

PROCEEDINGS OF THE MERCHANT MARINE COUNCIL UNITED STATES COAST GUARD

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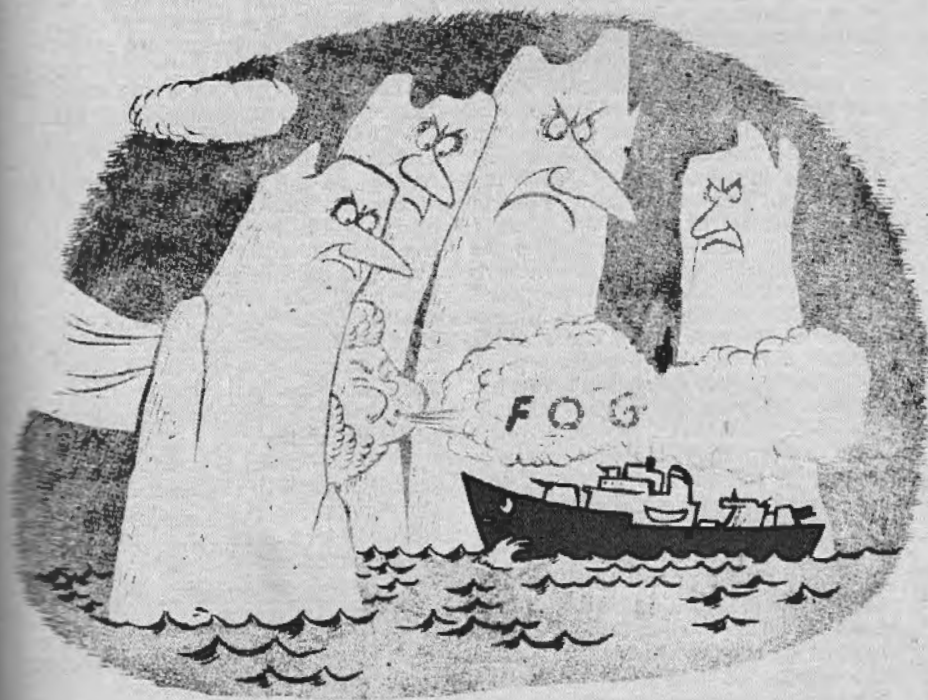


Vol. 10

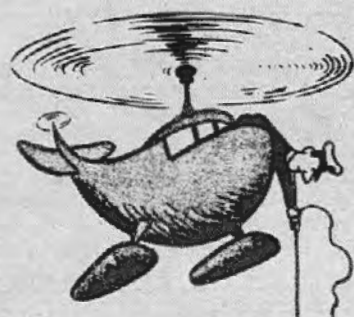
September 1953

No. 9

GOOD SEAMANSHIP MEANS:
TAKING YOUR VESSEL WHERE IT IS SAFE, WHEN IT IS SAFE,
AT THE SPEED OF A PRUDENT SEAMAN



NO MATTER HOW LITTLE THE VISIBILITY—
HALF OF IT BELONGS TO THE OTHER VESSEL



MERCHANT MARINE COUNCIL

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Coast Guard

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Chief Counsel

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

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COUNCIL ACTIVITIES

The Merchant Marine Council will hold a public hearing on Tuesday, 29 September 1953, commencing at 9:30 a. m., in Room 4120, Coast Guard Headquarters, 13th and "E" Streets, N. W., Washington, D. C., for the purpose of receiving comments, views, and data on the proposed changes in the Pilot Rules and the Navigation and Vessel Inspection Regulations, as set forth in Items I to XXVIII, inclusive, of the Merchant Marine Council semi-annual meeting agenda (CG-249). The agenda contains the specific changes proposed and where possible the present and proposed regulations are set forth in comparison form, together with the reasons for the changes where necessary.

Copies of the Merchant Marine Council semi-annual meeting agenda (CG-249) have been mailed to persons and organizations who have expressed a continued interest in the subjects under consideration and have requested that copies be furnished them. Copies of the agenda will be furnished others upon requests to the Commandant (CMC), United States Coast Guard, Washington 25, D. C., so long as they are available. After the supply of extra copies is exhausted, copies will be available for reading purposes only in Room 4104, Coast Guard Headquarters, or at the Offices of the various Coast Guard District Commanders.

Comments on the proposed regulations are invited. All persons who

desire to submit written comments, data, and views prior to the hearing for consideration in connection with the proposed changes should submit them in writing for receipt prior to 25 September 1953, by the Commandant (CMC), United States Coast Guard Headquarters, Washington 25, D. C., or comments, data, and views may be presented orally or in writing at the hearing. In order to insure consideration of comments and to facilitate checking and recording, it is essential that each written comment regarding a section or paragraph of the proposed regulations shall be submitted on Form CG-3287, showing the section number, the proposed change, the reason or basis (if any), and the name, business firm or organization (if any), and the address of the submitter.

At this Public Hearing, the proposed changes in the Pilot Rules and the Navigation and Vessel Inspection Regulations will be considered in the following order:

- ITEM I: PILOT RULES; LIGHTS FOR RAFTS.
- ITEM II: PILOT RULES FOR THE GREAT LAKES; WHISTLE LIGHTS.
- ITEM III: LAW ENFORCEMENT; OFFICERS' COMPETENCY CERTIFICATES CONVENTION, 1936.
- ITEM IV: MERCHANT MARINE OFFICERS; EXAMINA-

Continued on page 125.

Side Lights on the Rules

With this issue of the "Proceedings" we introduce a new feature series, entitled "Side Lights on the Rules." The pages devoted to this series of articles will endeavor to develop a better understanding of the various nautical rules of the road—local and international—by pointing out critical conflicts and basic similarities in the respective provisions. The present rules are sufficiently complex in themselves. On January 1, 1954, further conflicts will arise when the 1948 revision of the International Rules, which was dealt with in detail in the April-May-June 1953 issue of the "Proceedings," is made effective.

It might be said that the 1948 revision of the International Rules was a "house cleaning job" to eliminate confusion and vagueness in the provisions applicable to seagoing vessels. In this respect the revision was quite successful. It did not create greater uniformity with our own rules, but then, we must remember, the local rules of the United States have been developed unilaterally and that conflicts that exist today are the outgrowth of local custom.

The original International Rules to prevent collisions were adopted in this country on April 29, 1864, and applied on all our inland waters as well as on the high seas throughout the world. This act was made inapplicable to the high seas in 1890, to the Great Lakes in 1895, and to our coastal inland waters in 1897, as it was succeeded by other statutes applying in the respective waters indicated, with the result it remains in effect as the basic statute only on those waters now termed the Western Rivers.

Hence, in the United States there are today, in addition to the high seas, three distinct inland water jurisdictions covered by statutes. Except for the present International Rules (adopted in 1890 and put into effect in 1897 as a result of the deliberations of the International Conference of 1889) each set of statutory rules is supplemented by pilot rules now promulgated under statutory authority by the Commandant, United States Coast Guard. In addition, special lights and day signals prescribed by the Corps of Engineers, Department of the Army, for the Great Lakes and the Western Rivers, and the statutory Motorboat Act of 1940 further complicate requirements with regard to various vessels in all the inland waters of the United States.

A book might be written on the multitudinous differences that have developed in the various rules of the road in the different sections of the United States; differences which are the more noticeable because in other maritime countries the basic International Rules are followed, and, except for supplementary local regulations, departures such as are found in our various codes are unknown. There are, however, important points of similarity and uniformity in principle, despite numerous differences in detail, in the rules to prevent collisions on the high seas, coastal inland waters, the Great Lakes, and the Western Rivers. The reader should understand this underlying similarity and uniformity in principle prior to any discussion of pertinent conflicts, for it is, no doubt, this factor which is the strength of the rules, just as the differences may be said to constitute their chief weaknesses.

The major points of similarity and uniformity may be summed up as follows:

(1) Approaching steam vessels in good visibility are classified into three situations: meeting, overtaking, and crossing.

(2) Approaching sailing vessels are classified and required to pass one another in accordance with their courses in respect to the direction of the wind which propels them.

(3) Two steam vessels are said to be meeting if their courses are substantially, or within a point or two of, opposite, or if, as in the case of a winding river, they will become opposite at the point where they meet, even though they may first sight each other at right angles. In open water, under all the rules alike, meeting steam vessels are required to pass port to port, unless they are already so far to the starboard of each other that they will clear on that side at a safe distance without changing course. In order that they may pass safely port to port, a sufficient change of course

to the right is required of both vessels, not in the jaws of collision, but at such a safe distance apart and of a sufficient number of degrees to avoid even getting in dangerous proximity of each other.

(4) An overtaking vessel is one going in the same direction, or within six points of the same direction as a slower vessel ahead. The rules are uniform in recognizing that the leading vessel was there first, and that the overtaking vessel must take positive action to keep clear of her as long as risk of collision remains. It is *par excellence* a situation of privilege and burden, with the accompanying obligations of the privileged vessel to keep course and speed, and of the burdened vessel to take all the positive action necessary to keep clear. This principle of privilege and burden is common to all sets of rules, not only in the overtaking situation but when two steam vessels are crossing, when a steam vessel meets a sailing vessel, and when one sailing vessel approaches another.

