PROCEEDINGS OF THE
MERCHANT MARINE COUNCIL
UNITED STATES COAST GUARD

The printing of this publication has been approved by the Director of the Bureau of the Budget, March 11, 1952.

This copy for not less than 20 readers.
PASS IT ALONG

CG 129

Vol. 10 October 1953 No. 10

PROCLAMATION 3030

REGULATIONS FOR PREVENTING COLLISIONS AT SEA

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

WHEREAS certain regulations designated as Regulations for Preventing Collisions at Sea, 1948, were approved by the International Conference on Safety of Life at Sea, 1948, held at London from April 23 to June 10, 1948; and

WHEREAS by the act approved October 11, 1951 (ch. 495, 65 Stat. 406), the Congress of the United States of America has authorized the President of the United States of America to proclaim the said regulations, which are set forth in section 6 of the said act as amended by the act approved June 26, 1953 (Public Law 82, 83d Congress, 1st session), and to specify the effective date thereof, the regulations to have effect (after the effective date thus specified), as if enacted by statute; and

WHEREAS on October 26, 1951, the Government of the United States of America communicated to the Government of the United Kingdom, the depository nation, its acceptance of the regulations; and

WHEREAS the Government of the United States of America has been notified by the Government of the United Kingdom, as depository nation, that substantial unanimity has been reached as to the acceptance by interested countries, and that it has fixed January 1, 1954, as the date on and after which the regulations shall be applied by the Governments which have accepted them:

NOW, THEREFORE, I, DWIGHT D. EISENHOWER, President of the United States of America, under and by virtue of the authority vested in me by the aforesaid act, do hereby proclaim the said Regulations for Preventing Collisions at Sea, 1948, as set forth in section 6 of the said act, as amended, which are attached hereto and made a part hereof, and do specify the effective date thereof as January 1, 1954.

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 15th day of August in the year of our Lord nineteen hundred and fifty-three, and of the Independence of [SEAL] the United States of America the one hundred and seventy-eighth.

DWIGHT D. EISENHOWER

By the President:
WALTER B. SMITH,
Acting Secretary of State.

Proceedings of the

MERCHANT MARINE COUNCIL

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The Merchant Marine Council of the United States Coast Guard

CONTENTS

DISTRIBUTION (SDL) 54
A: a, aa, b, c, d, dd (2); remainder (1).
B: e (35); c (16); g (2); f (4); h (3); remainder (1).
C: a, b, c, d, e, f, g, i, m, o (1).
D: i (5); a, b, c, d, e, f, g, h, j, k, l, m (1).
E: o (New London only) (1).
List 141 M.
List 111.

Front Cover: Proclamation 3030 was published in the Federal Register of August 21, 1953, along with the Regulations for Preventing Collisions at Sea, 1948. See the April–May–June 1953 Proceedings for these Regulations.

PUBLIC LAW 232, 83D CONGRESS, MAKES THE MOBILE RIVER SUBJECT TO INLAND RULES.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That so much of the Act entitled "An Act to adopt regulations for preventing collisions upon certain harbors, rivers, and inland waters of the United States", approved June 7, 1897, as amended (33 U. S. C. 154), as reads "That the following regulations for preventing collisions shall be followed by all vessels upon the harbors, rivers, and other inland waters of the United States, except the Great Lakes and their connecting and tributary waters as far east as Montreal, and the waters of the Mississippi River between its source and the Huey P. Long Bridge and all of its tributaries emptying thereinto and their tributaries, and that part of the Atchafalaya River above its junction with the Plaquemine-Morgan City alternate waterway, and the waters of the Mobile River above Choctaw Point and all of its tributaries, and the Red River of the North; and are hereby declared special rules duly made by local authority;" is amended to read as follows: "That the following regulations for preventing collisions shall be followed by all vessels upon the harbors, rivers, and other inland waters of the United States except the Great Lakes and their connecting and tributary waters as far east as Montreal, and the waters of the Mississippi River between its source and the Huey P. Long Bridge and all of its tributaries emptying thereinto and their tributaries, and that part of the Atchafalaya River above its junction with the Plaquemine-Morgan City alternate waterway, and the Red River of the North, and are hereby declared special rules duly made by local authority:".

SEC. 2. Section 4233 of the Revised Statutes of the United States, as amended (33 U. S. C. 301), is amended to read as follows:

"SEC. 4233. The following regulations for preventing collisions shall be followed by all vessels upon the waters of the Mississippi River between its source and the Huey P. Long Bridge and all of the tributaries emptying thereinto and their tributaries, and that part of the Atchafalaya River above its junction with the Plaquemine-Morgan City alternate waterway, and the Red River of the North; and are declared special rules duly made by local authority."

Approved August 8, 1953.

Side Lights on the Rules

In the September 1953 issue of the "Proceedings," the first article in this series outlined the complexity of the local and international rules to prevent collisions and indicated the purpose of these articles would be to develop a better understanding of the various nautical rules of the road by pointing out critical conflicts and basic similarities in the respective provisions. It then went on to sum up the important points of similarity and uniformity in principle in these rules, closing with an example as to how this undertaking would be approached.

The example used was Rule 1 of the revised International Rules, which will be effective January 1, 1954. The local rules were partly in agreement with Rule 1, partly silent with respect to definitions and provisions contained therein.

As we turn to Rule 2 of the revised International Rules, the differences in details become more pronounced. Rule 2 (a) prescribes the sidelights, masthead light, and range lights to be carried by a power-driven vessel under way outside the lines of demarcation between the inland waters of the United States and the high seas. Rule 2 (b) on the other hand prescribes the equivalent lights to be carried by a seaplane under way on the water. Taking the rule step by step, it will be noted Rule 2 (a) (i) states:

Rule 2 (a) A power-driven vessel when under way shall carry:

(i) On or in front of the foremast, or if a vessel without a foremast then in the forepart of the vessel, a bright white light so constructed as to show an unbroken light over an arc of the horizon of 20 points of the compass (225 degrees), so fixed as to show the light 10 points (112½ degrees) on each side of the vessel, that is, from right ahead to 2 points (22½ degrees) abaft the beam on either side, and of such a character as to be visible at a distance of at least 5 miles.

An identical masthead light is required by Article 2 (a), Inland Rules, for steam vessels in inland waters. This light is required whether the vessel is a seagoing vessel or a nonseagoing vessel, except in the case of double end ferryboats which are subject to special lighting requirements prescribed by section 80.15 of the Pilot Rules for Inland Waters.

Rule 5, Western Rivers Rules, also requires an identical masthead light for seagoing steam vessels upon the Western Rivers. As in inland waters, ferryboats must carry special lights prescribed by section 95.27 of the Pilot Rules for Western Rivers. Rule 7 (a), Western Rivers Rules, requires a similar masthead light for steam vessels operating solely on the Western Rivers, the difference being no minimum visibility is specified for this light. Rule 6, Western Rivers Rules, introduces another modification in that it allows a river steamer with two smoke stacks in athwartship line to carry in lieu of the masthead light and the after range light, one red light on the outboard side of the port smoke stack and one green light on the outboard side of the starboard smoke stack, each light to show forward, aft, and abeam on its respective side.

The Great Lakes Rules make no differentiation between seagoing and nonseagoing steam vessels. Rule 3 (a), Great Lakes Rules, requires an identical masthead light for steam vessels under way. As in inland waters and the western rivers, double end ferryboats carry special lights prescribed by section 90.18 of the Pilot Rules for the Great Lakes.

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 WITH THE EXCEPTION OF THE REVISED INTERNATIONAL RULES OF THE ROAD WHICH WILL BE QUOTED HEREIN.

The next part of Rule 2, revised International Rules, prescribes a central range of two lights to be carried by certain power-driven vessels under way:

Rule 2 (a) (ii) Either forward of or abaft the white light mentioned in subsection (i) a second white light similar in construction and character to that light. Vessels of less than 150 feet in length, and vessels engaged in towing, shall not be required to carry this second white light but may do so.

Whether the second light is carried forward or aft of the light prescribed by Rule 2 (a) (i), the combination of lights creates a central range of which the forward light is commonly termed the masthead light and the after light the after range light.

The 20 point after range light is made optional by Article 2 (e), Inland Rules, for seagoing steam vessels entering the inland waters, irrespective of the length of the vessel. When it is carried (and by inference it must be by most vessels after January 1, 1954), it is to be similar to the masthead light in construction and visibility. Since seagoing steam vessels 150 feet or more in length will be required to carry a 20 point range light by Rule 2 (a) (ii), revised International Rules, on and after January 1, 1954, the optional nature of the rule will be modified to all extents and purposes insofar as vessels of 150 feet or more in length are concerned.

While the Inland Rules do not differentiate between seagoing and nonseagoing steam vessels with respect to the prescribed masthead light, such a differentiation is made with regard to the after range light. All steam vessels (except seagoing vessels and ferryboats) are required by Article 2 (f), Inland Rules, to carry an all around white range light aft rather than the 20 point after range light prescribed for seagoing steam vessels. There is no minimum visibility specified for this light; nor is the length of the vessel material. Unlike Rule 2 (a) (ii), revised International Rules, the Inland Rules are silent as to whether a vessel engaged in towing need or may carry either the after range light or the masthead light in addition to the specified towing lights.

Similar differences are noticeable in the Western Rivers Rules regarding the after range light prescribed by Rule 2 (a) (ii), revised International Rules. Rule 5, Western Rivers Rules, states a seagoing steam vessel under way shall carry lights as required by Article 2, International Rules, as amended. This rule refers to Article 2 of the International Rules, to be superseded January 1, 1954. Under the latter the 20 point after range light is optional for seagoing steam vessels, irrespective of the length of the vessel. Rule 7 (a), Western Rivers Rules, then provides that all steam vessels except as otherwise provided for must carry an all around white range light aft. There

is no minimum visibility specified for this light; nor is the length of the vessel material. Like the Inland Rules the Western Rivers Rules fail to make clear whether a towing vessel need or may carry either the after range light or the masthead light in addition to the prescribed towing lights.

