploded was damaged. Window panes in nearby buildings were shattered and corrugated metal sheathing on a warehouse 300 yards away was torn loose. The barge which had exploded suffered considerable structural damage in her cargo tanks and began sinking. She was quickly towed to a nearby shore and beached to prevent foundering. Fortunately there was little fire following the explosion and this was immediately extinguished.

Examination of the damaged barge on the day after the explosion indicated that the deep well vertical cargo pump with which it was equipped had a 20-inch cylindrical casing which extended through the deck down to within a few inches of the bottom of the barge. Between the bottom of the impeller in the lower end of this pump casing and the bottom of the casing itself there was a space approximately 4 inches deep which could not be pumped out or vacated in any normal pumping process. However, on the lower extremity of this pump casing was a 3-inch capped nipple obviously installed for the purpose of drainage. That this cap had not been removed for a long time was demonstrated in that it took two men with a 24-inch pipe wrench to remove the cap after the explosion. When the cap was removed, liquid gasoline drained out.

An explosimeter showed a reading of 100% explosibility in the immediate vicinity of this pump casing soon after the explosion. Eight days later a further test still indicated 100% explosibility on the meter in this immediate vicinity and further traces of liquid gasoline were also detected at that time.

The evidence was quite conclusive that the tank barge explosion was caused by the ignition of gasoline-air vapors which had originated from the cargo pump casing. The explosive vapor mixture had travelled from the pump casing through the cargo piping and escaped into No. 2 starboard tank through either a leaky valve or joint, or an open valve, gradually setting up an explosive mixture in this tank.

It is quite likely that had the drain nipple in the pump casing been removed, gasoline in this casing would have drained out and been flushed away and no explosive vapors been generated. It is also likely that ordinary ventilation precautions to replace the air or vapors in the tanks before any hot work was started could easily have avoided the explosion. Merely opening the tank access hatch would very likely have sufficed to warn the workmen of the lurking vapors by sense of smell. Filling the pump casing and the entire cargo pipe line with water would probably have prevented the release of explosive vapors to a great extent.

While the above simple and elementary precautions were not taken and the hot work was begun under conditions which may be described as utterly blind to safety precautions, it is felt that a principal factor in causing the series of derelictions which led to such a grim outcome was a misunderstanding of the significance of the Gas Free Certificate.

Tank Vessel Regulations require that no riveting, welding, burning, or like fire-producing operations shall be undertaken within or on the boundaries of bulk cargo spaces or in spaces adjacent thereto, until an inspection has been made to determine that such operations can be undertaken with safety. Such inspection shall be made, when in a port of the continental United States, by a gas chemist certificated by the American Bureau of Shipping, if such services are reasonably available.

It must be clearly understood, in the interpretation and application of this safety requirement, that the certification of any compartment of a

(Continued on page 171)