(5) Two steam vessels are said to be crossing when one approaches the other on either side in the arc between meeting and overtaking, i. e., from a point or two on the bow to two points abaft the beam. In all four jurisdictions the rules require the privileged crossing steam vessel, i. e., the one having the other on her port hand, to keep course; and, in three of them to keep her speed, until definite remedial action becomes necessary; while the burden steam vessel is required to keep clear, to avoid crossing ahead, and if necessary, to slacken speed, or stop, or reverse. When the two steam vessels arrive in dangerous proximity both are required, under the rules, to take positive action to avert collision. In other words, the rules are unanimous in providing that no vessel has the right of way through another vessel.

(6) In thick weather, there are numerous differences in prescribed sound signals, but the rules in fog are uniform in the following important respects:

(a) All vessels are required to give notice of their approach by signals on the whistle, siren, or fog horn, and these signals must be given at frequent intervals.

(b) Vessels in fog must go at moderate speed, which has been defined by the Supreme Court as bare steerage way, or at such speed as will

You never have the right-of-way through another vessel.

No rule requires a privileged vessel to hold course and speed until collision is inevitable.

A burdened vessel certainly is.

Being privileged is no privilege.

enable the vessel to come to a standstill in half the distance of visibility. The theory of preventing collisions in fog is the same in all jurisdictions. Collision is to be prevented, *not by dodging, but by stopping*. The International, Inland, Great Lakes, and Western Rivers rules are common in providing that whenever a fog signal is heard in a specified arc ahead, speed shall be reduced.

(7) The rules are alike in recognizing that situations may arise where specific rules will not work, and where the departure from these rules is accordingly necessary. Such departure to avoid immediate danger is authorized in every case by the so-called rule of special circumstances. The rules are similar in authorizing departure from the rules for this purpose only, and only to the extent that such departure is necessary.

(8) Finally, the provision is made in each set of statutory rules for the observance, in all weathers and situations, of good seamanship, which is defined as "any precaution which may be required by the ordinary practice of seamen." This rule is referred to as the general precautionary rule or as the rule of good seamanship.

Insofar as the 1948 revision of the International Rules is concerned, the reader will recall the effective date of the revised rules has been fixed as January 1, 1954. The revised International Rules will, of course, supersede the present International Rules, referred to in the preceding discussion. However, the major points of similarity and uniformity in principle outlined therein will hold true. Thus, we may go on to the consideration of the conflict in details in the next issue.

In forthcoming issues the revised International Rules will be taken in their numerical order. The similarities and the conflicts in the corresponding rules governing navigation on the coastal inland waters, the Great Lakes, and the Western Rivers, will be brought forth step by step. Take for example Rule 1:

"(a) These Rules shall be followed by all vessels and seaplanes upon the high seas and in all waters connected therewith navigable by seagoing vessels, except as provided in Rule 30. Where, as a result of their special construction, it is not possible for seaplanes to comply fully with the provisions of Rules specifying the carrying of lights and shapes, these provisions shall be followed as closely as circumstances permit.

"(b) The Rules concerning lights shall be complied with in all weathers from sunset to sunrise, and during such times no other lights shall be ex-

hibited, except such lights as cannot be mistaken for the prescribed lights or impair their visibility or distinctive character, or interfere with the keeping of a proper look-out.

"(c) In the following Rules, except where the context otherwise requires:

(i) the word 'vessel' includes every description of water craft, other than a seaplane on the water, used or capable of being used as a means of transportation on water;

(ii) the word 'seaplane' includes a flying boat and any other aircraft designed to manoeuvre on the water;

(iii) the term 'power-driven 'vessel' means any vessel propelled by machinery;

(iv) every power-driven vessel which is under sail and not under power is to be considered a sailing vessel, and every vessel under power, whether under sail or not, is to be considered a power-driven vessel;

(v) a vessel or seaplane on the water is 'under way' when she is not at anchor, or made fast to the shore, or aground;

(vi) the term 'height above the hull' means height above the uppermost continuous deck;

(vii) the length and breadth of a vessel shall be deemed to be the length and breadth appearing in her certificate of registry;

(viii) the length and span of a seaplane shall be its maximum length and span as shown in its certificate of airworthiness, or as determined by measurement in the absence of such certificate;

(ix) the word 'visible,' when applied to lights, means visible on a dark night with a clear atmosphere;

(x) the term 'short blast' means a blast of about one second's duration;

(xi) the term 'prolonged blast' means a blast of from four to six second's duration;

(xii) the word 'whistle' means whistle or siren;

(xiii) the word 'tons' means gross tons."

(Rule 30. Nothing in these Rules shall interfere with the operation of a special rule duly made by local authority relative to the navigation

A kick ahead when your speed is too slow is a better remedy than a kick astern because your speed is too fast.

Two steam vessels on opposite courses at 15 knots approach each other at the rate of 500 feet every 10 seconds. This is a poor place for delayed action.

of any harbor, river, lake, or inland water, including a reserved seaplane area.)

Investigation of the respective local rules discloses the following:

The Inland Rules apply to the inland waters of the United States, except the Great Lakes and their connecting and tributary waters as far east as Montreal, the Red River of the North, the Mississippi River and its tributaries above Choctaw Point, and that part of the Atchafalaya River above its junction with the Plaquemine-Morgan City alternate waterway.

The Western Rivers Rules apply to the Red River of the North, the Mississippi River and its tributaries above the Huey P. Long Bridge, the Mobile River and its tributaries above Choctaw Point, and that part of the Atchafalaya River above its junction with the Plaquemine-Morgan City alternate waterway.

The Great Lakes rules apply to the Great Lakes and their connecting and tributary waters as far east as Montreal. With the exception of special anchorage and movement regulations for the St. Marys River, Michigan, the same rules apply throughout these waters.

In neither case do the rules prescribe requirements for seaplanes on the water.

Article 1, Inland Rules, Rule 2, Western Rivers Rules, and Rule 2, Great Lakes Rules, correspond to Rule 1 (b), revised International Rules. The equivalent provisions are essentially the same, though not as complete. The Inland and Great Lakes Rules make no reference to lights impairing the visibility or distinctive character of prescribed lights or interfering with the keeping of a proper lookout. The Western Rivers Rules make no reference to lights impairing the distinctive character of prescribed lights, or interfering with the keeping of a proper lookout.

None of the local rules contain definitions corresponding to Rule 1 (c) (i), and (c) (ii), revised International Rules. In the case of seaplanes on the water, the local rules are silent throughout.

A power-driven vessel as defined in Rule 1 (c) (iii), revised International Rules, is termed a steam vessel and a steamer in the Western Rivers and the Great Lakes Rules. The Inland Rules refer to a power-driven vessel as a steam vessel. Aside from the differences in terminology, the definitions are identical. See Preliminary Definitions, Inland Rules, and Section 80.02, Pilot Rules for Inland Waters; Rule 1, Western Rivers Rules, and Section 95.03, Pilot Rules for Western Rivers; and Rule 1, Great Lakes Rules.

and Section 90.02, Pilot Rules for the Great Lakes.

The differentiation between a vessel under power and one under sail is the same throughout the four sets of rules, except for the use of the terms "steam" and "steam vessel" instead of the terms "power" and "power-driven vessel." For rules corresponding to Rule 1 (c) (iv), revised International Rules, we must turn to the Preliminary Definitions in the Inland Rules, Rule 1, Western Rivers Rules, and Rule 1, Great Lakes Rules.

The definition of a vessel under way is the same throughout all the rules. The local rules, however, do not refer to seaplanes on the water. In the local rules, the definition of a vessel under way is found in the Preliminary Definitions to the Inland Rules, Section 80.02 of the Pilot Rules for Inland Waters, Rule 1, Western Rivers Rules, and Rule 1, Great Lakes Rules.

None of the local rules define "height above the hull" as does Rule 1 (c) (vi), revised International Rules.

We find Article 11, Inland Rules, defining "length" in the same terms as Rule 1 (c) (vii), revised International Rules. The Western Rivers and Great Lakes Rules, however, are silent in this respect.

There are no definitions equivalent to Rule 1 (c) (viii), revised International Rules, in the local rules, since these rules are silent with respect to seaplanes on the navigable waters of the United States.

The word "visible" is defined in terms identical to Rule 1 (c) (ix), revised International Rules, in Part II, Preliminary, Inland Rules, Rule 1, Western Rivers Rules, and Rule 2, Great Lakes Rules.

Section 80.03, Pilot Rules for Inland Waters, defines a short blast as a blast of one second's duration as does Rule 1 (c) (x), revised International Rules. The Western Rivers and Great Lakes Rules do not contain equivalent definitions inasmuch as these rules deal primarily in terms of distinct blasts, defined in the Western Rivers Rules as a clearly audible blast of any length.

The Western Rivers and Great Lakes Rules do not define a prolonged blast, but a prolonged blast is defined in similar terms in Article 15, Inland Rules, and Section 80.03, Pilot Rules for Inland Waters. On the other hand, the Great Lakes Rules, define a long blast as one of at least 8 second's duration in Sections 90.6 and 90.7 of the Pilot Rules for the Great Lakes, this being the only place where a long blast is defined in any of the rules.

Turning to the remaining definitions, (c) (x) and (c) (xiii), of Rule 1, revised International Rules, we find no equivalent definitions in the rules

applicable to the Inland Waters, Western Rivers, and the Great Lakes.

It will be noted the local rules are partly in agreement with Rule 1, revised International Rules, partly silent with respect to definitions contained therein. The differences between the respective rules will become more noticeable as we delve further into the respective provisions.

While the series of articles in the "Side Lights on the Rules" series continues, the reader might bear in mind a resolution adopted by the Propeller Club of the United States at its annual convention held in New York on October 15, 16, and 17, 1946, which reads as follows:

"The rules of the road to prevent collisions on the high seas and in the various inland waters of the United States are in many respects needlessly different; and many of these differences have for years contributed to confusion in the minds of mariners whose vessels operate in more than one jurisdiction, oftentimes in a single voyage.

