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PROCEEDINGS

OF THE

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THE NEW COAST GUARD 16-ton 44-footer is a sturdy all-weather craft powered by two 180-h.p. diesel engines which allow her an approximate speed of 15 knots.

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IN THIS ISSUE . . .

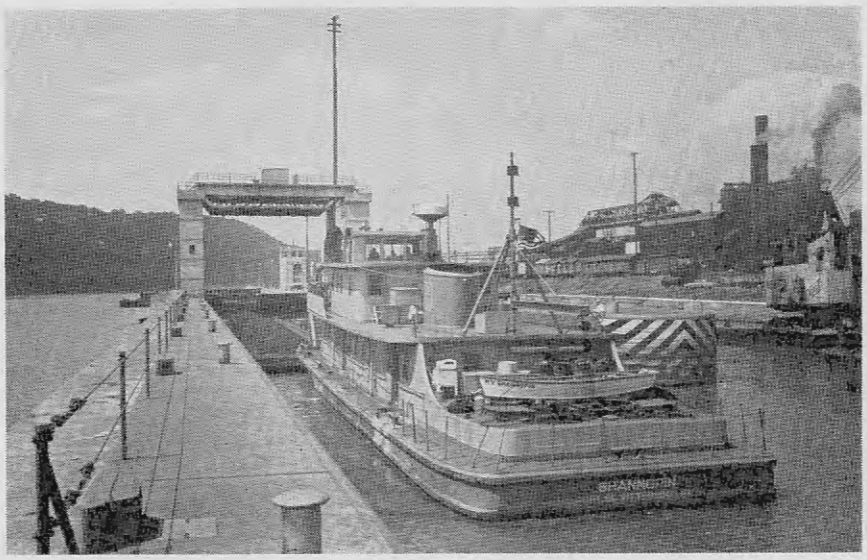
The Coast Guard's preliminary proposals for UNIFICATION OF THE INLAND, WESTERN RIVERS AND GREAT LAKES RULES OF THE ROAD are presented beginning page 3.

The greatly expanded MARINE CASUALTY STATISTICS for 1964 begin on page 14.

The series of articles comparing the 1960 International Rules of the Road with those of 1948 is continued beginning page 12.

CONTENTS

DIST. (SDL NO. 80)
A: a aa b c(2); remainder (1)
B: n(35); c(16); eq(5); f(4); h(3); g(2); remainder (1)
C: a b (less Quonset Pt.) c d e f g i m o u (1)
D: i(5); a b c d e f g h k l q r v w (1)
E: o(New London only) (1)
F: p(13)
List 141M
List 111



Coast Guard Proposes Unification of Inland, Great Lakes, and Western Rivers Rules of the Road

There is, and has been for a number of years, a recognized need to unify our Inland, Great Lakes, and Western River Rules of the Road into a single set of Rules patterned as closely as practicable after the International Rules of the Road. Following is the *preliminary* Coast Guard proposal to accomplish this, together with a few explanatory remarks. Those Rules or portions thereof that do not follow the 1960 International Rules verbatim have been italicized. The comments of any interested groups or individuals are solicited. Please forward them to:

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Washington, D.C. 20226

PART A.—PRELIMINARY AND DEFINITIONS

RULE 1

(a) *These Rules shall be followed by all vessels and seaplanes upon all inland waters of the United States, including United States territorial waters within the Great Lakes, and by all U.S. vessels upon the Great Lakes and their connecting and tributary waters as far east as Montreal.*

(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 exhibited, except such lights as cannot be mistaken for the prescribed lights or do not impair their visibility or distinctive character, or interfere with the keeping of a proper lookout. The lights prescribed by these Rules may also be exhibited from sunrise to sunset in restricted visibility and in all other circumstances when it is deemed necessary.

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

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

(ii) the word "seaplane" includes a flying boat and any other aircraft designed to maneuver 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 "underway" 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 her length overall and largest breadth;

(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) vessels shall be deemed to be in sight of one another only when one can be observed visually from the other;

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

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

(xii) the term "prolonged blast" means a blast of from four to six seconds' duration;

(xiii) the word "whistle" means any appliance capable of producing the prescribed short and prolonged blasts;

(xiv) the term "engaged in fishing" means fishing with nets, lines or trawls but does not include fishing with trolling lines.

(xv) the word "barge" means barge, canal boat, scow, and any other similar non-self-propelled vessel not otherwise provided for.

PART B.—LIGHTS AND SHAPES

All vessels except those towing by pushing ahead and those being towed may display the lights and shapes required by the International Regulations for Preventing Collisions at Sea. However, if they do not, they shall comply with the Rules in this part.

RULE 2

(a) A power-driven vessel when underway 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 white light so constructed as to show an unbroken light over an arc of the horizon of 225 degrees (20 points of the compass), so fixed as to show the light 112½ degrees (10 points) on each side of the vessel, that is, from right ahead to 22½ degrees (2 points) abaft the beam on either side, and of such a character as to be visible at a distance of at least 5 miles.

(ii) Either forward or abaft the white light prescribed in subsection (i) a second white light similar in construction and character to that light.

(iii) These two white lights shall be so placed in a line with and over the keel that the after light shall be at least 15 feet higher than the forward light. The horizontal distance between the two white lights shall be greater than the vertical distance. In all circumstances, the lights shall be so placed as to be clear of and above all other lights and obstructing superstructures.

(iv) On the starboard side a green light so constructed as to show an unbroken light over an arc of the horizon of 112½ degrees (10 points of the compass), so fixed as to show the light from right ahead to 22½ degrees (2 points) 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 portside a red light so constructed as to show an unbroken light over an arc of the horizon of 112½ degrees (10 points of the compass), so fixed as to show the light from right ahead to 22½ degrees (2 points) abaft the beam on the portside, 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.