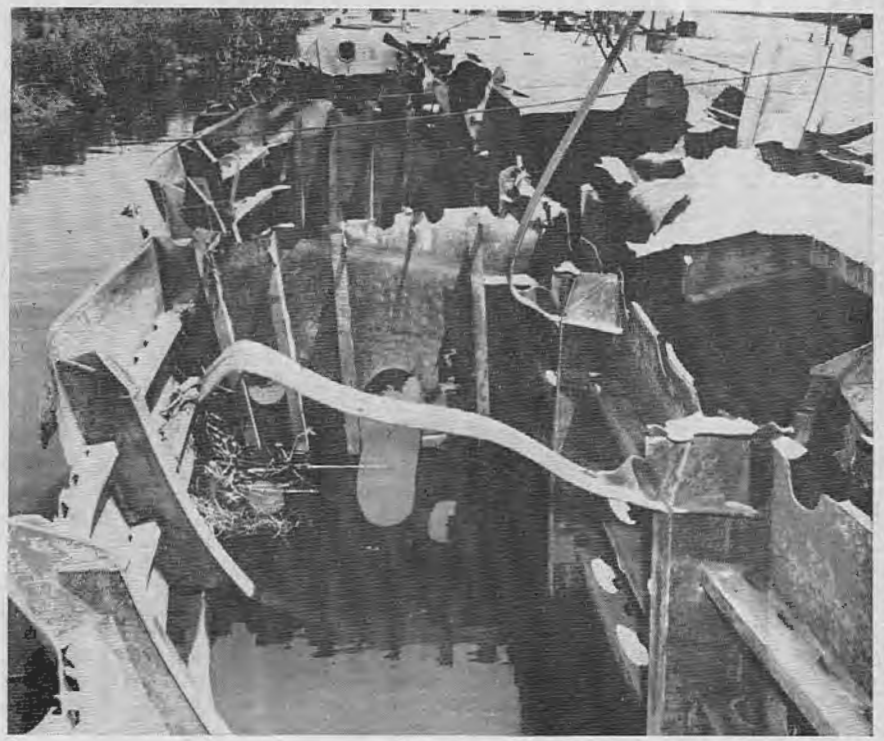


Figure 1.

AMENDMENTS TO REGULATIONS

[EDITOR'S NOTE.—The material contained herein has been condensed due to space limitations. Copies of the Federal Registers containing the material referred to may be obtained from the Superintendent of Documents, Washington 25, D. C.]

TITLE 46—SHIPPING

Chapter I—Coast Guard, Department of the Treasury

[CGFR 54–16]

MISCELLANEOUS AMENDMENTS TO CHAPTER

A notice regarding proposed changes in the navigation and vessel inspection rules and regulations was published in the FEDERAL REGISTER dated February 25, 1954, 19 F. R. 1056–1059, as Items I to XI, inclusive, on the Agenda to be considered by the Merchant Marine Council, and a public hearing was held on March 23, 1954, at Washington, D. C.

The amendments to 46 CFR 50.01–15 (d) and 55.07–5 (d) will permit the use of ultrasonic or other nondestructive methods for determining the thickness of the outer walls of pipe bends after fabrication. These changes provide an alternate method for determining pipe wall thicknesses and will require a non-destructive method of examination of pipe wall thicknesses where the design temperatures of the piping will exceed 750° F. These amendments are based on Item II in the Agenda.

The amendments to 46 CFR 52.01–55 (a) and 61.20–15 (f), regarding maximum allowable pressures for boilers constructed before November 19, 1952, provide that the maximum allowable pressure of a boiler may be recalculated on the basis of the regulations in effect at the time such boiler was contracted for or built, but in no event will the maximum allowable pressure be changed to permit a boiler to operate with a factor of safety of less than four and a half. These amendments are based on Item I in the Agenda.

The new regulation designated 46 CFR 52.65–15 (f) will require direct drains from boiler safety valves on new boilers or on replacements of existing safety valves. This new regulation is based on Item I in the Agenda.

The amendment to 46 CFR 52.70–10 (a) covers certain detail requirements for boiler nozzles, mountings and attachments. There are no limitations on butt-welded flanges. However, various restrictions are placed on boiler nozzles, mountings and attachments with flanged or welding or screwed ends. Slip-on flanges and socket-welded connections may be used under certain conditions. This amendment is based on comments and data submitted in connection with the proposed regulation in Item I in the Agenda.

The amendment to 46 CFR 55.10–1 (g), regarding relief valves in exhaust pipe, clarifies the intent of the regulation requirements for the exhaust lines of machinery when designed at the same pressure as the inlet pressure. Where the piping on the exhaust side of machinery is designed to the same pressure as the inlet steam pressure, relief valves on the exhaust side are not considered necessary and will no longer be required. This amendment is based on Item II in the Agenda.

The new regulation designated 46 CFR 55.10–1 (h) will restrict certain installations, such as control and instrument piping in superheated steam lines, to minimize the possibility of cracking due to thermal shock. The new regulation is based on Item II in the Agenda.

The amendment to 46 CFR 55.10–25, regarding bilge and ballast piping, revises paragraphs (i) and (j) and adds a new paragraph (k). These changes are intended to clarify the requirements and to provide for the proper draining of bilges when pumps are used for combination service. This amendment is based on Item II in the Agenda.

The amendment to 46 CFR 57.10–5 (d) (3) removes the specific prohibition against the use of 90° elbows or bends of less than five diameters in the exhaust piping of all internal combustion engine installations on board motor vessels. Exhaust piping will still have to be led to the point of escape without traps and a minimum number of bends or elbows to prevent back pressure. This amendment is based on Item III in the Agenda.

The new regulations designated 46 CFR 70.05–10 and 90.05–10 describe the intent and application of the phrase "vessels on an international voyage," as used in the Coast Guard rules and regulations. These amendments are based on Item IV in the Agenda.