"A clear understanding and an intelligent observance of the rules of the road is conceded to be the surest preventive of collision on the high seas.

"The Propeller Club of the United States thereby goes on record as favoring the principle of uniformity in the rules to prevent collisions on all public navigable waters; and further as favoring the revision of both statutory and regulatory rules so as to bring them into agreement insofar as such agreement seems practicable to the various maritime interests concerned."

It has been the oft-repeated policy of the U. S. Coast Guard to interfere as little as possible with private industry in the maritime field. On the other hand, it is and has been the Coast Guard's well considered function to be as helpful as possible in obtaining regulations adequate for safety wherever possible to do so. The Coast Guard can provide the leadership and the "know how" in an impartial manner, but this in itself is insufficient without the desire of the maritime public to simplify the format and content of the rules to prevent collisions on the navigable waters of the United States. It is to be hoped that, notwithstanding the occasional necessity of a rule to fit strictly local conditions, the very practical suggestion embodied in the resolution quoted above will, upon the gaining of a good understanding of the conflicts and omissions in the rules, meet with a sufficient insistence of mariners everywhere so that the Coast Guard will be in a position to help the maritime industry help itself.

THE CASE OF THE FIREROOM BURNED BENCH

How many of us have observed, and ignored, the casual manner in which inflammables, such as kerosene and diesel oil are handled and treated in the fireroom?

In the fireroom of a merchant vessel not long ago, a fireman became a flaming torch, and subsequently died of his burns. In this case the casualty occurred at or near the fireroom burner bench. The cause: A bucket of diesel fuel accidentally ignited and overturned. Who was responsible? The fireman? The watch engineer? To some degree, were all the black-gang responsible?

The area of the fireroom burner bench is one of the important breeding places for fires aboard ship. First, there is the can or bucket of kerosene for cleaning burners, quite often unsecured; Second, the trash container, containing oily rags, etc.; Third, the ever present waste fuel container. All of these are fire hazards. It takes but one more element to create a casualty such as described in this article. CARELESSNESS!!

The understanding of the problem and the cooperation of shipboard personnel in eliminating the cause of fires, is of course the most important element in solving fire problems. There are specific things that can and should be done to make the area around the burner bench safe:

FIRST: Keep the amount of waste oil to a minimum.

SECOND: Keep the trash container covered at all times.

THIRD: Have the burner cleaning container secured and the amount of solvent kept at a minimum.

LASTLY: Train shipboard personnel as to the nature of fire, its dangers, and fire fighting.

HIP BOOTS OR ANCHOR?

The subject of this tragedy was an experienced fisherman, approximately 55 years of age. At the time of his death he had been a menhaden fisherman for the past 3 years on the same purse seiner.

The purse seiner was one of approximately 200 gross tons, operating in the Gulf of Mexico. On a clear day with a light westerly breeze and slightly choppy sea, it was purse seining for menhaden; a set had just been made. The attending purse boats had been drawn up aft of the mother boat to allow the crew to disembark. The occupants of one purse boat dis-

embarked safely. Four or five of the occupants of the next boat got safely aboard the purse seiner. When it came time for this fisherman to disembark, his attention was distracted by a remark made to him by another crew member at the stern of the boat. He half turned to answer him and then attempted to board the seiner, but by then the gap between the stern of the seiner and the bow of the purse boat had widened to 5 or 6 feet. He attempted to jump the span, but fell into the water, fully clothed, including hip boots, and did not reappear on the surface.

This incident was witnessed by the master of the purse seiner and the mate, who made an immediate effort to recover his body by the use of the seine. The plane spotter for the menhaden fleet searched the Gulf area, but could not locate the body. It was subsequently found by a shrimp boat some 40 miles to seaward.

His death was listed as one of accidental drowning. Yet, it might well have been listed "suicide," for without a life jacket, hip boots are truly anchors, which will drag those in the water to their death.

LIFEBOATS: A Chief Mate tells of trying to fit the rudder of a lifeboat into the gudgeons provided for that purpose. It wouldn't fit. Neither would the rudders in other boats fit their respective boats. The rudders were shuffled around until each was in the proper boat.

Comment: Rudders are so seldom used that a mix-up like this might go undetected for a long time. A rudder would be most important if you had to sail a lifeboat. We suggest that you ship the rudders at the first opportunity and determine if they fit. They should then be stenciled with the number of the lifeboat to which they belong.



Courtesy Safety Bulletin

NUMBERED AND UNDOCUMENTED VESSELS

The table below gives the cumulative total of undocumented vessels numbered under the provisions of the Act of June 7, 1918, as amended (46 U. S. C. 288), in each Coast Guard district by Customs ports for the quarter ending 30 June 1953. Generally speaking, undocumented vessels are those machinery-propelled vessels of less than 5 net tons engaged in trade which by reason of tonnage are exempt from documentation. They also include all other vessels propelled in whole or in part by machinery which have not been issued marine documents by the Customs owned in the United States and found on the navigable waters thereof.

Coast Guard District	Customs port	Total
1 (Boston).....	(4) Boston.....	16,276
	(1) Portland, Maine.....	11,536
	(2) St. Albans.....	1,206
	(5) Providence.....	4,766
		33,874
2 (St. Louis).....	(45) St. Louis.....	9,796
	(12) Pittsburgh.....	1,987
	(34) Pembina.....	70
	(35) Minneapolis.....	2,166
	(40) Indianapolis.....	3,430
	(42) Louisville.....	2,712
	(43) Memphis (part).....	5,113
	(46) Omaha (part).....	274
	(47) Denver.....	14
		25,562
3 (New York).....	(10) New York.....	43,288
	(6) Bridgeport.....	8,630
	(11) Philadelphia.....	18,318
		70,236
5 (Norfolk).....	(14) Norfolk.....	15,234
	(13) Baltimore.....	21,740
	(15) Wilmington, N. C.....	7,216
		44,192
7 (Miami).....	(18) Tampa (part).....	22,525
	(16) Charleston.....	1,888
	(17) Savannah.....	2,861
	(49) San Juan.....	354
	(51) St. Thomas.....	106
		27,734
8 (New Orleans).....	(20) New Orleans.....	21,104
	(18) Tampa (part).....	756
	(19) Mobile.....	8,707
	(21) Port Arthur.....	4,124
	(22) Galveston.....	11,476
	(23) Laredo.....	2,249
	(24) El Paso.....	7
	(43) Memphis (part).....	76
		48,509
9 (Cleveland).....	(41) Cleveland.....	6,969
	(7) Ogdensburg.....	2,574
	(8) Rochester.....	4,889
	(9) Buffalo.....	4,283
	(36) Duluth.....	2,619
	(37) Milwaukee.....	3,696
	(38) Detroit.....	17,194
	(39) Chicago.....	5,686
		47,810
11 (Long Beach).....	(27) Los Angeles.....	9,633
	(25) San Diego.....	1,694
	(26) Nogales.....	115
		11,632
12 (San Francisco).....	(28) San Francisco.....	12,464
		12,464
13 (Seattle).....	(30) Seattle.....	17,268
	(29) Portland, Oregon.....	8,767
	(33) Great Falls.....	439
		26,474
14 (Honolulu).....	(32) Honolulu.....	4,428
		4,428
17 (Juneau).....	(31) Juneau.....	7,286
		7,286
Grand total.....		360,201

YOU MAY HAVE THE ANSWER

An interim report recently adopted by the Executive Committee of the Radio Technical Commission for the Marine Services (RTCM) indicates that some progress is being made toward the development of an electronic identification device to aid in the reduction of marine casualties and facilitate the same movement of vessels in congested and restricted areas.

The interim report, prepared by Committee SC-16 of the RTCM, is titled "Objectives and General Operational Requirements for the Study and Development of a Marine Identification System." It includes the terms of reference and basic premise of the committee study, a brief description of the elements comprising a marine identification system, general operational requirements of an identification device utilizing radar, and an outline of the practical considerations involved. The report was released for dissemination at this time in the hope that others outside of the RTCM Committee will be stimulated to suggest possible methods of obtaining the desired objective. Its purpose is to outline the framework within which any proposed identification device or method must be made to operate.

According to Edward C. Phillips, Director of Telecommunications, National Federation of American Shipping, Inc., and Chairman of the RTCM Committee, the basic function of a marine identification device is to close a gap presently existing when marine radar and two-way voice radio communications are used jointly for navigational purposes. The problem concerns the ability to associate a particular voice communication with the proper radar echo when more than two vessels are within range of one another or when more than one vessel is within range of a shore-based radar unit.

Several possible methods of providing such identification have already been examined by the RTCM Committee and one device, called RAD-ENT by its developers, the Sperry Gyroscope Company, is scheduled for operational testing this summer at a shore-based radar unit operated by the Board of Harbor Commissioners, Long Beach, California; and for inter-ship purposes by the Lake Carriers' Association on the Great Lakes.

It is suggested the reader give some consideration to the problem, and if so inclined, feel free to communicate suggested methods of obtaining the desired objective.

The Committee report referred to the following statement by the Executive Committee of R.T.C.M., as its terms of reference of study:

"A commercially adaptable rapid and positive all-weather marine identification device would aid in the reduction of marine casualties and facilitate the safe movement of vessels in congested and restricted areas. Such a device would also be a valuable adjunct to any radar harbor advisory service, and might have important military considerations in the control of restricted areas in times of national emergency.