On the Great Lakes a steam vessel of over 100 feet registered length must, according to Rule 3 (e), Great Lakes Rules, carry an all around white range light, visible at a distance of at least three miles, abaft the forward masthead light. Such vessels, however, have the option of carrying two such all around after range lights placed not over 30 inches apart horizontally, one on either side of the keel, so arranged that one or the other or both are visible from any angle of approach. Rule 3 (f), Great Lakes Rules, deals with steam vessels under that length. A steam vessel not more than 100 feet in length must carry an all around white range light abaft the forward masthead light. However, no minimum visibility is specified for this light. Here too, the rules are not clear as to whether a vessel having a tow need or may carry the after range light in addition to the towing lights.

How the masthead or range lights are to be carried by power-driven vessels under way on the high seas is dealt with in Rule 2 (a) (iii), revised International Rules:

Rule 2 (a) (iii) These two white lights shall be so placed in a line with and over the keel that one shall be at least 15 feet higher than the other and in such a position that the lower light shall be forward of the upper one. The horizontal distance between the two white lights shall be at least three times the vertical distance. The lower of these two white lights or, if only one is carried, then that light, shall be placed at a height above the hull of not less than 20 feet, and, if the breadth of the vessel exceeds 20 feet, then at a height above the hull not less than such breadth, so however that the light need not be placed at a greater height above the hull than 40 feet. In all circumstances the light or lights, as the case may be, shall be so placed as to be clear of and above all other lights and obstructing superstructures.

The pertinent articles in the Inland Rules, Articles 2 (a), 2 (e), and 2 (f), do not specify a minimum height above the hull at which the masthead light is to be carried. Article 2 (e), Inland Rules, requires the 20 point after range light for seagoing steam vessels to be at least 15 feet above the masthead light, and the horizontal distance between these lights to be greater than the vertical distance between them; both lights must be in line with the keel with the lower light forward. The all around after range light required by Article 2 (f), Inland Rules, for all steam vessels except seagoing vessels and ferryboats must merely be at least 15 feet above the masthead light and aft of it. The Inland Rules do not have an equivalent statement that the masthead and range lights be above and clear of all other lights and superstructures.

The rules applicable to the Western Rivers do not specify a minimum height above the hull at which the masthead light is to be carried by steam vessels operating solely on the Western Rivers. Rule 5, Western Rivers Rules, does, however, require a seagoing steam vessel to carry the masthead light 20–40 feet above the hull. Under Rule 5, Western Rivers Rules, the 20 point after range light for seagoing vessels must be at least 15 feet above the masthead light, and the horizontal between these lights must be greater than the vertical distance between them; both lights must be in line with the keel with the lower light forward. Rule 7 (a), Western Rivers Rules, merely requires the all around after range light for nonseagoing steam vessels to be aft and above the masthead light. These rules also fail to state that the masthead and range lights be above and clear of all other lights and superstructures.

On the Great Lakes, Rule 3 (a) requires the forward masthead light to be higher above the water than the sidelights, while Rule 3 (e) requires the all around after range light for steam vessels of over 100 feet registered length to be in line with the keel and at least 15 feet higher and 50 feet abaft the forward masthead light. Such a vessel may choose to carry two all around after range lights in lieu of a single after range light. If it does, the lights must be not over 30 inches apart horizontally, one on either side of the keel, with one or both visible from any angle of approach. The all around after range light for a steam vessel not more than 100 feet in length (Rule 3 (f), Great Lakes Rules) has but to be in line with the keel, higher than the masthead light, and aft of it. These rules, like the Inland Rules and Western Rivers Rules, do not have an equivalent requirement that the masthead and range lights must be above and clear of all other lights and superstructures.

Next, Rule 2 (a), International Rules, prescribes sidelights to be carried by power-driven vessels under way upon the high seas:

IT'S MY RIGHT-OF-WAY, MUTTERED RED, BUT THE OTHER GUY CAME RIGHT AHEAD.

Rule 2 (a) (iv) On the starboard side a green light so constructed as to show an unbroken light over an arc of the horizon of 10 points of the compass (112½ degrees), so fixed as to show the light from right ahead to 2 points (22½ degrees) abaft the beam on the starboard side, and of such a character as to be visible at a distance of at least 2 miles.

(v) On the port side a red light so constructed as to show an unbroken light over an arc of the horizon of 10 points of the compass (112½ degrees), so fixed as to show the light from right ahead to 2 points (22½ degrees) abaft the beam on the port side, and of such a character as to be visible at a distance of at least 2 miles.

(vi) The said green and red sidelights shall be fitted with inboard screens projecting at least 3 feet forward from the light, so as to prevent these lights from being seen across the bows.

Identical sidelights are required for vessels in inland waters by Articles 2 (b) and 2 (c), Inland Rules. Points, however, are not spelled out in degrees. Identical sidelight screens are likewise prescribed by Article 2 (d), Inland Rules.

Sidelights required on the Western Rivers are prescribed in Rules 3 (a), (b), and (c), Western Rivers Rules. The sidelights must be visible at least three miles and may show up to one-half point across the bow. Unlike Rule 2 (a) (iv–v), revised International Rules, points are not spelled out in degrees. Otherwise the requirements are the same. Rule 3 (c), Western Rivers Rules, prescribes similar sidelight screens for vessels on the western rivers. The sole difference is that the screens must be fixed to prevent the sidelights from being seen more than one-half a point across the bow.

The Great Lakes Rules prescribe identical sidelights and identical sidelight screens in Rules 3 (b), (c), and (d). Points, however, are not spelled out in degrees.

The remainder of Rule 2, revised International Rules, deals with lights corresponding to the above lights for vessels which are to be carried by seaplanes under way upon the high seas:

Rule 2 (b) A seaplane under way on the water shall carry:

(i) In the forepart amidships where it can best be seen a bright white light, so constructed as to show an unbroken light over an arc of the horizon of 220 degrees of the compass, so fixed as to show the light 110 degrees on each side of the seaplane, namely, from right ahead to 20 degrees abaft the beam on either side, and of such a character as to be visible at a distance of at least 3 miles.

(ii) On the right or starboard wing tip a green light, so constructed as to show an unbroken light over an arc of the horizon of 110 degrees of the compass, so fixed as to show the light from

right ahead to 20 degrees abaft the beam on the starboard side, and of such a character as to be visible at a distance of at least 2 miles.

(iii) On the left or port wing tip a red light, so constructed as to show an unbroken light over an arc of the horizon of 110 degrees of the compass, so fixed as to show the light from right ahead to 20 degrees abaft the beam on the port side, and of such a character as to be visible at a distance of at least 2 miles.

The Inland Rules, Western Rivers Rules, and the Great Lakes Rules do not provide for seaplanes on the inland waters of the United States. In the United States, seaplanes on the water are governed by Civil Air Regulations contained in 14 CFR 60.22, 60.23, which in general conform to the nautical rules to prevent collisions applicable to vessels.

To complete the discussion of Rule 2, revised International Rules, it is necessary to consider other statutory provisions modifying the application of the rule. Rule 13 (b), revised International Rules, authorizes certain exemptions regarding lights required to be carried by vessels and seaplanes on the high seas:

Rule 13 (b) Whenever the Government concerned shall have determined that a naval or other military vessel or water-borne seaplane of special construction or purpose cannot comply fully with the provisions of any of these Rules with respect to the number, position, range or arc of visibility of lights or shapes, without interfering with the military function of the vessel or seaplane, such vessel or seaplane shall comply with such other provisions in regard to the number, position, range or arc of visibility of lights or shapes as her Government shall have determined to be the closest possible compliance with these Rules in respect of that vessel or seaplane.

This rule is in turn modified by Section 2 of the Act adopting the 1948 revision:

Sec. 2. Any requirements of such regulations in respect of the number, position, range of visibility, or arc of visibility of the lights required to be displayed by vessels shall not apply to any vessel of the Navy or of the Coast Guard whenever the Secretary of the Navy or the Secretary of the Treasury, in the case of Coast Guard vessels operating under the Treasury Department, or such official as either may designate, shall find or certify that, by reason of special construction, it is not possible for such vessel or class of vessels to comply with such regulations. The lights of any such exempted vessel or class of vessels, however, shall conform as closely to the requirements of the applicable regulations as the Secretary or such official shall find or certify to be feasible. Notice of such findings or certification and of the character and position of the lights prescribed to be displayed on such exempted vessel or class of vessels shall be published in the Federal Register and in the Notice to Mariners and, after the effective date specified in such notice, shall have effect as part of such regulations.