The amendments to 46 CFR 71.25–20 (a) (1), 71.25–20 (a) (2), 91.25–20 (a) (1), and 91.25–20 (a) (2), add requirements regarding testing and marking for CO_2 cylinders used in hand portable fire extinguishers, and semiportable and fixed fire extinguishing systems. These amendments are based on Item VIII in the Agenda.

The amendments to 46 CFR 72.05–5 (h) and 72.05–10 (b), regarding structural fire protection of passenger vessels, 72.05–50 (g), regarding ventilation of auxiliary machinery spaces, and 72.05–55 (c), regarding furniture and furnishings in passageways and stairway enclosures on passenger vessels, clarify the requirements. These amendments are based on Item V in the Agenda.

The amendments to 46 CFR 72.40–5 (a) and (b) and 92.25–5 (a) will require on new passenger, cargo and miscellaneous vessels contracted for on or after January 1, 1955, that the maximum distance between courses of rails in guard rails shall be 18 inches. These amendments are based on Item VII in the Agenda.

The amendments to 46 CFR 75.10–15 (b), regarding lifesaving equipment for passenger motor vessels of less than 300 gross tons in the coastwise service, 94.01–1 (a), regarding application of lifesaving equipment requirements to cargo and miscellaneous vessels, 75.15–90 and 94.15–90, regarding application of stowage and marking requirements for lifeboats and life rafts, 75.43–10 (a) and 94.43–10 (a), regarding the number of ring life buoys and water lights required, 94.45–1 (a) and 94.45–10 (a), regarding line-throwing appliances on cargo and miscellaneous vessels, 94.50–10 (a), regarding illumination for lifeboat launching operations on cargo and miscellaneous vessels, and 94.55–1 (a), regarding portable radio apparatus on cargo and miscellaneous vessels, clarify the application of such regulations. The amendments modify the application of certain requirements to vessels but do not change the requirements for such life-saving items. These amendments are based on Item IV of the Agenda.

The amendments to 46 CFR 76.05–1, regarding fire detecting and extinguishing equipment, 76.05–5 (a), regarding manual alarm system, 76.05–10 (a), regarding the supervised patrol or watchman system, and 95.05–10, regarding fixed fire extinguishing systems required, eliminate the application of certain fire prevention re-

quirements to motorboats and clarify the application of the regulations. The amendments to 46 CFR 76.50–10 and 95.50–10 clarify the requirements regarding hand portable fire extinguishers, semiportable fire extinguishing systems and exclude motorboats from certain requirements with respect thereto. These amendments are based on Item IV in the Agenda.

The amendment to 46 CFR 78.30–10 (a), regarding supervised patrols on passenger vessels, eliminates the application of this requirement to motorboats. The amendment to 46 CFR 93.01–1 (a), regarding stability regulations, makes these requirements apply only to vessels on an international voyage, which are contracted for on or after November 19, 1952. These amendments are based on Item IV in the Agenda.

The miscellaneous amendments to 46 CFR Part 146 revise and bring up to date certain requirements governing water transportation of certain commodities so that they will be as nearly parallel as practicable to the Interstate Commerce Commission regulations governing land transportation of the same commodities. These amendments also include certain new articles of commerce, authorize additional shipping containers for certain commodities, and revise certain marking and labeling requirements. The amendments affect 46 CFR 146.04–5, regarding list of explosives and other dangerous articles and combustible liquids; 146.20–3 (q), regarding shipment of new explosives; 146.20–7 (k), regarding explosive projectiles; 146.20–9 (a) and (d) (1), regarding class B explosives; 146.20–55, regarding electric lanterns or flashlights; 146.20–100, regarding class A, dangerous explosives; 146.20–200, regarding class B, less dangerous explosives; 146.20–300, regarding class C, relatively safe explosives; 146.21–65 (c), regarding limited quantity shipments of inflammable liquids; 146.21–100, regarding transportation of inflammable liquids; 146.22–25 (b), regarding lithium, aluminum hydride; 146.22–100, regarding transportation of inflammable solids and oxidizing materials; 146.23–100, regarding transportation of corrosive liquids; 146.24–100, regarding transportation of compressed gases; 146.25–200, regarding transportation of poisonous articles; 146.26–100, regarding transportation of combustible liquids; 146.27–100, regarding transportation of hazardous articles; and 146.25–55 (b) (1) and (2), regarding exemptions for class B, poisonous solids. These amendments are based on Item IX in the Agenda.