"The Executive Committee of R.T.C.M., therefore establishes a Special Committee to define the need for a marine identification system which will facilitate short distance contact between mobile vessels for safety of navigation and communication purposes. The Special Committee, at least initially, is to give primary consideration to the use of such a device by and between vessels equipped with marine radar and some form of radio communication. Without limiting the scope of the study, it is desired that the following specific aspects of the matter be examined and reported upon.

1. The extent and nature of identification intelligence desired. For example, should the identification intelligence include such information as the name or call letters of vessel; the communication channel or channel on which watch is being maintained; and whether or not the ship's radar is in operation.
2. The extent to which known methods of identification are capable of producing the identification intelligence desired.
3. Economic and practical factors affecting the problem, including regulatory or other measures which would appear to be required to make the identification device effective.
4. Recommendation as to general type of marine identification device, if any, which appears to be most practicable, including a brief description of the manner in which such device might be utilized under practical operating conditions for safety of navigation and communication purposes."

As objectives and general operational requirements for the study and development of a marine identification system, the Committee report listed these points:

1. **Basic Premise.** A navigator on a ship moving in open or congested waters; or an operator of a shore based radar guidance system, or harbor defense system, needs to know:
 - (1) The location of all vessels in a given defined area, the dimensions of which will depend upon the particular situation involved.
 - (2) Be able to communicate either directly or indirectly with other vessels, particularly with those with which he will be concerned.
 - (3) Be able to select any one of the vessels of interest and identify it with respect to a particular communication.
2. **Elements of Identification System.** It is considered that any marine identification system will comprise three elements:
 - (1) A locating device (radar)
 - (2) A communication link, and
 - (3) Identification.

For optimum utilization all units should be provided with each of these elements. However, the system should provide for the identification of a nonradar equipped vessel by a radar equipped unit, provided each are fitted with the communication and identification elements.

The utilization of radar technique is the only practicable method known to the Committee for furnishing adequate location information at the present. Existing marine radar equipment, either ship or shore based, is accepted as fulfilling this element.

The communications link should be of the telephone type, furnishing direct communication from bridge to bridge or bridge to shore based radar installation. It may be either portable or a fixed installation. Transmitting distance should be comparable to or better than the range of the locating device (radar) in use.

The identification device should provide a means of designating a par-

Continued on page 125.

L. P. G.—LETHAL POTENTIAL GREAT

Liquefied Petroleum Gases aboard vessels provide many comforts and services. But, used improperly and without due regard for their hazardous potential, they can be dynamite!

Last spring in Louisiana a 42-foot work boat was totally destroyed by fire and two men narrowly escaped serious injury when gas escaping from a butane cylinder ignited. The boat was moored to an oil company rig and nearby on the rig was a battery of similar gas cylinders. The butane cylinder on the boat was stowed on its side in the stern and due to the heat of the hot sun the vapor pressure in the cylinder was increased considerably. It was a standard cylinder tested, marked, and

equipped with a pressure relief valve as required by Interstate Commerce Commission Regulations. The two men in the cabin of the boat at the time heard a hissing noise. Believing it to come from the tank battery on the rig, they went out on deck and discovered the butane cylinder at the stern of the boat to be hissing due to the escape of gas from the relief valve. Just as they approached the cylinder, a fire flashed around them setting fire to their clothes and burning their faces and hands. One man dove overboard and swam to the tank battery platform. The other cast the boat loose, fearing spread of the fire to the tank battery, and also dove overboard. As the boat drifted out

into the stream, becoming a mass of flames, a second butane cylinder exploded.

The two men swam out to the boat and attempted to fight the fire with the portable fire extinguishers on board. However, by this time, the fire had encompassed the whole boat, and they were forced to abandon the attempt. The boat burned to the waterline and sank, a total loss of over \$10,000.

What is L. P. G.? Bottled gas or liquefied petroleum gas is produced from natural gas or emerges as a by-product of petroleum refining. Essentially it consists of propane, butane, or propane-butane mixtures, which are easily liquefiable hydro-

FIRE EXTING

TYPE		FOAM	CHEMICAL SOLUTION Soda-Acid	CLEAR WATER	ANTI-FREEZE	
METHOD OF OPERATING		INVERT	INVERT	INVERT	INVERT	INVERT
METHOD OF DISCHARGING EXTINGUISHING AGENT		CHEMICAL REACTION	CHEMICAL REACTION	GAS PRESSURE from carbon dioxide cylinder	GAS PRESSURE from capsule	GAS PRESSURE from carbon dioxide cylinder
RATED LIQUID CAPACITY OF MOST COMMON SIZE		2½ GALLONS	2½ GALLONS	2½ GALLONS	2½ GALLONS	2½ GALLONS
QUANTITY OF PRINCIPAL EXTINGUISHING AGENT PRODUCED		18 TO 25 GALLONS	2½ GALLONS	2½ GALLONS	2½ GALLONS	2½ GALLONS
EFFECTIVE RANGE OF STREAM		35 TO 40 FEET	30 TO 40 FEET	45 TO 55 FEET	30 TO 40 FEET	45 TO 55 FEET
APPROX. DURATION OF DIS- CHARGE AT ROOM TEMP.		60 SECONDS	60 SECONDS	60 SECONDS	60 SECONDS	60 SECONDS
NATURE OF PRINCIPAL EXTINGUISHING AGENT		FIREFOAM a mass of bubbles filled with carbon dioxide gas.	LIQUID Soda Solution	LIQUID Plain water	LIQUID calcium chloride solu- tion.	LIQUID calcium chloride solu- tion.
PRINCIPAL EXTINGUISHING EFFECT		BLANKETING	COOLING	COOLING	COOLING	COOLING
FOR USE ON CLASS A FIRES	Wood, Textiles, Rubbish, etc.	YES for use in places involving Class "A" fires. Must be kept in heated cabinet when installed in places subject to freezing tem- peratures.	YES for use in places NOT involving oils, greases, etc., in any way. Must be kept in heated cabinet when installed in places subject to freezing temperatures.	YES for use in places NOT involving oils, greases, etc., in any way. Must be kept in heated cabinet when installed in places subject to freezing temperatures.	YES for use in places NOT involving oils, greases, etc., in any way. Does not re- quire protection at temperatures down to 40 degrees F. below zero.	YES for use in places NOT involving oils, greases, etc., in any way. Does not re- quire protection at temperatures down to 40 degrees F. below zero.
	Gasoline, Oil, Greases, etc. Flammable Liquids not Derived from Alcohols.	YES for use in places involving Class "B" fires because of characteristics not possessed by any other type.	NO because it has prac- tically no blanketing effect.	NO because it has prac- tically no blanketing effect.	NO because it has prac- tically no blanketing effect.	NO because it has prac- tically no blanketing effect.
	Acetone, Ethers, Alcohols, and Kindred Liquids	NO	NO	NO	NO	NO
FOR USE ON CLASS C FIRES	Electrical Machinery	NO unless fires have spread beyond the extinguishing capacity of vaporizing liquid or carbon dioxide extinguishers and where current is turned off. The stream is a conductor.	NO except where current is turned off. The stream is a conductor.	NO except where current is turned off. The stream is a conductor.	NO except where current is turned off. The stream is a conductor.	NO except where current is turned off. The stream is a conductor.
		NO	NO	NO	NO	NO
UNDERWRITERS' RATING		A1-B1	A1	A1	A1	A1

carbons under atmospheric temperatures at variable pressures dependent upon the gas mixture. However, the most common commercial form of propane does not exceed 215 p.s.i. at 100° F. In other words, these liquefied gases have all the favorable characteristics of gases as far as utilization is concerned, and they are also capable of being greatly concentrated by liquefaction, for storage and transportation purposes, hence their desirability for heating, cooking, and many other purposes, domestic and commercial.

As an example of their advantageous feature of high thermal values in nominal space required for storage or transportation, a tank which holds 10,000 gallons of liquefied petroleum gas of 1,400 cu. ft. internal volume contains the thermal equivalent of

about 2,000,000 cu. ft. of "city" or manufactured gas, or 1,000,000 cu. ft. of natural gas. The cost of storage of LP gas is less than $\frac{1}{100}$ of the cost of storing an amount of city gas of equivalent thermal heating value. Modern steel gas storage cylinders or flasks now readily available on the market weigh only in the order of approximately 1 lb. per lb. of LP gas contained. The actual cost of B. T. U.'s produced from LP gas, that is the heating value of the fuel, compares favorably with electricity, and city or natural gas.

Consequently LP gas is becoming a favorite fuel for use aboard ships and smaller craft for heating and cooking. However, there is strong evidence to indicate its use is increasing much faster than is the appreciation of its inherent dangers. Like

certain other heavier-than-air gases, LP gas has the characteristic of settling when released, drifting and finding its way into the lowest pockets or spaces in the vessel. When mixed with air it forms a highly explosive mixture which ignites as readily as a gasoline-air mixture and with as disastrous results. Since LP gas is generally colorless, the best method of detection of a leak is by odor. As released from the pressurized liquid, the gas, if not odorized by an additive, would have an odor similar to gasoline but not very strong.