To determine the extent vessels and seaplanes are exempted from the requirements of Rule 2, revised International Rules, it is necessary to read Rule 13 (b) with the above Section 2, remembering Section 2 limits Rule 13 (b), *whereupon the authorized exemptions are seen to be limited to Naval and Coast Guard vessels of special construction.*

The local rules, i. e., the Inland Rules, Western Rivers Rules, and Great Lakes Rules, do not contain similar exemptions. However, the Act of December 3, 1945, as amended, provides essentially the same exemptions for these vessels and applies to all the inland waters of the United States. This act provides:

Any requirements as to the number, position, range of visibility, or arc of visibility of lights required to be displayed by vessels under the Act of Congress approved August 19, 1890 (title 33, U. S. C., sec. 61–141), entitled "An Act to adopt regulations for preventing collisions at sea"; or the Act of Congress approved June 7, 1897 (title 33, U. S. C., secs. 154–231), entitled "An Act to adopt regulations for preventing collisions upon certain harbors, rivers, and inland waters of the United States"; or the Act of Congress approved February 8, 1895 (title 33, U. S. C., secs. 241–294), entitled "An Act to regulate navigation upon the Great Lakes and their connecting and tributary waters"; or the Act of Congress approved August 19, 1890 (title 33, U. S. C., secs. 301–315), entitled "An Act to adopt special rules for the navigation of harbors, rivers, and inland waters of the United States, except the Great Lakes and their connecting and tributary waters as far east as Montreal, supplementary to the Act of August nineteenth, eighteen hundred and ninety, entitled "An Act to adopt regulations for preventing collisions at Sea", and all laws amendatory thereto, shall not apply to any vessel of the Navy or of the Coast Guard, where the Secretary of the Navy, or the Secretary of the Treasury in the case of Coast Guard vessels operating under the Treasury Department, or such official or officials as either may designate, shall find or certify that, by reason of special construction, it is not possible with respect to such vessel or class of vessels to comply with the statutory provisions as to the number, position, range of visibility, or arc of visibility of lights. The lights of any such exempted vessel or class of vessels shall, however, comply as closely to the requirements of the applicable statutes as the Secretary shall find to be feasible.

When the Secretary of the Navy or the Secretary of the Treasury, or such official or officials as either may designate, shall make any finding or certification as prescribed in section 1, notice of such finding or certification and the character and position of the lights to be displayed on such vessel shall be published in "Notice to Mariners."

Rule 7, revised International Rules, then excludes power-driven vessels of less than 40 gross tons and other small vessels from the requirement of carrying lights prescribed by Rule 2, revised International Rules, providing as follows:

Rule 7: Power-driven vessels of less than 40 tons, vessels under oars or sails of less than 20 tons, and rowing boats, when under way shall not be required to carry the lights mentioned in Rule 2, but if they do not carry them, they shall be provided with the following lights—

(a) Power-driven vessels of less than 40 tons, except as provided in section (b), shall carry—

(i) In the forepart of the vessel, where it can best be seen, and at a height above the gunwale of not less than 9 feet, a bright white light constructed and fixed as prescribed in Rule 2 (a) (i) and of such a character as to be visible at a distance of at least 3 miles.

(ii) Green and red sidelights constructed and fixed as prescribed in Rule 2 (a) (iv) and (v), and of such a character as to be visible at a distance of at least 1 mile, or a combined lantern showing a green light and a red light from right ahead to 2 points (22½ degrees) abaft the beam on their respective sides. Such lantern shall be carried not less than 3 feet below the white light.

(b) Small power-driven boats, such as are carried by seagoing vessels, may carry the white light at a less height than 9 feet above the gunwale, but it shall be carried above the sidelights or the combined lantern mentioned in subsection (a) (ii).

(c) Vessels of less than 20 tons, under oars or sails, except as provided in section (d), shall, if they do not carry the sidelights, carry where it can best be seen a lantern showing a green light on one side and a red light on the other, of such a character as to be visible at a distance of at least 1 mile, and so fixed that the green light shall not be seen on the port side, nor the red light on the starboard side. Where it is not possible to fix this light, it shall be kept ready for immediate use and shall be exhibited in sufficient time to prevent collision and so that the green light shall not be seen on the port side nor the red light on the starboard side.

(d) Small rowing boats, whether under oars or sail, shall only be required to have ready at hand an electric torch or a lighted lantern showing a white light which shall be exhibited in sufficient time to prevent collision.

(e) The vessels and boats referred to in this Rule shall not be required to carry the lights or shapes prescribed in Rules 4 (a) and 11 (e).

The Inland Rules, Great Lakes Rules, and the Western Rivers Rules, while not having corresponding rules excluding small steam vessels, are likewise not applicable as far as running lights are concerned to certain motorboats not over 65 feet in length. The Motorboat Act of April 25, 1940,

as amended, provides running lights for motorboats subject to that Act in lieu of the running lights prescribed by Article 2, Inland Rules, Rules 3, 5, 6, and 7, Western Rivers Rules, and Rule 3, Great Lakes Rules. This act provides in part:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the word "motorboat" where used in this Act shall include every vessel propelled by machinery and not more than sixty-five feet in length except tugboats and towboats propelled by steam. The length shall be measured from end to end over the deck, excluding sheer: *Provided,* That the engine, boiler, or other operating machinery shall be subject to inspection by the Coast Guard, and to their approval of the design thereof, on all said motorboats, which are more than forty feet in length, and which are propelled by machinery driven by steam.

Sec. 2. Motorboats subject to the provisions of this Act shall be divided into four classes as follows:

Class A. Less than sixteen feet in length.

Class 1. Sixteen feet or over and less than twenty-six feet in length.

Class 2. Twenty-six feet or over and less than forty feet in length.

Class 3. Forty feet or over and not more than sixty-five feet in length.

Sec. 3. Every motorboat in all weathers from sunset to sunrise shall carry and exhibit the following lights when under way, and during such time no other lights which may be mistaken for those prescribed shall be exhibited:

(a) Every motorboat of classes A and 1 shall carry the following lights:

First. A bright white light aft to show all around the horizon.

Second. A combined lantern in the fore part of the vessel and lower than the white light aft, showing green to starboard and red to port, so fixed as to throw the light from right ahead to two points abaft the beam on their respective sides.

(b) Every motorboat of classes 2 and 3 shall carry the following lights:

"Curb Indicator! . . . Her old man is really getting fussy!"

Courtesy Maritime Reporter

First. A bright white light in the fore part of the vessel as near the stem as practicable, so constructed as to show an unbroken light over an arc of the horizon of twenty points of the compass, so fixed as to throw the light ten points on each side of the vessel; namely, from right ahead to two points abaft the beam on either side.

Second. A bright white light aft to show all around the horizon and higher than the white light forward.

Third. On the starboard side a green light so constructed as to show an unbroken light over an arc of the horizon of ten points of the compass, so fixed as to throw the light from right ahead to two points abaft the beam on the starboard side. On the port side a red light so constructed as to show an unbroken light over an arc of the horizon of ten points of the compass, so fixed as to throw the light from right ahead to two points abaft the beam on the port side. The said side lights shall be fitted with inboard screens of sufficient height so set as to prevent these lights from being seen across the bow.

(c) Motorboats of classes 2 and 3, when propelled by sail and machinery, or by sail alone, shall carry the colored side lights, suitably screened, but not the white lights prescribed by this section: *Provided, however,* That motorboats of all classes, when so propelled, shall carry, ready at hand, a lantern or flashlight showing a white light which shall be exhibited in sufficient time to avert collision: *Provided further,* That motorboats of classes A and 1, when so propelled, shall not be required to carry the combined lantern prescribed by subsection (a) of this section.

(d) Every white light prescribed by this section shall be of such character as to be visible at a distance of at least two miles. Every colored light prescribed by this section shall be of such character as to be visible at a distance of at least one mile. The word "visible" in this Act, when applied to lights, shall mean visible on a dark night with clear atmospbere.

It will be noted this act deals in terms of feet in length, while Rule 7, revised International Rules, deals in terms of gross tons, thereby resulting in border line cases difficult to reconcile. For example, a motorboat subject to the Motorboat Act which is 60 feet in length and 42 gross tons in weight is excluded from the requirements of Article 2, Inland Rules, while in inland waters, but is subject to the requirements of Rule 2, revised International Rules, upon entry upon the high seas.

In closing this consideration of Rule 2, revised International Rules, a word or two might be said about Rule 10 of these rules. The latter does not modify the application of the rule, but it does supplement the lights prescribed therein. It will be noted Rule 2 does not prescribe lights showing aft. Stern and tail lights for power-driven vessels and seaplanes under way on the high seas are prescribed in Rule 10 of the revised rules, which states:

Rule 10:

"(a) A vessel when under way shall carry at her stern a white light, so constructed that it shall show an unbroken light over an arc of the horizon of 12 points of the compass (135 degrees), so fixed as to show the light 6 points (67½ degrees) from right aft on each side of the vessel, and of such a character as to be visible at a distance of at least 2 miles. Such light shall be carried as nearly as practicable on the same level as the sidelights.

"Note.—For vessels engaged in towing or being towed, see Rules 3 (b) and 5.

"(b) In a small vessel, if it is not possible on account of bad weather or other sufficient cause for this light to be fixed, an electric torch or a lighted lantern shall be kept at hand ready for use and shall, on the approach of an overtaking vessel, be shown in sufficient time to prevent collision.

"(c) A seaplane on the water when under way shall carry on her tail a white light, so constructed as to show an unbroken light over an arc of the horizon of 140 degrees of the compass, so fixed as to show the light 70 degrees from right aft on each side of the seaplane, and of such a character as to be visible at a distance of at least 2 miles."

As pointed out before the Inland Rules, Western Rivers Rules, and the Great Lakes Rules are all silent with respect to seaplanes on the inland waters of the United States. Moreover, the local rules do not require a fixed stern light either for seagoing vessels or those operating solely on the waters subject to the respective rules. Article 10, Inland Rules, merely requires overtaken vessels to show a white light or flare-up light from the stern if they do not carry an all around range light. The rule is silent as to the minimum visibility, height, or arc of such a light when shown. Rule 10, Western Rivers Rules, similarly requires overtaken vessels to show a white light or flare-up light from the stern if they do not carry one or more lights visible aft. It allows the white stern light to be a fixed 12 point light, visible at least 2 miles. Stern lights are not specifically provided for by the Great Lakes Rules, except in the case of sailing vessels. Rule 12, Great Lakes Rules, requires a sailing vessel upon an approach of a steam vessel to show a flare-up light on the quarter to which the steamer has approached.