The new regulation designated 46 CFR 147.04–5 and amendment to 46 CFR 147.05–100 add new requirements regarding liquefied carbon dioxide for permanently installed fire extinguishing systems and requirements regarding engine starting fluid. These amendments are based on Item IX in the Agenda.

The specifications for various pyrotechnic distress signals have been revised and brought up to date. The changes in the revised specifications published in this document deal primarily with the requirements regarding construction, performance, sampling, inspections, conditioning, and tests for such signals. These amendments are based on Item X in the Agenda. The specifications have been republished in their entirety in order to incorporate certain editorial changes required.

The specification Subpart 160.021, regarding hand red flare distress signals, contains amendments to 46 CFR 160.021–1 (c), 160.021–3, and 160.021–4, which revise and bring the specification up to date.

The specification Subpart 160.022, regarding floating orange smoke distress signals, contains amendments to 46 CFR 160.022–1 (b), 160.022–3, and 160.022–4, which revise and bring the specification up to date.

The specification Subpart 160.024, regarding pistol-projected parachute red flare distress signals, contains amendments to 46 CFR 160.024–1 (c), 160.024–3, and 160.024–4, which revise and bring the specification up to date.

The specification Subpart 160.036 regarding hand-held rocket-propelled parachute red flare distress signals, contains amendments to 46 CFR 160.036–1 (b), 160.036–3, and 160.036–4, which revise and bring the specification up to date.

The specification Subpart 160.037, regarding hand orange smoke distress signals, contains amendments to 46 CFR 160.037–1 (c), 160.037–3, and 160.037–4, which revise and bring the specification up to date.

The amendment to 46 CFR 160.040–5 (c), regarding representative production tests of all rockets, was revised in accordance with the proposed amendment described in Item XI in the Agenda. The change requires representative production check tests on all rockets supplied, either with new appliances or as replacements for spent rockets. The specification Subpart 160.040, regarding impulse-projected rocket type (and equipment) line-throwing appliances for merchant vessels, has been also editorially revised and brought up to date.

These amendments to the regulations shall become effective 90 days after the date of publication of this document in the Federal Register, except as otherwise indicated in the regulations.

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 2–54

5 August 1954

Subj: Placard forms; use of transparent materials in lieu of glass for posting of

1. *Purpose.* The purpose of this memorandum is to set forth a policy permitting the use of plastics in cases where the regulations require that certain forms be framed under glass for posting on board vessels.

2. *Background.* Inquiries have been received concerning the acceptance of laminated acetate or other plastics in lieu of glass for the purpose of protecting the various forms required by the vessel inspection laws and regulations to be displayed to the public on board vessels.

3. *Discussion.* The statutes and regulations requiring framing under glass were intended to protect the posted placards or forms and to insure their legibility for considerable periods of time. At the time that the statutes and/or regulations were made effective, the only available suitable material for the purpose intended was glass. Due to the comparatively recent advances made in the field of transparent plastics it is considered desirable to permit the use of these materials in lieu of glass where possible.

4. *Action.* The following policy will be followed in all cases where glass is now required in accepting plastics in lieu of glass:

a. All printed placard forms may be encased in laminated acetate or framed under clear transparent sheet plastic or equivalent.

b. All forms requiring entries or signature may be framed under clear transparent sheet plastic or equivalent.

c. Where break glass type boxes are installed, plastics shall not be used in lieu of glass.

5. *Effective date.* Upon receipt.

R. A. SMYTH,
Captain, U. S. Coast Guard,
Acting Chief, Office of
Merchant Marine Safety.
By direction of the Commandant.

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 3–54

17 August 1954

Subj: Revocation or denial of merchant marine documents to persons

convicted of narcotic violations or who are users of or addicted to the use of narcotic drugs.

1. *Purpose.* The purpose of this circular is to bring attention to the provisions of Public Law 500, 83d Congress, approved 15 July 1954, which provides authority for the revocation or denial of merchant marine documents to persons involved in certain narcotic violations or who are the users of or addicted to the use of narcotic drugs.