On a small vessel using gasoline or diesel oil for fuel, personnel would have difficulty differentiating the odor of escaping LP gas from odors existing on the vessel from other fuels. This is especially true in the case of gasoline for it has been demon-

UISHER CHART

PUMP TANK (Anti-freeze or plain water)	VAPORIZING LIQUID		CARBON DIOXIDE	DRY CHEMICAL
PUMP	PUMP	PULL LEVER	OPEN VALVE	OPEN VALVE AND NOZZLE
HAND PUMPING	PUMPING ACTION	STORED AIR PRESSURE	PRESSURE STORED IN CYLINDER	PRESSURE STORED IN CYLINDER
5 GALLONS also 2½ gallons	1 QUART	1 GALLON	15 LBS.	15 LBS.
5 GALLONS also 2½ gallons	Quantity variable — depends upon amount of liquid which comes in contact with heat of fire.	Quantity variable — depends upon amount of liquid which comes in contact with heat of fire.	Quantity variable—about 9 cu. ft. per pound of gas at normal temperature.	APPROX. 24 LBS.
30 TO 40 FEET	20 FEET OR MORE under full pump pressure	30 TO 40 FEET	6 TO 8 FEET under full pressure	20 FEET
5 GALLONS 100-120 Secs.	45 SECONDS	55 SECONDS	25 SECONDS	16 SECONDS
LIQUID (plain water or calcium chloride solution).	FREE GAS produced when liquid is vaporized by heat of fire.	FREE GAS produced when liquid is vaporized by heat of fire.	CARBON DIOXIDE GAS AND SNOW	DRY CHEMICAL
COOLING	SMOTHERING	SMOTHERING	SMOTHERING	SMOTHERING
YES for use in places not involving oils, greases, etc. When Alico crystals are used, does not require protection at temperatures down to 40 degrees F. below zero.	NO Cooling and quenching agents more effective on Class "A" fires because the fire is likely to be deep-seated. This type is effective on superficial Class "A" fires of small size particularly where the surrounding structure confines the gas to seat of the fire.	NO Other types are better adopted to Class "A" fires. This type good only under most favorable conditions because of difficulty of confining gas at seat of fire.	NO Cooling and quenching agents are more effective on deep-seated Class "A" fires. However, this type is effective on superficial Class "A" fires.	NO Cooling and quenching agents are more effective on deep-seated Class "A" fires. However, this type is effective on superficial Class "A" fires.
NO because it has practically no blanketing effect.	YES Underwriters' rating below indicates the relative effectiveness compared to other types. Small size and anti-freeze properties of this type are two of its valuable features.	YES This type good only under most favorable conditions because of difficulty of confining gas at seat of fire.	YES especially so under freezing conditions. Ideal for running or dripping flammable liquid fires. Large capacity adds to extinguishing properties of this type.	YES especially so under freezing conditions. Ideal for spill or running and dripping flammable liquid fires. Large capacity adds to extinguishing properties of this agent.
NO	NO	NO	YES Excellent for incipient fires in flammable liquids kindred to Alcohols.	YES Excellent for incipient fires in flammable liquids kindred to Alcohols.
NO except where current is turned off. The stream is a conductor.	YES Because stream is a non-conductor. Satisfactory where fires have not spread beyond extinguishing capacity of extinguisher and especially in places where current is not likely to be turned off.	YES Because stream is non-conductor. Satisfactory where fires have not spread beyond extinguishing capacities of extinguisher and especially in places where current is not likely to be turned off.	YES Discharge is a non-conductor, has no wetting, no solvent effect and leaves no residue.	YES Discharge is a non-conductor, has no wetting, no solvent effect.
A1 (either size)	B2—C2	B2—C1	B1—C1	B1—C1

strated that one good whiff of gasoline may have a slight anesthetizing effect on the olfactory nerves, or sense of smell, for a few moments. Therefore, as in the case of most city gases, a slightly repugnant odorant is added to the LP gas to make its detection by smell much easier. Today practically all LP gas is odorized with ethyl mercaptan or some other commercial odorant such as CALODORANT. However, it would be extremely wise, in ordering LP gas for any purpose aboard ship or boat to specify odorized gas.

It will be seen that the only feasible place for the storage of LP gas aboard a vessel with safety is at a point outside the cabin or superstructure and not within the hull. A point where possible leakage will be quickly disseminated in the open air, or blown away by the wind, without entering the vessel's hull is suitable. On Coast Guard-inspected merchant vessels, LP gas storage cylinders are required to be located in a substantial metal enclosure on or above the weather deck. This enclosure must be provided with top and bottom ventilation. On passenger vessels the use of LP gas for any purpose is prohibited. LP gas cylinders used aboard inspected vessels must be constructed, tested, fitted with a safety relief valve, and marked in accordance with Interstate Commerce Commission Specifications. By ICC regulations, these cylinders are periodically tested with hydrostatic pressure and marked with the test date. For the user of LP gas aboard small craft, it would be well to ascertain that the containers have been constructed and tested periodically as required by the ICC rules. The rule for odorization aboard inspected vessels is that all LP gas used shall be effectively odorized by an agent of such character as to indicate positively, by a distinctive odor, the presence of gas down to concentration in air of not over one-fifth the lower limit of combustibility, or for most LP gases, a volumetric per cent of gas to air of not over .31%.

One of the most important considerations for any LP gas system, and particularly for any marine installation, is that the system be tight from the cylinder to the burner jets. On inspected vessels an annual leak test of the system from regulator to jet is required. Using not less than the working pressure of the system, or say about $\frac{1}{2}$ p. s. i., using a water column or a pressure gage, this pressure must hold constant with the supply valve and the burner valve closed. A test for leaks is also made with a soap solution or low freezing point liquid,

but never with a flame. The same sort of test is recommended by the Coast Guard and by the National Fire Protection Association for any uninspected vessel using an LPG system and particularly for motorboats. In obtaining any LPG equipment, all component parts of systems other than cylinders should be listed by Underwriters' Laboratories, Inc. or other recognized testing laboratory, such as the American Gas Association, of Cleveland, Ohio, and so labeled. There should be no pilot light or other continuous flame devices as the inherent danger of the flow of gas into the vessel if the flame is extinguished is quite obvious. There should be a positive stop valve at the source, close to the tank, and a master shut-off packless valve controlling all burners simultaneously at the service manifold.

On small craft there should be two signs posted with the manufacturer's operating instructions and including the following:

CAUTION

1. Keep cylinder valves closed when boat is unattended. Close them immediately in an emergency.
2. Be sure all appliance valves are closed before opening cylinder valve.
3. Always apply match or flame to burner and then open burner valve.
4. Close master valve whenever consuming appliance is not in use.
5. Test system for leakage at least bi-weekly and after any emergency as follows: With appliance valve closed, master and one cylinder valve open, note gage pressure. Close cylinder valve. The pressure should remain constant for at least 10 minutes. If pressure drops, locate leakage by application of soapy water at connections. Never use flame to check for leaks.

Only systems introducing fuel below deck in gaseous form should be used, as the system introducing fuel below deck in liquid form is considered to be by far the more hazardous. Each cylinder should have a stop valve directly on the cylinder outlet. In multi-cylinder systems a stop valve should be provided in each line from the cylinder to the regulator or manifold in addition to the valves required at the cylinder. All systems should have a pressure gage. A low-pressure relief should be integral with the regulator and vented

overboard, otherwise a relief valve should be in the low pressure line and a vent in the chamber which may use a common overboard outlet. The discharge from the low-pressure reliefs should be led preferably to the stern, or if not feasible, to a point at least two feet distant from any part of an opening to the interior of the boat or from a motor exhaust which is below the level of such discharge. Outlet ends should be turned down to prevent choking the line with water.

All LPG piping or tubing should be of as short runs inside the cabin as possible and have adequate flexibility. It should be exposed to sight but protected from mechanical injury. Lines should be continuous lengths of piping or tubing from regulator to shut-off at stove manifold. On small vessels subject to rolling and pitching open flames from LPG system should be particularly watched so that they are not snuffed out by spills, boil-overs, gusts of wind, etc., as the gas will then flow freely and settle in the bilges. An automatic device to shut off gas supply in case flame is extinguished should be fitted to oven burners or any other burners not directly exposed to view, and is recommended for all burners when practicable.

Most storage cylinders with relief valves installed in accordance with ICC regulations are set to start to relieve at 90% of the designed working pressure of the cylinder. Since the pressure of the gas confined in a tight container will increase approximately in direct proportion to an increase of the temperature of the liquid, it will be seen that a nearly-full cylinder will not require much external heating, from such sources as the sun, engine exhaust, etc. to cause the relief valve to open. In this event, having the cylinder stored on an open deck will pay off, as there will be a greater opportunity for the escaping gas to disappear in the open air and not seek out the bilges. In the above casualty, apparently some of the escaping gas flowed into the boat and was ignited by a source of ignition never identified.

In summation, if you have or are going to have a Liquefied Petroleum Gas system on your vessel: (1) Make sure all the connections are tight. (2) Guard against release of the gas inside the vessel. (3) Store your tank in the open. (4) Close all valves when system is not in use. (5) Buy equipment furnished by reliable suppliers and approved by recognized testing laboratories. Make sure your LPG means **LITTLE POSSIBILITY OF GRIEF**.

OVERZEALOUS

The pictured river passenger vessel suffered two or more explosions followed by fire, as a result of which the vessel's upper works were destroyed; her hull was sunk; many crew members lost their lives; and others sustained injuries necessitating hospitalization. At the time of the investigation, there were 14 known dead and six crew members missing.

The direction and velocity of the wind at the time of the explosions were such as to sweep the resulting flames rapidly through the superstructure of the vessel from bow to stern, thus involving the entire ship in fire within two or three minutes.

By good fortune there were no passengers on board at the time.