The next Article in this series will deal with Rule 3 of the revised International Rules. While the corresponding requirements will not be as scattered, there, too, it will be found there are numerous differences in details of no readily discernable value—that is to say, differences in details which are not required by local conditions.

STABILITY REQUIREMENTS OF THE NEW REGULATIONS

By James B. Robertson, Jr., Naval Architect, Merchant Marine Technical Division, U. S. Coast Guard

The Merchant Vessel Regulations which became effective November 19, 1952, contain some new requirements relative to stability. These requirements are applicable to all vessels contracted for after that date, except that the provisions relative to the stability information to be furnished the vessel may be considered to be effective with respect to any vessel inclined after that date.

Under previous regulations only passenger vessels have been required to be inclined, except in special cases where the stability of other type vessels has been questioned. Under the new regulations, in accordance with the 1948 Safety at Sea Convention, all newly constructed cargo and tank vessels of 500 gross tons and over on international voyages are also required to be inclined, except where reliable stability information may be obtained from the results of an inclining test on a sister ship.

No specific standards for stability are laid down for cargo and tank vessels, but it is required that the Master be furnished such information as will permit the determination of freeboard and stability for any condition of loading.

The regulations applicable to passenger vessels contain a considerable number of new provisions as compared to the previous regulations, although these provisions are for the most part in accord with our established practice. For instance, the weather and passenger criteria's for required GM have been in use by the Merchant Marine Technical Division for many years.

The provisions relative to damaged stability, taken together with the increased standards for subdivision, represent an appreciable increase in the required standard of safety, but are generally in accord with recent construction practice here.

The provisions relating to stability information furnished the vessel, which generally apply both to cargo vessels and tankers as well as passenger vessels, are in agreement in general intent with the past practice for passenger vessels. However, in one important particular, the definition of responsibility for the preparation of such information, they differ from past practice. The regulations now require that this information be prepared by the owner and furnished the Master after approval by the Coast Guard. In the past this responsibility has not been defined, although Stability Booklets have frequently been prepared by the shipyard or the owner's naval architect. In the absence of an adequate Stability Booklet, instructions to insure operation of the vessel with sufficient stability have been incorporated in the Stability Letter furnished the vessel by the Coast Guard.

This has never been considered too satisfactory an arrangement, and it is intended that the number of instances in which it will now be necessary to include instructions in the Stability Letter will be small.

It is a comparatively simple technical matter to prepare instructions sufficient to insure adequate stability, if followed, but it is difficult, if not impossible, for a central agency not familiar with the operational conditions in a particular service to determine the extent to which those instructions will be practicable to that service. For instance, where a minimum permissible draft or minimum tankage are specified, severe difficulty may be experienced in handling the resulting salt water ballast in the arrival condition. Possible means of improving such a situation are:

1. Improvement in oily ballast handling by provision of low suctions in double bottoms and sumps in deep tanks, together with steaming connections.
2. Improvement of oil - ballast separation facilities aboard ship.
3. Use of sludge or oil-ballast separation barges at the critical arrival port.
4. Provision of adequate clean ballast. This may often be accomplished by the use of evaporators for 100 percent fresh water makeup so that only emergency fresh water need be carried.
5. Reduction of the required tankage by stowage of cargo at a low center of gravity. This may be practicable whenever less than the vessel's full cubic is used on the voyage terminating on the critical arrival. It will also be possible when the full cubic is used, but low stowage of the higher density portions of the cargo is practicable. Conversely, on the outbound voyage from the fueling port, when the vessel may tend to be unnecessarily stiff, it may be possible to ease the vessel by stowage of cargo at a higher mean center of gravity.
6. Lowering of the vessel's center of gravity by installation of fixed ballast or by reduction of topside weight, for instance, by the use of aluminum for lifeboats, davits, stack, and superstructure.

The best selection from the foregoing alternatives demands a knowledge of all related operational and economic factors. Such knowledge is available only to the vessel owner or operator. Thus, it is believed that the new regulations take a forward step in placing responsibility for the preparation of stability information with the owner or operator, the Coast Guard's action being primarily confined to a consideration of technical adequacy and clearness of presentation.

In practice, Stability Information will be prepared by the shipyard or by the owner's naval architect, who should be fully advised by the owner concerning the anticipated operational conditions. It is evident that such work should be undertaken as early as possible and, in fact, desirable that the underlying general considerations be made in the preliminary stages of design. By the time of the inclining test, which should be performed with the vessel as nearly complete as possible, the Stability Information to be supplied the vessel should be complete and approved by the Coast Guard subject only to the inclusion of that part of the data which is dependent upon the results of the inclining test.

Clarity and conciseness of presentation are considered essential, whether in regard to the information furnished a small cargo vessel or that furnished a Liner. This does not mean that the data should be presented in insufficient completeness. The aim in all cases is to facilitate the dependable determination of stability aboard the ship.

Because of the wide range of conditions which may be encountered, it

AVOIDANCE OF NAVAL MANEUVERS BY MERCHANT VESSELS

The Chief of Naval Operations has brought to the attention of the Commandant, U. S. Coast Guard, the continuing disregard of code signals of vessels of the U. S. Navy by merchant shipping and the consequent interruption of Navy antisubmarine and other exercises by participating Naval vessels. Such occurrences are a serious concern, since Naval vessels may be unnecessarily endangered and the efficiency of their operations appreciably reduced. A disregard of such signals creates a potential menace to safety of life and property at sea.

The masters and officers of all merchant vessels are cautioned to recognize and regard the code signals displayed by Naval vessels during such maneuvers. Where such signals are disregarded such negligence or carelessness may be the subject of proceedings against the licenses of the officers on watch or in command of the vessels, under the provisions of R. S. 4450.

Code signals used aboard Naval vessels for the purposes indicated herein are contained in H. O. No. 87, International Code of Signals, Volume I.

is not feasible to specify the form and extent of stability information and instructions. However, the following outline of material to be presented is offered for guidance. In some instances it may be possible and desirable to eliminate considerable of this material; in a few instances it may be desirable to amplify it:

1. The principal hydrostatic characteristics. Displacement, dead weight, freeboard, tons per inch, moment to trim 1 inch, and transverse metacenter should be furnished. For passenger vessels, to these, should be added the required GM. A tabular presentation or one in the form of dead-weight scale is considered preferable to the customary curves.
2. A profile diagram of the ship drawn to suitable vertical and horizontal scales which are indicated thereon. This diagram should show either directly or by tables alongside, the designation, capacity, and homogeneous centers of all cargo and tank spaces, and the amount, kind and extent of any permanent ballast. On vessels where the variation in stores or in passengers is sufficient to appreciably affect the stability, these spaces should also be indicated. For passenger vessels, for the purpose of damaged stability, all persons should be taken at the lifeboat embarkation positions. In the case of passenger vessels, this, or another diagram, should also show the location and extent of watertight bulkheads, watertight doors and remote control stations, cross-flooding or other damage control devices, areas having master controlled opening-type port lights, and the location of any bulkhead openings above the margin line but below the bulkhead deck may have been specially permitted.
3. A tabular presentation showing the effect on stability of liquids in each tank. This may take the form of a table giving tank capacities, vertical centers, and free surface factors, or may consist of a table wherein, for regular increments of draft or displacement, the total effect on GM for each tank at one-fourth, one-half, three-fourths, and full capacity is given directly. In either case, full fuel oil should be taken as 98 percent of the actual total tank capacity and all free surface allowance should be based on the value effective at a 5° heel.
4. A tabular presentation showing, for regular increments of draft or displacement, the effect on GM of a given amount of cargo or other weight, say 100 tons, carried at the various vertical levels.
5. Small scale diagrams showing the distribution of cargo, tankage, etc. corresponding to typical conditions, together with the resultant displacement, draft, trim, freeboard and GM. These diagrams will be clearer if a different color can be used for oil, water, ballast, and cargo etc. These generally should include a lightship plus crew condition, no cargo departure and arrival conditions, departure and arrival conditions corresponding to the average anticipated service loadings, and full homogeneous cargo departure and arrival conditions. In the case of passenger vessels, with the exception of the lightship condition, no condition should correspond to less stability than that required. In the case of cargo vessels, while no minimum standard of stability is specified by the rules, no condition should show less stability than is considered adequate under the circumstances. Where special conditions of operation result in especially low values of GM, necessary precautions should be indicated.
6. In the case of sister vessels having small differences in the lightship values as indicated by inclining tests or by an inclining test and a deadweight determination (differences within the tolerance which may normally be expected in such determinations) the stability information furnished the vessels may be based upon a mean lightship. However, any difference in such vessels as regards the capacity of any tank, cargo spaces, etc., should be accurately reflected in the data furnished each vessel.
7. Blank forms, including a cargo stowage diagram, drawn up so as to facilitate the calculation of the GM from the data furnished should be supplied the vessel and an example in the use of these forms should be given.
8. Instructions as to the operation of cross-flooding or other damage control devices. Instructions as to the conditions under which certain tanks may require to be kept filled or any cargo spaces less than full should be included. In some instances it may be possible and desirable to dispense with much of the other material referred to in these recommendations and to depend largely on simple written instructions.
9. Reliable mechanical or other devices for the determination of GM may be used to supplement the other data furnished, but should not be considered to supplant it. Where such devices are furnished, care should be taken that the designation of all spaces on the device is consistent with that used on the vessel and in the other data, and that consistent results are obtained. Any preliminary numerical work necessary to the use of such a device should be coordinated with the preliminary numerical work necessary for the determination of GM by calculation so that a single computation form can be used for either purpose.

BOARDING ACCIDENTS ON THE LAKES

In the last 8 years 18 people have lost their lives by falling from gangways in the Great Lakes area. (Falls and injuries were, of course, far more numerous.)