2. *Discussion.* Public Law 500 provides statutory authority for the Coast Guard to deny issuing a document to a person involved in certain narcotics violations or to persons who are users of or addicted to the use of narcotic drugs. It also provides that if a person has been issued a document by the Coast Guard, then the Coast Guard may take action seeking to revoke the holder's document. This authority is specific and applies regardless of whether or not the holder of a Coast Guard document is acting under the authority of such a document.

3. *Public Law 500.* This is an act to provide for the revocation or denial of merchant marine documents to persons involved in certain narcotic violations (Public Law 500—83d Congress, 68 Stat. 484):

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That when used in this Act—

"(a) The term 'narcotic drug' shall have the meaning ascribed to that term by paragraph (a) of the first section of the Narcotic Drugs Import and Export Act, as amended (21 U. S. C., sec. 171 (a)), and also shall include marihuana as defined in section 3238 (b) of the Internal Revenue Code.

"(b) The term 'Secretary' means the head of the department in which the Coast Guard is operating.

"c) The term 'seaman's document' means any document authorized by law or regulation to be issued to a merchant mariner by the Secretary.

"Sec. 2. The Secretary may—

(a) deny a seaman's document to—

(1) any person who, within ten years prior to the date of the application therefor, has been convicted in a court of record of a violation of the narcotic drug laws of the United States, the District of Columbia, or any State or Territory of the United States, which conviction has become final; or

(2) any person who, unless he furnishes satisfactory evidence that he is cured, has ever heen a user of or addicted to the use of a narcotic drug; and

(b) take action, based on a hearing before a Coast Guard examiner, under hearing procedures prescribed by the Administrative Procedure Act, as amended (U. S. C., title 5, secs. 1001–1011), to revoke the seaman's document of—

(1) any person who, subsequent to the effective date of this Act and within ten years prior to the institution of the action, has been convicted in a court of record of a violation of the narcotic drug laws of the United States, the District of Columbia, or any State or Territory of the United States, the revocation to be subject to the conviction's becoming final; or

(2) any person who, unless he furnishes satisfactory evidence that he is cured, has been, subsequent to the effective date of this Act, a user of or addicted to the use of a narcotic drug.

Approved July 15, 1954."

4. *Definition of narcotic drugs.*

a. The provisions of section 171 (a) of Title 21, United States Code, read as follows:

"(a) The term 'narcotic drug' means opium, coca leaves, cocaine, isonipecaine, opiate, or any salt, derivative, or preparation of opium, coca leaves, cocaine, isonipecaine, or opiate; and the word 'isonipecaine' as used herein shall mean any substance identified chemically as 1-methyl-4-phenyl-piperidine-4-carboxylic acid ethyl ester, or any salt thereof, by whatever trade name designated; and the word 'opiate' as used herein shall have the same meaning as defined in section 3228 (b) of Title 26."

b. The provisions of section 3238 (b) of the Internal Revenue Code or Title 26 of the United States Code read as follows:

"(b) The term 'marihuana' means all parts of the plant Cannabis sativa L., whether growing or not; the seeds thereof; the resin extracted from any part of such plant; and every compound, manufacture, salt, derivative, mixture, or preparation of such plant, its seeds, or resin; but shall not include the mature stalks of such plant, fiber produced from such stalks, oil or cake made from the seeds of such plant, any other compound, manufacture, salt, derivative, mixture, or preparation of such mature stalks (except the resin extracted therefrom), fiber, oil, or cake, or the sterilized seed of such plant which is incapable of germination."

5. *Applications for documents.* Every applicant for a seaman's document will be required to indicate on the application whether or not the applicant has ever been convicted of violation of the narcotic drug laws of the United States, the District of Columbia, or any State or Territory of the United States. If the answer is "Yes," the applicant will be required to state the place, date, and particulars of each conviction. The applicant will also be required to indicate whether or not the applicant has ever used or has ever been addicted to the use of narcotics. If the answer is "Yes," further information regarding the place, date, and particulars of use or addiction to the use of narcotics will be required. An applicant's failure to answer or refusal to answer one or more questions in the application will be considered as one of the reasons for refusal to issue the document in question.

6. *Revocation of documents.* In every case where there is reason to believe the holder of a seaman's document is no longer entitled thereto under the provisions of Public Law 500, 83d Congress, the Coast Guard will institute proceedings under the Administrative Procedure Act (5 U. S. C. 1001–1011) and R. S. 4450, as amended (46 U. S. C. 239), looking to the revocation of the Coast Guard document.