Approximately one hour before the explosion, the Master and Pilot held a conference at which the question of repairing a loose deck stanchion was discussed. The stanchion was one of several which supported the second deck and extended from the main deck to the second deck. It was located approximately 30 feet aft from the bow of the vessel on the port side, just forward of a removable section of rail used at times for passenger ingress and egress, and on the margin line of the port wing fuel tank.

The vessel was fitted with six fuel oil tanks located in the hold under the main deck forward of a transverse bulkhead at frame No. 43. This bulkhead formed the after boundary of four of the tanks which lay abreast. The other boundaries of these four tanks were the sides of the ship, the main deck, a transverse bulkhead at frame No. 31, and three fore and aft bulkheads. Forward of these four tanks, there were two more tanks. These latter tanks were separate from the sides of the ship, but their tops and bottoms were formed by the main deck and the ship's bottom. The after boundary of these two tanks was formed by the forward bulkhead of the after four tanks; their forward boundary was formed by a bulkhead located at frame No. 19. At the time of the casualty, there were approximately 27,000 gallons of fuel oil in the bunkers.

The Chief Engineer said that he could repair the loose stanchion by welding it and would do so at some unspecified future time.

Approximately one-half hour before the casualty, some one, presumably the Chief Engineer, was seen taking the vessel's welding machine to the vicinity of the forward deck. His body, when recovered from the

river, was found at a point opposite the defective stanchion; there were welding gloves on the hands; and the body was badly battered and burned.

It is believed:

1. The Chief Engineer, after his conference with the Pilot and Mate regarding the loose stanchion, decided to repair it immediately and to that end either moved or had someone else move the ship's welding machine forward to the vicinity of the loose brace shortly before the initial explosion took place.

2. As soon as the machine was set up and started, the Chief began welding. In a very short time, the gases in the fuel tank directly below the point at which the Chief was working became ignited. (It was testified that the rivets holding the stanchion to the deck were loose and the deck was corroded, and it seems probable that the gases in the tank seeping out around the loose rivets became ignited and flashed back into the tank; or that the deck became red hot at the point of welding and the gasses in the tank ignited by this means; or that the welding rod could have arced through the corroded deck plating.

3. The ignition of the gases in the fuel tank caused the first relatively mild explosion, rupturing one or more of the adjacent fuel tanks, and thus causing the second more violent explosion which tore the tops off the

remaining fuel tanks and started the fire which destroyed the vessel.

Loath as one may be to put the blame for such a casualty upon a man who was killed in the explosion and thus is unable to defend himself, the weight of the evidence gathered during the course of the investigation pointed inescapably to the fact that the Chief Engineer was gravely negligent in the performance of his duties when he attempted to weld on the boundaries of a fuel oil tank without first gas-freeing the tank. If the Engineer had lived, proceedings under R. S. 4450 would most certainly have been initiated looking to the suspension or revocation of his license. Common sense and the usual practice employed by welders when working around fuel tanks should have warned the Chief Engineer against the danger of his course. If this operation had been carried out while the vessel was heavily laden with passengers, a catastrophe of appalling proportions undoubtedly would have resulted.

Laws and regulations may be promulgated time and again covering dangerous practices in complete detail, but they in themselves cannot prevent casualties. They may serve as warnings or as a means of punishment; the protection of life and property still boils down to common sense and the conscientious use of safe practices.



Your Fact Forum

Q. What is the purpose of preparing a surface for painting?

A. Paint is of little value if it is applied on an insecure foundation. Loose old paint, rust, dirt, dust, moisture, or grease on any surface will prevent new paint from adhering to it.

Q. What are the three basic considerations to fire protection?

A. They are:

1. Fire prevention.
2. Fire-fighting equipment.
3. Fire-fighting technique.

Q. What care should be given spare tarpaulins, boat covers, etc.?

A. Spare tarpaulins, lifeboat covers, etc., or awnings that have not been in use for sometime, should be taken on deck and aired and dried occasionally. Canvas will sweat and if not dried out from time to time will rot.

Q. What is the mission of Ocean Weather Stations maintained by the U. S. Coast Guard and the functions which they perform?

A. 1. Taking and disseminating meteorological and hydrographical data.

2. Furnishing mid-ocean aids to navigation.

3. Furnishing communication facilities and check points.

4. Maintaining an effective listening net for distress messages.

5. Rescue of personnel.

6. Conducting such scientific investigations as may be directed by proper authority.

Q. What is the purpose and the source of notices to mariners?

A. Notices to mariners give the mariner prompt notice of changes in marine navigational aids. There are three classes of notices to mariners:

1. *Local notices to mariners*, which are issued by each Coast Guard district to give notice of changes and deficiencies in aids within the area of the district.

2. *Weekly notices to mariners*, which are prepared jointly by the Coast Guard and the Navy Hydrographic Office and are published weekly by the latter. They contain the same information as the local notices but cover a larger area.

3. *Marine broadcast notices to mariners*, which are made when there is a casualty or change to an important aid, such that failure to get the notice might endanger a vessel.

Q. List some precautions to be taken with electrical gear.

A. 1. Never attempt to alter or repair any electrical gear; call a trained technician when repairs are necessary.

2. Never touch a live wire, and be particularly careful around any electrical apparatus if the hands are wet or it is necessary to touch moist surfaces.

3. Never allow naked wires in the vicinity of gasoline or other explosives.

4. Never paint screw threads, label places, hinges, etc., of electrical fittings.

5. Do not energize transmitter antennas within 50 feet of any fueling operation.

6. Unauthorized crew members should not attempt to perform any work on equipment in radio transmitter spaces.

7. Before a man is sent aloft for any reason, the radio room should be notified and arrangements made to suspend radio transmission while the man is aloft. No man should go aloft until definite word has been received that the power has been turned off.

Q. What is the difference between a gas mask and an oxygen breathing apparatus?

A. A gas mask simply purifies the air breathed through the mask and should not be used in an atmosphere containing less than 16 percent oxygen. The oxygen breathing apparatus purifies the air and also replenishes the oxygen in the apparatus; it is entirely self-contained and thus does not depend upon the outside atmosphere for its oxygen. It should not be confused with the canister type gas mask.

Q. How often should the oil discharge piping on tank vessels be tested?

A. A test should be conducted at least once a year.

Q. What is meant by the term "dangerous goods?"

A. The term "dangerous goods" pertains to substances of an explosive or combustible nature that are subject to spontaneous combustion. They are inflammable either inherently or when placed near other goods and may produce fumes harmful to other cargoes or to persons.

CARELESSNESS AND WEARINESS DO NOT MIX

A tug with an astern tow consisting of one barge entered a lock. A seaman was stationed on board the barge at the after starboard towing bitt to handle the after mooring line. The mooring line in use was a 6 inch manila line and was piled indiscriminately in the vicinity of the bitt.

The seaman passed the eye of the line to the lock wall, where it was passed around a bollard by the lock attendant. He then passed one turn of the line around the towing bitt on the barge. To pass a second turn, the seaman picked up a bight of the line from the deck and dropped it over the bitt. The forward motion of the barge brought a strain upon the line, and he found his leg caught tight in the bight.

He could not free himself. With the tightening of the line around the bitt, his lower left leg was crushed against, and carried around, the bitt with the line, resulting in a broken leg, severe lacerations of the flesh, and pulled ligaments.

The way on the barge was stopped when the master of the tug reversed the engines and backed the tug against the barge. The lock attendant then jumped on the barge and released the seaman.

Indications are this man's leg will be permanently affected by the accident.

The seaman had been working as a deck hand on harbor tugs for approximately 7 months. He had been on duty for the preceding 27 hours with a total amount of rest of approximately two hours; ½ hour at midnight and 1½ hours later in the morning.

The apparent and principal cause of this accident was the indiscriminate piling of the mooring line in the vicinity of the towing bitt instead of its being properly faked down preparatory for use. The seaman's weariness from having had very little rest in 27 hours of work was certainly a contributing factor.

Carelessness and weariness do not mix. Carelessness in itself is sufficiently dangerous. Weariness in addition to carelessness logically lead to casualties of this nature.

Reflections on An Accident Report

A harp and wings has Danny O'Dare. For having a smoke in the mid-ship square. He lost his job; he lost his life; And he certainly left a beautiful wife.

ticular radar response as being from a unit whose identity is known, or can be made known by its association with a particular communication. The identification device may be either portable or fixed; and it may be either an independent unit or an integral part of either the locating device or the communications link. It should have a minimum range of 10 miles for ship to ship operation. If its utilization in harbor surveillance operation requires a greater distance, the burden of providing improved range characteristics should rest with the shore facilities. The device need not be fully automatic and its probable utilization on a demand only basis is anticipated.

3. General Operational Requirements of an Identification Device Utilizing Radar.

- (1) The device must be usable with radar operating in either the 3000-3246 Mc. or 9320-9500 Mc. Bands.
- (2) Utilization of the radar antenna (for either transmission or reception) on the vessel requesting identification is considered the most practical method of obtaining directivity.
- (3) On the vessel being identified the antennas associated with the device must be nondirectional in the horizontal plane.
- (4) The identification information should have a bearing resolution limited only by the capabilities of the radar and a range resolution within plus or minus 200 yards of the inherent range resolution of the radar.
- (5) In order to obtain the virtues of cross band operation and avoid the operational disadvantages of clutter from undesired reception, the device on the vessel being identified should transmit on a band other than the ship radar band.
- (6) The device should supply substantially instantaneous response.

4. Practical Considerations—

- (1) The identification device or system must be operationally and economically attractive enough so that it stands a reasonable chance of obtaining voluntary world-wide acceptance.