In almost all of these cases the gangway was of the same type, i. e., a ladder of wood or steel construction, *without raised handrails*, which was anchored on the ground and tied to the vessel's railing or bulwarks.

(And, all these deaths occurred either in daylight or under adequate lighting conditions.)

Of the 18 who lost their lives in this manner, 10 were drowned. The other 8 died from injuries sustained in falling. Eight were known to be under the influence of intoxicating liquor. Two, who were sober, were in the process of boarding their vessel with packages under their arms. Presumably, the remaining 8 were not under any personal hindrance while attempting to navigate one of these ladders.

A seaman is supposed to exercise reasonable caution in dangerous places, therefore the old maxim "One hand for the ship and one for yourself." But, can't the two be reconciled? There certainly is indication that additional safety measures are necessary as long as such equipment is in use.

LIFT THE RIGHT WAY

"Pug Pullman" used to be a middleweight champ. He never hesitated lifting the heaviest job in the shop, never let anyone give him a hand. The other day Pug lifted one 200-pound slab too many. In a second he turned green, then white, and slumped in his tracks. Someone gave him a drink of water and he vomited. They took him off the floor on a stretcher. That was Pug's last day in the shop.

You guessed it. The trouble was "rupture" or as the doctors call it, "hernia." It was a foul blow which disables at least a million and a quarter people a year in this country besides Pug.

Trying to pin down the reasons for the great number of accidents due to lifting would be an endless job. The reasons are numerous, and new ones spring up every day. Everybody should know that no matter how big and burly he is, he cannot lift a great weight without taking the chance of rupturing himself or spraining his back. He should also know that trying to lift anything at all when standing on an insecure footing can have the same result.

Yet hardly a day passes without such an accident happening. Is it carelessness? Sometimes. Then there are times when back strains just sort of happen . . . It is up to the individual man to beware of them. Never try to lift anything heavy without the assistance of at least one other man. Never get careless about lifting.

There is one case in which two men were carrying a heavy timber. They arrived at the spot where the timber was to be dropped. One man dropped his end. The other didn't—and got a badly sprained back out of it. Then there was the man who picked up a

large pipe wrench from the derrick floor, hoisted it to his shoulder, stepped off backwards to get his balance, and stepped off the floor. He fell about 4 feet, landing on his heels. This sprained his back very nicely indeed.

A large percentage of injuries received while on the job resulted from the improper handling of materials. Here are a few simple rules which, if followed, will decrease your chance of becoming injured.

Be extremely careful when piling and unpiling, loading, lifting, and setting down any materials. Remember, when you lift a heavy object, to do it steadily, use your legs instead of your back. You can feel which muscles you are using. Avoid using those in your back and use those in your legs.

Always remember:

1. Keep the load close to your body.
2. Get a good footing and solid grip on the object.
3. Bend the knees and keep the back straight.
4. Lift with the leg muscles.
5. Get help for heavy or awkward loads.
6. Set a good example . . . if you see someone attempting to lift too heavy a load, give him a hand.

SEAGOING LIBRARIES

The Thirty-First Annual Report of the American Merchant Marine Library Association was published recently.

The "Public Library of the High Seas," as the Association is more commonly known, kept pace with maritime operations during 1952. The influx in shipping, caused by the National Shipping Authority program and the record shattering ore shipments on the Great Lakes accounted for 1,455 vessels receiving 6,791 library units during 6,076 individual ship services. In all, 271,640 books, 203,730 pocket books, and 679,100 magazines were dispatched from the 11 port offices during 1952.

Since the Association was founded in 1921, a total of 10,158,093 books have been dispatched in 186,189 library units to 49,747 vessels.

AMMLA is the only national organization providing this type of service to American flag vessels exclusively. To provide this service the Association is entirely dependent upon its many loyal friends for support.

Donations of books may be sent to the nearest port offices which are located at: Municipal Recreation Pier, Baltimore, Md.; 408 Atlantic Avenue, Boston 10, Mass.; Charleston Public Library, Charleston, S. C.; Toulouse Street Wharf, New Orleans, La.; 406 East Plume Street, Norfolk, Va.; Pier #4, South, Philadelphia 6, Pa.; 105 Embarcadero, San Francisco 11, Calif.; 820 South Beacon St., San Pedro, Calif.; Old Weather Bureau Building, Sault Ste. Marie, Mich.; 3415 East Marginal Way, Seattle 4, Wash.

Contributions of money should be sent by those desiring to do so to the American Merchant Marine Library Association, 45 Broadway, New York 6, N. Y.

LESSONS FROM CASUALTIES

THE FIRST FIVE MINUTES

There is an old saying amongst firemen that any fire, if caught at an early enough stage, can be extinguished with a teaspoonful of water. There is another saying that, in fighting a fire, the first five minutes are worth the next five hours. A good example of the worth of this statement occurred recently in an East Coast Port when a cargo vessel caught fire in No. 4 hold. Had prompt action been taken, the first five minutes of the fire could easily have been the last five minutes. As it turned out, the fire was extinguished only after a long exhausting struggle, about 6½ hours later.

As the vessel was loading military supplies and was scheduled to depart early next morning, the stevedores were working the night shift through to complete loading. Undoubtedly men became weary—and careless. A gasoline-powered lift truck in No. 4 Hold needed refuelling. To save time, one of the loading gang brought a five-gallon can of gasoline down to the 'tween deck and started to pour the liquid directly into the tank. Some gasoline spilled onto the hot exhaust manifold of the lift truck and burst into flame. Excitedly, the man dropped the gasoline can on the wooden hatch cover, and in the rush of excitement by people near the lift truck, the open can was then kicked or thrown onto the metal wing of the hold, spilling gasoline as it went. Flaming gasoline spread and ran down through the cracks of the hatch covers into the lower hold. The hatch covers were enveloped in flames. The night mate who was forward at the moment checking mooring lines noticed the glow of the fire, ran up to the pilothouse, rang the fire alarm, and called the engine room for water on the fire main. Unfortunately by this time the fire had a good start in the cargo of the lower hold, which included rubber tires and clothing.

The mate rounded up two 15-lb. portable foam extinguishers and these were discharged into the hold, extinguishing the gasoline fire on the lift truck. The deck hose was then played down into the 'tween deck space and the fires on top of the hatch covers and the adjacent deck were doused. Since all the fire within sight and accessible from deck was now out, the night mate, using extremely good judgment, had the top hatch of the hold battened down as quickly as possible, put on tarps, closed all vents, blower fans, and drafts, and opened the fixed CO_2 system into this hold. 1200 lbs. of CO_2 were expended into the hold and the hatch kept closed for 1 hour. Upon opening the hatch, smoke could still be seen arising from the lower hold. However, men could now work at the 'tween deck level. The hatchboards were pulled, the surface cargo in the lower hold was gradually removed, and a bed of fire still burning was located.

Water from deck hoses was used intermittently as the cargo was removed, and finally, 6 and ½ hours after the original ignition all the fire was extinguished. It was most fortunate that there was little or no damage to the vessel caused by the fire and only about $10,000 in damages to the cargo. It was considered by all the officials who had cognizance of this casualty that the prompt and intelligent actions taken by the night mate undoubtedly contributed greatly to reducing the resultant damage, but, more important, may well have saved several lives. In extinguishing the initial and most awkward conflagration, the flames at the lift truck, with the quickest and handiest means—the foam portables—the mate may have given the fifteen stevedores working in the hold at the time the few precious moments of respite necessary for their escape alive. It also largely provided the needed moments to allow the hatch to be buttoned up and the CO_2 system to be actuated effectively.

Fueling a lift truck or any other piece of machinery with a gasoline can in an area as susceptible to fire as this cargo hold, half filled with mixed and inflammable cargo, is akin to playing "Russian Roulette,"—sooner or later the loaded chamber comes up and—WHAM! Such a practice is most seriously to be avoided. The introduction of gasoline in any manner aboard a dry cargo merchant vessel, other than in a tight approved-type 5-gallon safety can to be stowed in a protected paint or lamp locker or in the fuel tank of a motor lifeboat, is a dangerous practice and one which will inevitably lead to woe.

In this casualty, the first five minutes were vital and were wasted. Had the man of action—the night mate—been right on the scene, it is possible the first five minutes could have been the last five. While the practice of fueling with a gasoline can was the real villain, the simple safety precaution of having a foam or CO_2 portable right at hand could have made a bad situation slightly less dangerous. Much the better solution would be to provide a large enough fuel tank on the lift truck to last throughout the loading process, or if this is impracticable, remove the truck to the dockside for fueling. The inconvenience caused by this plan is small as weighed against the value of 15 stevedores' lives and the value of a ship's cargo. Gasoline can be a faithful servant *or* a deadly master.

FOR WANT OF A BOLT

A dramatic example of the importance of small details to the overall safety of a ship occurred recently when damage to a lock gate to the tune of about $65,000 was caused by the lack of a 10-cent bolt in a tug's machinery.

As the pusher-type diesel tug entered the north gate of a lock in the Intracoastal Waterway, with a large empty oil barge secured to its bow, no premonition of disaster was felt by the Master as he reached for the engine control in his pilothouse. Ringing up the control for full astern as the tug and tow passed into the lock, the Master glanced abeam at the lock wall to watch for that slowing down which would mean the killing of headway and another safe locking-through. Suddenly, the horrible realization dawned on him that the engine was not backing; the tug was still coasting ahead at an alarming rate; and his barge ahead was looming upon the south gate. Frantic motions on the engine control availed nothing. With a grinding, rending sound, the bow of the barge struck the lock gate and twisted its tender alignment beyond hope of repair.