7. *Action required.* The cooperation of all persons concerned with or affected by Public Law 500, 83d Congress, is requested. All organizations representing or dealing with persons holding Coast Guard documents are requested to assist in distributing the information set forth in this circular.

R. A. SMYTH,
Captain, U. S. Coast Guard,
Acting Chief, Office of
Merchant Marine Safety.
By direction of the Commandant.

EQUIPMENT APPROVED BY THE COMMANDANT

FUSIBLE PLUGS

The regulations prescribed in Subpart 162.014, Subchapter Q, Specifications, require that manufacturers submit samples from each heat of fusible plugs 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 15 July to 15 August 1954, is as follows:

The Lunkenheimer Co., Cincinnati 14, Ohio. Heat Nos. 479 through 483.

AFFIDAVITS

The following affidavits were accepted during the period from 15 July to 15 August 1954:

Butterworth System, Inc., Foot of E. 22nd St., Bayonne, N. J., Valves.

Duoseal Corp., 8247 E. Firestone Boulevard, Downy, Calif., Valves & Fittings.

Metal Goods Manufacturing Co., 106–110 S. Park Ave., Bartlesville, Okla., Valves & Fittings.

ARTICLES OF SHIPS' STORES AND SUPPLIES

Articles of ships' stores and supplies certificated from 29 July 1954 to 27 August 1954, 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" are as follows:

CERTIFIED

New Process Chemical Co., Inc., 121 Clay St., San Francisco 11, Calif. Certificate No. 171, dated July 30, 1954, "PROCESS 129 SPECIAL DEGREASING COMPOUND."

New Process Chemical Co., Inc., 121 Clay St., San Francisco 11, Calif. Certificate No. 173, dated July 30, 1954, "TRICON SELF-RINSE TANK CLEANER."

R. C. D. Chemicals, Inc., 465 Straight St., Paterson, N. J. Certificate No. 183, dated August 12, 1954, "F. O. T. #99."

New Process Chemical Co., Inc., 121 Clay St., San Francisco 11, Calif. Certificate No. 186, dated August 27, 1954, "TRICON PROCESS 14."

New Process Chemical Co., Inc., 121 Clay St., San Francisco 11, Calif. Certificate No. 187, dated August 27, 1954, "PROCESS 130 SD."

New Process Chemical Co., Inc., 121 Clay St., San Francisco 11, Calif. Certificate No. 188, dated August 27, 1954, "TRICON PROCESS 61."

New Process Chemical Co., Inc., 121 Clay St., San Francisco 11, Calif. Certificate No. 190, dated August 27, 1954, "TRICON GAS-FREE TANK CLEANER."

Relief Officers

(Continued from page 161)

There are other casualties that may arise and which the Relief Mate must be prepared to meet. Damage to the ship's structure and gear may occur at any time during cargo operations. Or personnel may be injured about the vessel. It is essential that the Relief Mate know what emergency measures to take, what medical facilities are available, and what reports are required in these instances.

Cargo and ship's stores must also be protected from damage and possible pilferage. Where such conditions do take place the Relief Mate must know what reports are required. He must also know what company officials are available to assist in correcting such situations. The value of a complete list of emergency telephone numbers supplied to each vessel for use by both the regular and relief officers thus becomes more evident.

Many steamship companies carry specific types of cargoes aboard their vessels. Special means of handling and caring for this cargo in many cases have been developed. This may induce special docking problems, or loading or discharging situations with which a Relief Mate may not be familiar. For this reason special instructions available to the Relief Mate covering these situations are very helpful.

It is true many of the points covered appear routine to men who make a practice of staying with a particular company or ship trip after trip. The knowledge and experience these men have picked up during this time helps considerably towards efficient operation of their vessel. Some means of imparting this special knowledge quickly to the Relief Officer, aboard for possibly one watch, is essential. The method arrived at by one steamship company to accomplish this is considered worthy of note.

Gas Free—But for How Long?

(Continued from page 167)

vessel as "gas free", no matter to what degree, can only be held to describe the conditions of such compartment at the time that such certification is made.