- (2) Dual purpose features, such as usability with a system of navigational beacons, the serving of an alerting function, furnishing information as to whether other vessels in the vicinity have radar in operation, etc., are desirable secondary considerations.
- (3) The operational and equipment burden should rest as much as possible with the unit which wishes the identification.
- (4) Features of partial utility for vessels without radar should not be overlooked.

Organizations participating in this R. T. C. M., project are the U. S. Coast Guard, Federal Communications Commission, Navy, Sperry Gyroscope Co., Raytheon Mfg. Co., Radiomarine Corp., Federal Telecommunications Laboratories, Westinghouse Electric Corp., Tropical Radio & Telegraph Co., Esso Shipping, Jansky & Bailey, radio consultants of the Lake Carriers' Association, and the National Federation of American Shipping, Inc.

Readers who may wish to communicate suggestions should address correspondence to the Executive Secretary, R. T. C. M., % Federal Communications Commission, Washington, D. C.

Continued from page 114.

TION SUBJECTS FOR DECK OFFICERS ON OCEAN OR COASTWISE STEAM OR MOTOR VESSELS.

ITEM V: MOTORBOAT OPERATOR'S LICENSE; APPLICANTS' EVIDENCE OF EXPERIENCE.

ITEM VI: UNINSPECTED VESSELS; FIRE-EXTINGUISHING EQUIPMENT FOR OUTBOARD MOTORBOATS.

ITEM VII: ALL INSPECTED VESSELS; FIRE PROTECTION EQUIPMENT; FIRE HOSE COUPLING THREADS.

ITEM VIII: TANK VESSELS; LIFESAVING APPLIANCES.

ITEM IX: MARINE ENGINEERING REGULATIONS; MATERIALS AND CONSTRUCTION.

ITEM X: MARINE ENGINEERING REGULATIONS; UNFIRED PRESSURE VESSELS.

ITEM XI: MARINE ENGINEERING REGULATIONS; PIPING.

ITEM XII: MARINE ENGINEERING REGULATIONS; INSPECTIONS; TAIL SHAFT SURVEY.

ITEM XIII: PASSENGER VESSELS; SPECIAL SURVEYS FOR UNCLASSIFIED PASSENGER VESSELS.

ITEM XIV: ELECTRICAL ENGINEERING REGULATIONS; MEANS OF COMMUNICATION BETWEEN RADIO ROOM AND WHEELHOUSE AND "ONE OTHER PLACE."

ITEM XV: SUSPENSION AND REVOCATION PROCEEDINGS; STATEMENTS OF POLICY.

ITEM XVI: SUSPENSION AND REVOCATION PROCEEDINGS; REVIEW OF EXAMINERS' DECISIONS.

ITEM XVII: DANGEROUS CARGO REGULATIONS; REPAIRS OR ANY WORK INVOLVING WELDING OR BURNING.

ITEM XVIII: DANGEROUS CARGO REGULATIONS; REVISIONS TO AGREE WITH ICC REGULATIONS AND EDITORIAL CHANGES.

ITEM XIX: DANGEROUS CARGO REGULATIONS; EXPLOSIVES.

ITEM XX: DANGEROUS CARGO REGULATIONS; INFLAMMABLE LIQUIDS.

ITEM XXI: DANGEROUS CARGO REGULATIONS; INFLAMMABLE SOLIDS AND OXIDIZING MATERIALS.

ITEM XXII: DANGEROUS CARGO REGULATIONS; CORROSIVE LIQUIDS.

ITEM XXIII: DANGEROUS CARGO REGULATIONS; COMPRESSED GASES.

ITEM XXIV: DANGEROUS CARGO REGULATIONS; POISONOUS ARTICLES.

ITEM XXV: DANGEROUS CARGO REGULATIONS; COMBUSTIBLE LIQUIDS.

ITEM XXVI: DANGEROUS CARGO REGULATIONS; HAZARDOUS ARTICLES.

ITEM XXVII: MANNING OF VESSELS; LICENSED OPERATORS OF MOTORBOATS.

ITEM XXVIII: SPECIFICATIONS; BUOYANT APPARATUS AND LIFE FLOATS.

The reader's attention is invited to Items I and II in view of their general interest.

Item I: It is proposed to modify the requirements regarding the type of lights above the surface of the water for rafts and other water craft operating by hand power, force power, off current, by changing the height the light must be suspended above the water from "not less than 8 feet" to "not less than 4 feet." To accom-

plish this, it is proposed to amend paragraph 80.32 (c) in the Pilot Rules for Certain Inland Waters, etc., paragraph 90.21 (b) in the Pilot Rules for the Great Lakes, etc., and paragraph 95.37 (c) in the Pilot Rules for the Western Rivers and the Red River of the North. The proposed amend-

ments do not change the other provisions for such lights.

Item II: It is proposed to authorize the use of an all around amber colored light in conjunction with the whistle sounding mechanism, by adding a new section 90.4a, entitled "Visual signal," to the Pilot Rules for

the Great Lakes and the St. Mary's River. The present Pilot Rules for the Great Lakes are silent regarding the use of whistle lights. This is a new optional pilot rule and is proposed to clarify and make uniform standards for such visual signals when used.

APPENDIX

Amendments to Regulations

[EDITOR'S NOTE: The material contained herein has been condensed due to space limitations. Copies of the documents may be obtained by writing to Coast Guard Headquarters, care of Commandant, Washington 25, D. C.]

TITLE 33—NAVIGATION AND NAVIGABLE WATERS

Chapter I—Coast Guard, Department of the Treasury

PART 19—WAIVERS OF NAVIGATION AND VESSEL INSPECTION LAWS AND REGULATIONS

VESSLS OPERATED BY PACIFIC MICRONESIAN LINES, INC.

CROSS REFERENCE: For promulgation of a waiver order affecting § 19.35 *Department of the Interior vessels operated by the Pacific Micronesian Lines, Inc.*, see Title 46, Chapter I, Part 154, *infra*.

TITLE 46—SHIPPING

Chapter I—Coast Guard, Department of the Treasury

Subchapter O—Regulations Applicable to Certain Vessels During Emergency [CGFR 53-21]

PART 154—WAIVERS OF NAVIGATION AND VESSEL INSPECTION LAWS AND REGULATIONS¹

VESSLS OPERATED BY PACIFIC MICRONESIAN LINES, INC.

The purpose of this waiver order designated § 154.35, as well as 33 CFR 19.35, was to waive the navigation and vessel inspection laws and regulations issued pursuant thereto which are administered by the United States Coast Guard to the extent necessary to permit the operation of the U. S. S. "Chicot" (AK 170), U. S. S. "Gunner's Knot" (official number 248054), U. S. S. "Errol" (AKL 4),

¹This is also codified in 33 CFR Part 19.

U. S. S. "Metomkin" (AKL 7), U. S. S. "Roque" (AKL 8), and U. S. S. "Torry" (AKL 11), as well as the schooner "Frela," the schooner "Mil-leeta," and the survey boat "Baker" or other vessels which may be used as substitutes for these vessels, of the Department of the Interior by the Pacific Micronesian Lines, Inc., to furnish transportation in the Trust Territory of the Pacific Islands, as well as between the Trust Territory of the Pacific Islands, and the United States, including its territories and possessions, and foreign ports until and including June 30, 1954, unless sooner terminated by proper authority.

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 3-53

Subj: Manning of Motor Vessels; interpretation of R. S. 4426 and 4463; 46 U. S. C.; 46 U. S. C. 404, 222.

Purpose: This circular contains the clarification of the requirements regarding licensed engineers and li-

censed pilots for motor vessels of over 15 gross tons and over 65 feet in length, which are subject to inspection and certification, under the provisions of R. S. 4426, as amended.

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 4-53

Subj: Validated documents for merchant marine personnel; information concerning.

Purpose: This circular contains the requirements and additional information regarding employment of persons on board merchant vessels of the United States who must have documents bearing the endorsement "Validated for emergency service" or who must have temporary clearance before being signed on as replacements in or as additions in the crew at foreign ports, as a condition of employment on certain categories of merchant vessels. The procedures to be followed are also set forth for the information of those concerned.

ACCEPTABLE COVERED STEEL ARC WELDING ELECTRODES

The following are additions to the list of electrodes which are acceptable to the U. S. Coast Guard for use in welded fabrication.

ELECTRODE LISTING

General Electric Co., Schenectady 5, New York (Arcrods Corp.—Manufacturer)

184.010/General Electric

Brand	AWS Class	Operating Positions and Electrode Sizes, Inches				
		$\frac{5}{16}$ and below	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{5}{16}$	$\frac{3}{8}$
W-22	E6010	1	1	2	2	3
W-611A	E6011	1	1	2	2	3
W-612A	E6012	1	1	2	2	3
W-612B	E6012	1	1	2	2	3
W-613A	E6013	1	1	2	2	3
W-616A	E6016	1	2	2	2	3
W-620A	E6020	2	2	2	2	3
W-620B	E6020			2	2	
W-620C	E6020	2	2	2	2	3
W-710A ($\frac{1}{4}$ Mo.)	E7010	1	1	2	2	3
W-711A ($\frac{1}{4}$ Mo.)	E7011	1	1	2	2	
W-816A (2 $\frac{1}{2}$ Ni.)	E7016	1	2	2	2	
W-720A ($\frac{1}{4}$ Mo.)	E7020	2	2	2	2	3
W-1016B (2 $\frac{1}{4}$ Cr. 1 Mo.)	E9016	1	2	2	2	3
Smith Corp., A. O., Milwaukee 1, Wisconsin SW65	E6016	1	2	2		

Circular canceled. This circular includes all information contained in Navigation and Vessel Inspection Circular No. 7-52, dated June 6, 1952, concerning the possession of specially validated merchant mariner's documents as a condition of employment on certain categories of merchant vessels of the United States, as well as the new conditions imposed with respect to the engagement of persons to serve aboard such vessels at foreign ports. Navigation and Vessel Inspection Circular No. 7-52 is hereby canceled, effective September 1, 1953.