Too late, far too late, the Master hastened down to the engine room to find to his chagrin that the linkage between the pilothouse control and the engine had failed because a 10-cent bolt had worked loose and fallen out, causing the control to be inoperative. There being only seconds remaining to back the engine by manual control before striking the gate, the engineers had not had time after the Master's frantic bell signal to back the engine before the damage was done.

Later, after cool analysis, it was decided that the failure of the bolt was caused by vibration and the failure to have the bolts in the linkage secured with lock washers and cotter pins, a precaution almost impossible for the engineers to have foreseen. But what a cost for such a small failure!

STAND BY TO BLAST OFF!

A man working with an oxyacetylene burning torch on a sand and gravel dredge last winter attempted to emulate Capt. Video and become jet-propelled. Since he was thirty-seven years of age at the time (it was his final birthday) he should have realized that his space-travel ship, an old empty gasoline drum, was decidedly inferior to the latest vehicles for interplanetary travel. Perhaps if he had been a member of the younger TV set, he would have at least worn his space helmet and had his antigravitational deaccelerator ready for the landing. The space doctor, in old-fashioned twentieth century language, merely called it "death by cerebral trauma due to skull fracture."

It seems that the burner was assisting a welder by cutting pieces of strap and plate to the desired size with the oxyacetylene torch and then handing them to the welder, to tack-weld in place. As the welder was working up on a gravel chute several feet above the deck of the dredge, it was necessary for the burner to get something to stand on to hand up the pieces. Did he go for a step ladder or some other such drab piece of equipment? NO! For there, close at hand was a nice colorful steel barrel, all red with a white band around the middle. "What better platform could a fellow ask for? Of course there might be a little gasoline inside but that can easily be fixed. All we do is pull out the bung, turn the barrel upside down, bung down (so we'll get rid of the gasoline) and then stand on the top end. Then we are all set to really get going! Oh, yes. Those little sparks and pellets of molten metal which keep dropping from the welding. Well, they've never done any harm before, probably won't now. Remember, we got rid of the gasoline.

Unfortunately, when it happened, there was no eyewitness. The welder, who was uninjured, had his helmet down over his face. As for the burner, the record will probably never show whether head met deck, barrel met head, head met barrel, or head met chute. But the take-off which had been so carefully arranged by the burner, took place on schedule and either the barrel or the burner became jet-propelled. Apparently the burner who had not used his head very much before taking off, used it too much in the landing and suffered a fatal skull fracture.

To visualize the explosive power of gasoline mixed with air in the correct proportions, picture the loud bang (backfire) often heard when the few cubic inches of gas-air in the cylinder of an automobile fire prematurely explodes and *some* of the explosion comes out through the carburetor and is heard *under* the hood. Then picture the 11,550 cubic inches of gas-air in the ordinary 50-gallon barrel being detonated by outside ignition. It will be seen that the steel barrel itself, or selected small pieces thereof, become missiles reminiscent of service in a Field Artillery Unit in World War II. Gasoline, like many other petroleum products, burns freely and easily at the surface, when a liquid, but becomes highly explosive when vaporized and mixed with air in the correct proportions. Hence, it should be obvious that an "empty" gasoline drum is much more dangerous than one full of gasoline. About the only "empty" gasoline drum which is safe is one that is *full* of water, or otherwise inerted.

Persons familiar with the petroleum business never fully trust a metal container which is empty but which contained gasoline. Gasoline has the property of penetrating the surface pores of ferrous metals. It is well-known that long after a gasoline tank or barrel has been emptied and cleaned by scrubbing or steaming, the pores of the metal will still emit vaporous gasoline. Therefore any old "empty" gasoline drum which has stood around for some time may be "loaded." It may contain the ideal explosive mixture, or about 2.5% of gasoline in air, by volume, even though it was cleaned and scrubbed at some time before. If the gasoline drum was *not* cleaned, handle it just as you would a blockbuster aerial bomb.

One of the more tragic aspects of the above casualty was the fact that the welder recognized the gasoline barrel as such and warned the burner against using it. The burner indicated his gross ignorance of the powers of gasoline by replying that it was all right because he would take the bung out and drain it! This made the barrel as safe as a hand grenade with the fuse pulled.

BACKING SLOWLY FORWARD

A master of a small Great Lakes tanker was confronted with an alarming situation one day while moving his vessel slowly down a sluggish river, when he noticed, to his sudden consternation, that while he had rung up "Full astern" on both engines his vessel was gaining headway and swinging to the left. The fact that this headway was being gained toward an unopened railway bridge, and that a train was stopped on the bridge did nothing to ease his acute state of mind at that awful moment.

Little did he know that while the steam engine throttle controls were being operated at the time by two level-headed engineering officers of long experience and ample intelligence, due to a curious quirk of human nature whereby an individual can perform a mechanical process a hundred times correctly and then once incorrectly and not even notice the difference, the engineer on the starboard engine had answered the engine room telegraph correctly but had opened the throttle the wrong way.

As the tanker had maneuvered downstream, various bells had been used to maneuver the tanker into the center of the channel and to hold her there until the bridge could open. It was during these maneuvers that the signal "Full astern" was rung up—and correctly answered—on the telegraphs.

When the master noted that he was gaining headway and swinging to the left, instead of losing headway, he immediately did the best thing possible—he rapidly rang up "Full astern" twice again on both telegraphs. The sudden clanging and banging in the engine room immediately produced the desired result—both engineers jumped, first straight up in the air, then toward the throttles.

Within seconds the error was noted and the starboard engine was changed over to Full Astern, but too late. Inexonerably the bow moved upon the bridge abutment, and there was that slow grinding, crunching sound which sends shivers down the spines of Masters and Company Finance Managers. Fortunately, and to the great joy and good fortune of the aforementioned officials in this case, the headway was almost off when contact was made, and there was little if any damage to the bridge abutment and only minor damage to the vessel's bow, the indented area being only about four square feet.

In this minor casualty, unlike so many marine casualties where a gremlin named "Mr. Unkown" or "Mr. Cannotbe Determined" is to blame for such playful antics as answering bells the wrong way, emptying fire extinguishers while nobody is around, tossing gremlin-cigarettes in oily rags, and filling the bilges with gremlin-oil, there was a man upon whom the finger could fall. He readily admitted his mistake and was duly admonished. An unconfirmed rumor has it that there is now a sign hanging in the engine room of said tanker, signed by the Chief Engineer, which reads—

TO ERR IS HUMAN, TO FORGIVE DIVINE
(BUT NOT ON THIS STEAMBOAT!)

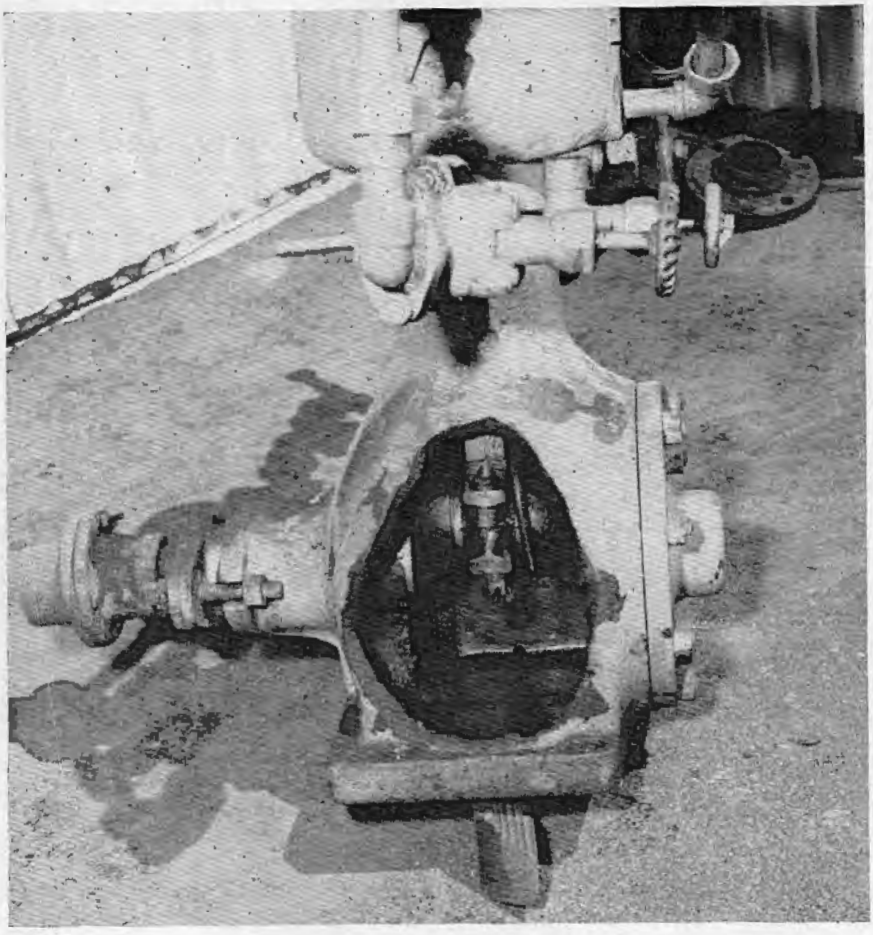
WHEN IS MACHINERY TOO OLD?

A few months ago, while the S. S. ---------- was proceeding en route Coos Bay, Oregon, from San Pedro, California, the Chief Engineer of the vessel in entering the engine room noticed that the refrigeration unit had been shut down. The unit consisted of a steam driven compressor built in 1917 of cast iron and an ammonia gas system. Already present at the scene were the First and Second Assistant Engineers. The First reported to the Chief that there was a little leak around the bonnet of the oil drain valve on the base of the compressor. The Chief, in turn, slacked off the valve a little, tightened the bonnet, and shut the valve tight again.