The presence of any hidden deposit of a petroleum product, such as the gasoline in the bottom of the pump casing in the above case, may well lead to the generation of additional vapors in that area. The characteristic of the metal of compartments which h a v e contained petroleum products to continue to emit minute quantities of vapor from the pores of the metal long after the product has been pumped out may also lead, in time, to an explosive air-vapor concentration in the "empty" compartment.

In view of these changes in vapor concentration which can take place in any compartment *after* it has been examined and pronounced gas free, the time limitation factor in the gas free certification must always be given serious consideration. For instance, there are casualty records on file at Coast Guard Headquarters which clearly indicate that compartments which have been certified gas free in the morning have become contaminated by vapors and suffered an explosion by the afternoon of the same day, hidden deposits of petroleum product being the cause.

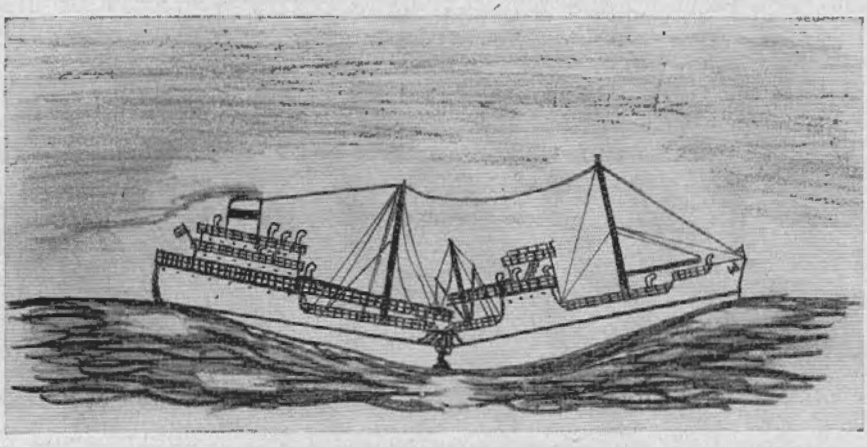
This condition may be caused, in part, by the heat of welding or burning which would tend to accelerate the generation of vapors in the heated area. It is also quite possible that penetration of the structure by such operations as burning, drilling, or chipping may expose hidden pockets of petroleum product which will then generate vapors. There are casualty cases on record wherein the gas free certification has been made and at a later time a valve has been opened or disassembled, product has run out, and an explosion occurred.

When it is remembered that the minimum concentration by volume of gasoline vapor in air necessary to have an explosive mixture is only about 1.5% and for other petroleum products the minimum percentage is similarly low, the need for extreme caution in relying on a compartment remaining gas free for a prolonged period, after it has been so certificated, is readily apparent.

The principal factor to be remembered when undertaking hot work on tank vessels is that a gas free certification only certifies conditions at the time of the chemist's examination and does *not* guarantee that any tanks or compartments will *remain* gas free. Due to the many unseen or unknown conditions, such as described above, which can lead to the generation of vapors after a gas free certification has been made, the safest attitude to be maintained concerning the propriety of conducting hot work in such compartments is one of continual suspicion.

When there has been any appreciable delay since the gas free certification was made, and especially if there are any conditions such as the above-mentioned which would encourage further vaporization, call the gas chemist again. The issuance of a gas free certificate every day work is continuing might seem, at the moment, to be an unnecessary expense or nuisance, but weighed against the consequences of explosion, it is very low-cost insurance.

U. S. GOVERNMENT PRINTING OFFICE: 1954



WATCH YOUR WEIGHT

Will this winter cost you a tanker? The heavy weather ahead is going to be tough on both the ships and the men who sail them. Here is a way to ease the strain on both at one time. Break out the guidance manual for loading your ship. With the assistance of this manual a favorable distribution of cargo and/or ballast can be simply and accurately determined. Thus a serious hogging or sagging stress is avoided and a possible casualty averted.

The necessity for the use of such a manual aboard T2 tankers is highlighted by the fact that a series of structural failures in these vessels led to the preparation and distribution of a "Guidance Manual for Loading T2 Tankers" in 1952 by the American Bureau of Shipping. During the past few years the value of this information has become recognized to such an extent that similar loading manuals are being developed for most new tankships before they leave the building yards.

Whether you sail a T2 or not, the preparation and use of a loading guide is good insurance against a broken back; yours and the ships!