Equipment Approved by the Commandant

DEPARTMENT OF THE
TREASURY

United States Coast Guard

ARTICLES OF SHIPS' STORES AND SUPPLIES

Articles of ships' stores and supplies certificated from June 27 to July 27, 1953, 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

The Nuvite Products Co., Inc., 17 State Street, New York 4, N. Y. Certificate No. 116, dated July 8, 1953. "Nuvite Marine Cleaner."

AFFIDAVITS

The following affidavit was accepted during the period from June 15 to July 15, 1953:

Malleable Fittings Co., 1040 West Lomita Boulevard, Harbor City, Calif. Fittings.

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 June 15 to July 15, 1953, is as follows:

The Lunkenheimer Co., Cincinnati 14, Ohio. Heat Nos. 458 through 460.

Merchant Marine Personnel Statistics

MERCHANT MARINE OFFICER LICENSES ISSUED

Quarter Ending 30 June 1953

DECK

Grade	Original	Renewal
Master:		
Ocean.....	80	563
Coastwise.....	9	57
Great Lakes.....	2	46
B. S. & L.....	25	156
Rivers.....	17	74
Radio officer licenses issued:	59	
Chief Mate:		
Ocean.....	76	126
Coastwise.....		14
Mate:		
Great Lakes.....	1	
B. S. & L.....	3	30
Rivers.....	17	42
Second Mate:		
Ocean.....	90	146
Coastwise.....		10
Third Mate:		
Ocean.....	155	114
Coastwise.....		6
Pilots:		
Great Lakes.....	23	60
B. S. & L.....	207	452
Rivers.....	120	137
Master: Uninspected vessels.....	6	11
Mate: Uninspected vessels.....	5	3
Total.....	895	2,076
Grand total.....		2,971

ENGINEER

Grade	Original	Renewal
STEAM		
Chief Engineer:		
Unlimited.....	77	533
Limited.....	15	282
First Assistant Engineer:		
Unlimited.....	65	175
Limited.....	5	97
Second Assistant Engineer:		
Unlimited.....	101	212
Limited.....	1	21
Third Assistant Engineer:		
Unlimited.....	202	240
Limited.....		2
MOTOR		
Chief Engineer:		
Unlimited.....	25	124
Limited.....	50	177
First Assistant Engineer:		
Unlimited.....	13	51
Limited.....	14	47
Second Assistant Engineer:		
Unlimited.....	8	50
Limited.....	4	14
Third Assistant Engineer:		
Unlimited.....	201	267
Limited.....		1
Chief Engineer: Uninspected Vessels.....	8	9
Assistant Engineer: Uninspected Vessels.....	8	1
Total.....	797	2,293
Grand total.....		3,000

INVESTIGATING UNITS

Coast Guard Merchant Marine Investigating Units and Merchant Marine Details investigated a total of 3,368 cases during the second quarter of 1953. From this number, hearings before examiners resulted involving 55 officers and 274 unlicensed men. In the case of officers, no licenses were

ORIGINAL SEAMEN'S DOCUMENTS ISSUED

Quarter Ending 30 June 1953

Type of document	Atlantic coast	Gulf coast	Pacific coast	Great Lakes and rivers	Total
Staff officer.....	73	14	45	1	133
Continuous discharge book.....	1	17	1	1	20
Merchant mariner's documents:	1,938	621	1,542	3,387	7,388
AB any waters unlimited.....	263	58	118	42	481
AB any waters, 12 months.....	154	39	87	161	441
AB Great Lakes, 18 months.....	2	4	12	55	73
AB tugs and towboats, any waters.....	3				3
AB buys and sounds.....					
AB seagoing barges.....	1				1
Lifeboatman.....	327	10	307	19	663
Q. M. E. D.....	409	108	206	194	917
Radio operators.....	3	1	1		5
Certificate of service.....	1,769	580	1,518	3,246	7,113
Tankerman.....	14	35	5	69	123

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

NOTE.—The last 11 categories indicate number of endorsements made on United States merchant mariner's documents.

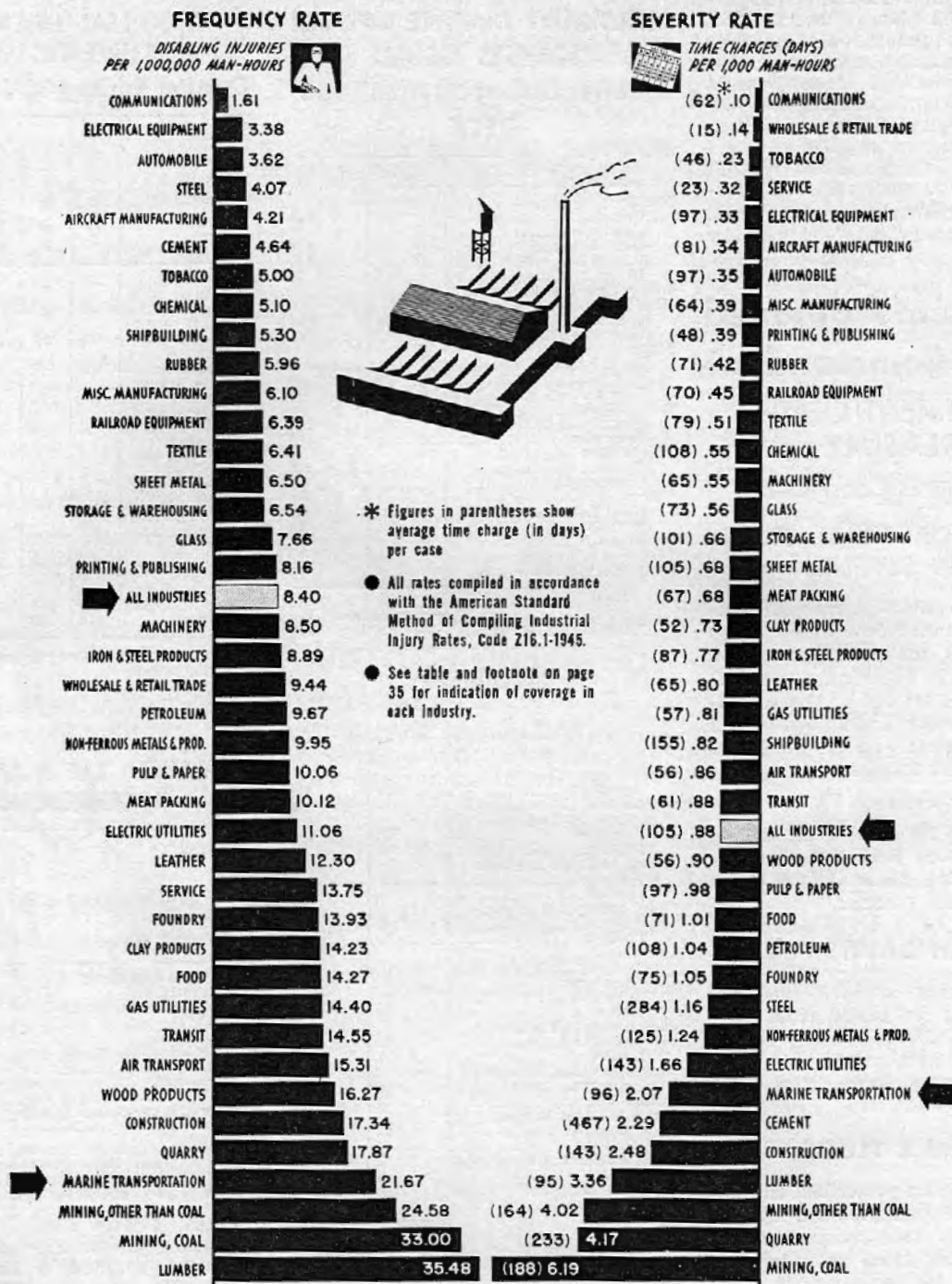
WAIVER OF MANNING REQUIREMENTS

Waivers	Atlantic coast	Gulf coast	Pacific coast	Great Lakes	Total
Deck officers substituted for higher ratings.....	1		1	13	15
Engineer officers substituted for higher ratings.....	1		4	3	8
O. S. for A. B.....	11	10	5	21	47
Wiper or coalpassers for Q. M. E. D.....	6		5	7	18
Total waivers.....	19	10	15	44	88
Number of vessels.....	15	8	14	28	65

NOTE.—In addition, individual waivers were granted to permit the employment of able seamen holding certificates for "any waters—12 months" in excess of the 25 percent authorized by statute.

revoked, 4 were suspended without probation, 12 were suspended with probation granted, 5 licenses were voluntarily surrendered, 13 cases were dismissed after hearing and 9 hearings were closed with admonitions. Of the unlicensed personnel, 47 certificates were revoked, 28 were suspended without probation, 99 were suspended with probation granted, 49 certificates were voluntarily surrendered, 10 hearings were closed with admonitions, and 26 cases were dismissed after hearing.

1952 injury rates, reporters to National Safety Council



COURTESY ACCIDENT FACTS 1953