The refrigeration machinery was then started up. For a minute or two nothing happened so the Chief opened the suction valve farther, the discharge valve having already been opened. As no pressure showed on the suction valve gage, the Chief Engineer continued to open the valve. After opening the valve about three turns the pressure started to rise. At this time the suction gage indicated 7 pounds pressure and the discharge gage 94 pounds, which was normal. The Chief then opened the suction valve all the way, and the pressure on the suction gage indicated a rapid rise in pressure to approximately 35 pounds. He told the Second to secure the steam to the engine; almost simultaneously, the compressor exploded.

The explosion blew out of the compressor crankcase casing a piece of metal approximately 10 inches long and 7 inches wide and ¾ of an inch thick, shaped somewhat like an ellipse. The three Engineers suffered ammonia burns which resulted in their being sent to the hospital for treatment.

Investigation showed the compressor had been overhauled approximately three times during the course of the year prior to the accident. During each overhauling the entire system had also been blown clean. Due to leakage of ammonia around the compressor shaft, the shaft had been built up and machined to original dimensions. In addition, a ¼-inch line had been led from the cooling water supply to the compressor at a point just above the shaft, so that a trickle of water could be played on the shaft to absorb any leaking ammonia. Five days prior to the explosion, the refrigeration unit had been recharged with new ammonia gas. It had been operating normally up until the time of the accident and was fitted with a safety relief valve on the high pressure end.



When the compressor was subsequently removed from the vessel and examined ashore, it was noted the blown out section was an iron casting of medium quality. The minimum gage thickness of the crankcase shell was found to be 23/32nds of an inch and the internal diameter 11¼ inches. These measurements were sufficient to give a permissible working pressure of 125 pounds per square inch. Under ordinary operating conditions there would have been no pressure within the crankcase casing and at the maximum would only equal the suction pressure.

The compressor was disassembled and the piston, rings, and cylinder carefully examined. All were found to be in good condition, with no wear down in the cylinder walls. All indications were that a tight oil seal existed, with no visible means for the ammonia to leak into the crankcase in an amount necessary to build up sufficient pressure to cause the explosion. All valves, including the bypass valve, were opened up and found to be in good condition. Material failure, as the cause of the explosion, was somewhat uncertain in view of the fact that the refrigeration machinery had been operating satisfactorily up until the time of the accident and that all parts of the compressor when disassembled were found to be in good condition. However, as the compressor was built in 1917 of unknown quality cast iron, fatigue may have occurred at a pressure far below that at which the machine was originally designed.

CARGO HANDLING HAZARDS ON THE LAKES

In a recent fatality on a Great Lakes freighter, the discharging of cargo had been completed, and the unloading boom was being swung inboard. The lateral movement of the boom was controlled by cables rigged with a double purchase. Due to the possibility that the cables might become fouled with the boom cradle as the boom was swung inboard, a seaman was stationed in the vicinity to

signal the boom operator if the cables became fouled.

The seaman assigned the duty of watching the cable was an experienced seaman and had participated in this operation 20 times or so previously. Nevertheless, he placed himself in such a position that any sudden lash of the cables would endanger his person. Without warning, he was caught by one of the boom cables and thrown into the open cargo hold, whereupon he sustained a fatal skull fracture.

No one witnessed the actual incident. The mate operating the crane could not see the man where he was standing. Another man who was stationed 25 feet away to relay signals to the crane operator did not realize what had happened, until he heard his shipmate yell as he fell.

In another instance, a seaman was crushed to death during cargo handling on a Great Lakes freighter. The freighter was one converted to the carriage of scrap iron and steel in bulk. Instead of the regular hatch arrangement on Great Lakes bulk freight vessels, it had only three large cargo hatches. There was a "whirly" type steam-driven crane between No. 1 and No. 2 hatches and a similar crane installation between No. 2 and No. 3 hatches.

While the vessel was loading cargo in a lake port, the body of an able seaman on watch was found in the way of the foundation structure of No. 1 crane. The body was ripped and gashed and bruised. Though the fatality was not witnessed, it was apparent from the body's location, the nature of the injuries, and the type of the crane installation, that the seaman had been caught and crushed between the crane cab counterweight and a heavy girder I beam support for the crane.

The area was one out of sight of the operator.

The deceased was also an experienced seaman familiar with the duties and intricacies of the ship he was on.

These two cases (and others that could be cited) bear out the inherent danger of cargo operations. The danger of accidents around open hatches and moving equipment is always present. It is incumbent upon each seaman to exercise extreme alertness so as not to expose himself unnecessarily to hazardous situations. Even under the best of conditions there is an element of danger.

"Don't crowd the ladder. You might all arrive at the bottom in a heap, which is a poor way to go down, and a poorer way to go up."

DIAGRAM OF AN ACCIDENT TO A CHIEF MATE

Courtesy Safety Bulletin

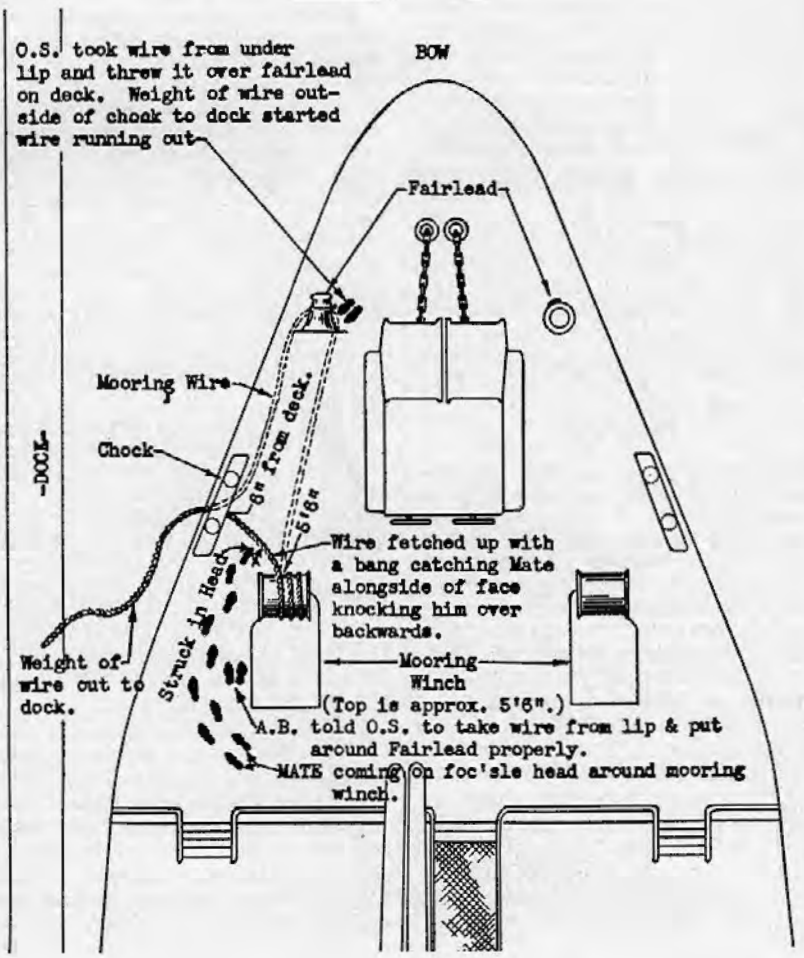
The Chief Mate of a Company vessel was caught across the face by a mooring wire. His nose and right cheek bone were fractured and deeply cut. We are happy to report that he is well on his way to recovery and should be none the worse for the incident. He will, however, have some painful memories to look back on.

Here's what happened. The vessel was at the wharf. It became necessary to shift the breastline for use as a spring. The breast was slacked off and the wire fell down around the base of the forward fairlead. An Ordinary Seaman was told to clear the wire from the lip of the fairlead. The man threw the wire over the fairlead. The wire ran out the chock from its own weight and the bight struck the Mate in the face.

Shore Safety Committee Comment: We see two points here that might be commented on. First, the old one of keeping out of bights. The Mate may not have been aware he was in a bight but he was. Sure, he was an innocent victim of other people's actions but then most individuals who get caught in bights fall in the same category.

The second point is also an old one, the problem of the transmission of ideas, i. e., the giving of orders. The O. S. was a new man, in fact, he had just joined the ship. Looking into our crystal ball and judging from events, we see that the O. S. did not know what was expected of him. He cleared the wire all right. What he should have done was to have lifted it clear of the lip and placed it in the fairlead. *The vessel made a good report on the accident.* The excellent drawing below is taken from that report.

REMEMBER: IT COULD HAPPEN TO YOU



APPENDIX

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 5-53

30 July 1953

Subj: Records of seamen not shipped or discharged before a shipping commissioner; submission of reports by masters of merchant vessels required

1. *Purpose.* The purpose of this circular is to provide instructions for reporting the employment, discharge or termination of the services of seamen employed on merchant vessels of the United States of 100 gross tons and upward, except vessels employed exclusively in trade on the navigable rivers of the United States, as required by subsection (L) of Section 643 of Title 46, U. S. Code and Section 14.05-20 of Title 46, Code of Federal Regulations, when such seamen are not shipped or discharged before a shipping commissioner. Attention is also called to the reinstated requirements that masters of merchant vessels of 100 gross tons and over engaged in trade on lakes, bays, sounds, canals, and harbors must submit reports covering those employed on 1 September 1953 and monthly thereafter.

2. *Circular canceled.* This circular includes the instructions contained in Navigation and Vessel Inspection Circular No. 1-50, dated 9 February 1950, with regard to submitting reports of the employment, discharge or termination of the services of seamen on vessels making coastwise and Great Lakes voyages, as well as new instructions for the submission of such reports in the case of vessels engaged in trade on lakes other than the Great Lakes, bays, sounds, bayous, canals and harbors, on and after 1 September 1953. A notice canceling, effective 31 August 1953, the waiver under which masters of vessels in these latter categories were previously exempt from the requirement for submitting these reports was published in the Federal Register for June 27, 1953. Navigation and Vessel Inspection Circular No. 1-50 is, therefore, canceled as of 31 August 1953.

3. *Exemptions.* The reports referred to herein are not required if the certificate of inspection issued to the vessel, including any amendments thereto, is for "rivers" only, or in the case of a vessel not subject to inspection if its operations are confined to waters for which a certificate of inspection for "rivers" would be normally issued. If any doubt arises as to whether an uninspected vessel is exempt under this definition, the matter should be referred to the nearest Officer in Charge, Marine Inspection, U. S. Coast Guard, for decision.

4. *Forms.* The following forms are prescribed for the use of masters of vessels if required to submit these reports and a supply of these forms may be obtained from any Marine Inspection Office of the U. S. Coast Guard:

Form CG 735 (T) Report of Ship Personnel not Shipped or Discharged Before a Shipping Commissioner
Form CG 718A Certificate of Discharge of Merchant Seaman
Form CG 718E Record of Entry in Continuous Discharge Book

5. *Manner of submitting reports.* The required reports are to be submitted in accordance with the following:

a. *Coastwise voyages.*

When the vessel is sailing on a voyage which will extend to the ocean or the Gulf of Mexico and when coastwise shipping articles are opened, or when the vessel is departing on a coastwise voyage for which shipping articles are not required, the master shall, immediately prior to sailing, submit a Form CG 735 (T) listing the name, as well as the other data required by the form with the exception of the date and place of discharge, of each member of the crew. Thereafter, at each domestic port visited on the voyage, the master shall, prior to departure, submit a supplementary report on Form CG 735 (T) listing the name, as well as the other data required by the form of each seaman engaged or discharged or whose services were otherwise terminated since the previous submission of the form. When coastwise shipping articles are completed or when a voyage on which shipping articles are not required is completed, the master shall submit a Form CG 735 (T) listing the name, as well as the other data required by the form, of each member of the crew on board at the time of the completion of the voyage.

b. *Great Lakes voyages.*

When the vessel is employed exclusively in trade on the Great Lakes, the master shall submit Form CG 735 (T) at the commencement of the season, or when the vessel is put into service, listing the name, as well as the other data required by the form with the exception of date and place of discharge, of each member of the crew. Thereafter, at the end of each calendar month, the master shall submit a supplementary report on Form CG 735 (T) listing the name, as well as other data required by the form, of (1) each seaman whose employment was terminated during the month and who was not re-engaged on the vessel's next trip and (2) each seaman engaged during the month who was not also employed on the vessel in the same capacity on her last trip preceding the engagement. At the close of the season, or when the vessel is withdrawn from service, the master shall submit a final report on Form CG 735 (T) listing the name, as well as the other data required by the form, of each seaman who has not been previously reported as discharged.

c. *Vessels engaged in trade on lakes (other than the Great Lakes), bays, sounds, bayous, canals and harbors*

When the vessel is employed exclusively in trade on the lakes (other than the Great Lakes), bays, sounds, bayous, canals or harbors, the master shall submit Form CG 735 (T) on 1 September 1953, or when the vessel is put into service, listing the name, as well as other data required by the form with the exception of date and place of discharge, of each member of the crew. Thereafter, at the end of each calendar month, the master shall submit a supplementary report on Form CG 735 (T) listing the name as well as other data required by the form, of (1) each seaman whose employment was terminated outright, or whose employment was temporarily interrupted during the month and (2) each seaman engaged during the month, either as a new crew member, or who is returning to the vessel after a break in his service. If the vessel is withdrawn from service, the master shall submit a final report on Form CG 735 (T) listing the name, as well as other data required by the form, of each seaman who has not been previously reported as discharged.

d. *Seaman's Certificate of Discharge*

The master shall attach to any Form CG 735 (T) on which a discharge is reported the white copy of the certificate of discharge issued to the seaman (Form CG 718A Rev.), or a record of the entry made in the seaman's continuous discharge book (Form CG 718E). It is essential that the service reported for a seaman on Form CG 735 (T) corresponds in all respects with that shown on his cer-

tificate of discharge, or the entry made in his continuous discharge book.

e. *Disposition of executed forms*

The report on Form CG 735 (T) with copies of Forms CG 718A Rev. and CG 718E, as required, shall be submitted by the master to the local Coast Guard Marine Inspection Office for transmittal to Coast Guard headquarters.

6. *Purpose served by reports.* These reports enable the Coast Guard to determine if seamen are in possession of specially validated merchant mariner's documents in accordance with the security regulations. In addition, these reports are essential to the Coast Guard in the issuance of duplicate certificates of discharge to seamen and in complying with the many requests from steamship companies and other parties at interest for a record of a seaman's service.

7. *Action required.* The cooperation of all masters, operators of vessels, seamen, and organizations representing maritime personnel is requested in order that compliance with the requirements of law described in this circular will not be violated. These requirements are applicable to merchant vessels of 100 gross tons and over in the following categories when seamen on such vessels are not shipped or discharged before shipping commissioners:

a. Vessels in the coastwise trade.

b. Vessels on the Great Lakes.

c. Vessels in trade on lakes other than the Great Lakes, bays, sounds, bayous, canals and harbors, unless the exemption provided in paragraph 3 of this circular applies.

H. C. SHEPHEARD
Rear Admiral, U. S. C. G.
Chief, Office of
Merchant Marine Safety.

By direction of the Commandant.

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 6-53

26 August 1953

Subj: Electrically propelled vessels; dangerous condition in certain propulsion control cubicles; correction of.

1. *Purpose.* This circular calls attention to certain dangerous conditions that may exist within the propulsion control cubicles of electrically propelled vessels. An interim measure for safe operation is required until permanent corrective modifications to the equipment are made.

2. *Background.* It was recently discovered on a T2-SE-A1 type tank vessel equipped with Westinghouse propulsion control equipment that a voltage of lethal proportions exists within the propulsion control cubicle when it appears apparently safe to enter the cubicle to make repairs or perform routine maintenance. When the control cubicle is open, the hazard is that, under certain circumstances, a potential of 500 volts or more is present on the direction switch contacts (then in open position). This condition exists when the propulsion generator and exciter are running idle and the generator and motor excitation circuit breakers are open. In the arrangement of the propulsion generator excitation circuits, the excitation circuit breaker is located in the exciter field circuit. Even though this breaker has been tripped by the door interlock switch, or other means, the voltage generated by the exciter from the residual magnetism in its field can cause sufficient current to flow in the propulsion generator field to produce a potential of 500 volts or more within the generator stator windings.

3. *Discussion.* The plans of various T2-SE-A1 tank vessels were reviewed. It was found that this hazardous condition exists on all T2-SE-A1 type tank vessels having Westinghouse or Allis-Chalmers propulsion control equipment installed. This condition may be also found on other electrically propelled vessels having these or other types of propulsion control equipment installed.

4. *Recommended equipment changes.* It is felt that equipment changes necessary to remove this hazard should be made in conjunction with specific recommendations of the manufacturer. Therefore, the owner or operator of an electrically propelled vessel should check and determine if this hazardous condition is present. If it is, the owner or operator should submit revised plans in triplicate showing proposed changes in existing equipment to the Commandant (MMT), U. S. Coast Guard, Washington 25, D. C., for approval. At the next annual inspection of such vessels, marine inspectors will check and report if corrections have been or are in the process of being made.

5. *Interim operating requirements.* Until this hazardous condition can be removed from electrically propelled vessels, the following steps should be taken so that no one will be injured or lose his life:

a. Instruct all engine room operating and maintenance personnel of the possible hazards involved.

b. Require the excitation setup or transfer switch to be in the "OFF" position before opening the control cubicle door.

c. Have prepared an appropriate warning sign, together with instructions regarding what to do before entering cubicle, and have this sign attached to the outside of the control cubicle.

6. *Action required.* The owners, operators, masters, and others concerned with electrically propelled vessels should take immediate steps to determine if this hazardous condition is present, and if found should take necessary action to remove it. Until changes can be made in existing equipment, the interim operating requirements in paragraph 5 should be followed.

H. C. SHEPHEARD
Rear Admiral, U. S. C. G.
Chief, Office of
Merchant Marine Safety.

By direction of the Commandant.

EQUIPMENT APPROVED BY THE COMMANDANT

[Editor's Note: Due to space limitations, it is not possible to publish the documents regarding approvals and termination of approvals of equipment published in the Federal Register dated August 7, 1953 (CGFR 53-32; 53-33). Copies may be obtained upon request from the Commandant (CMC), U. S. Coast Guard, Washington 25, D. C.]

ARTICLES OF SHIPS' STORES AND SUPPLIES

Articles of ships' stores and supplies certificated from July 28 to August 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

Gamlen Chemical Co. 4 Midland Ave., East Paterson, N. J. Certificate No. 119, dated August 4, 1953. "GAMLEN SOLVENT NUMBER 26."

Octagon Process Inc. 15 Bank St., Staten Island 1, N. Y. Certificate No. 120, dated August 10, 1953. "RUSTCLEAN 515."

Stewart-Hall Chemical Corp. 550 So. Fulton Ave, Mount Vernon, N. Y. Certificate No. 121, dated August 17, 1953. "DESLUDGIT."

AFFIDAVITS

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

Horspool and Romine Mfg. Co., Inc. 5850 Marshall Street, Oakland 8, California BOLTING.

U. S. GOVERNMENT PRINTING OFFICE: 1953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USE THE
RIGHT
TOOL
THE
RIGHT
WAY!
BuEmployComp