(b) A seaplane underway on the water shall carry—

(i) In the forepart amidships where it can best be seen a 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 portside, and of such a character as to be visible at a distance of at least 2 miles.

REMARKS

This proposal would change the existing Inland Rules by requiring a 20 point after range light on all vessels of 65 feet in length and over, in lieu of the present 32 point light. The proposal would require the same lights for seaplanes on the water which the International Rules require.

RULE 3

(a) A power-driven vessel when towing another vessel or seaplane astern, alongside, or by pushing ahead shall, in addition to her sidelights, carry two white lights in a vertical line one over the other, not less than 3 feet apart, and when towing astern and the length of the tow, measuring from the stern of the towing vessel to the stern of the last vessel towed exceeds 600 feet, shall carry three white lights in a vertical line one over the other, so that the upper and lower lights shall be the same distance from, and not less than 3 feet above or below, the middle light. Each of these lights shall be of the same construction and character and one of them shall be carried in the same position as the white light prescribed in Rule 2(a)(i). In a vessel with a single mast, such lights may be carried on the mast. Towing vessels shall also carry an additional white light forward and lower than or abaft and higher than the white lights mentioned above, and forming a central range of lights with them so that the vertical separation between the highest and lowest lights of the central range is at least 15 feet and the horizontal distance is greater than the vertical distance. The additional light shall be of the same construction and character as the light prescribed in Rule 2(a)(i).

(b)(i) The towing vessel shall, if towing by any means

except by pushing ahead, show the stern light prescribed in Rule 10.

(ii) The towing vessel pushing another vessel ahead, shall, in addition to the lights prescribed in section (a), carry at or near the stern two amber lights in a vertical line, one over the other, not less than three feet apart; each of these lights shall be so constructed as to show an unbroken light over an arc of the horizon of 135 degrees (12 points of the compass), so fixed as to show the light 67½ degrees (6 points of the compass) 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.

(c) Between sunrise and sunset a power-driven vessel engaged in towing astern, if the length of tow exceeds 600 feet, shall carry, where it can best be seen, a black diamond shape at least 2 feet in diameter.

(d) A seaplane on the water, when towing one or more seaplanes or vessels, shall carry the lights prescribed in Rule 2(b) (i), (ii) and (iii); and, in addition, she shall carry a second white light of the same construction and character as the white light prescribed in Rule 2(b)(i), and in a vertical line at least 3 feet above or below such light.

REMARKS

This proposal is similar to the International Rule, but the central range requirement is made applicable down to 65 feet and the spacing requirements are relaxed. The amber lights of Inland and Western Rivers towboats pushing ahead are retained.

RULE 4

(a) A vessel which is not under command shall carry, where they can best be seen, and, if a power-driven vessel, in lieu of the lights prescribed in Rule 2(a) (i) and (ii), two red lights in a vertical line one over the other not less than 3 feet apart, and of such a character as to be visible all round the horizon at a distance of at least 2 miles. By day, she shall carry in a vertical line one over the other not less than 3 feet apart, where they can best be seen, two black balls or shapes each not less than 2 feet in diameter.

(b) A seaplane on the water which is not under command may carry, where they can best be seen, and in lieu of the light prescribed in Rule 2(b)(i), two red lights in a vertical line, one over the other, not less than 3 feet apart, and of such a character as to be visible all round the horizon at a distance of at least 2 miles, and may by day carry in a vertical line one over the other not less than 3 feet apart, where they can best be seen, two black balls or shapes, each not less than 2 feet in diameter.

(c) A vessel engaged in laying or in picking up a submarine cable or navigation mark, or a vessel engaged in surveying or underwater operations, or a vessel engaged in replenishment at sea, or in the launching or recovery of aircraft when from the nature of her work she is unable to get out of the way of approaching vessels, shall carry, in lieu of the lights prescribed in Rule 2(a) (i) and (ii), or Rule 7(a)(i), three lights in a vertical line one over the other so that the upper and lower lights shall be the same distance from, and not less than 3 feet above or below, the middle light. The highest and lowest of these lights shall be red, and the middle light shall be white, and they shall be of such a character as to be visible all round the horizon at a distance of at least 2 miles. By day, she shall carry in a vertical line one over the other not less than 3 feet apart, where they can best be seen, three shapes each not less than 2 feet in diameter, of which the highest and lowest shall be globular in shape and red in color, and the middle one diamond in shape and white.

(d)(i) A vessel engaged in minesweeping operations shall carry at the fore truck a green light, and at the end or ends of the fore yard on the side or sides on which danger exists, another such light or lights. These lights shall be carried in addition to the light prescribed in Rule 2(a)(i) or Rule 7(a)(i), as appropriate, and shall be of such a character as to be visible all round the horizon at a distance of at least 2 miles. By day she shall carry black balls, not less than 2 feet in diameter, in the same position as the green lights.

(ii) The showing of these lights or balls indicates that it is dangerous for other vessels to approach closer than 3,000 feet astern of the minesweeper or 1,500 feet on the side or sides on which danger exists.

(e) The vessels and seaplanes referred to in this Rule, when not making way through the water, shall show neither the colored sidelights nor the stern light, but when making way they shall show them.

(f) The lights and shapes prescribed in this Rule are to be taken by other vessels and seaplanes as signals that the vessel or seaplane showing them is not under command and cannot therefore get out of the way.

(g) These signals are not signals of vessels in distress and requiring assistance. Such signals are contained in Rule 31.

REMARKS

All of Rule 4 follows the 1960 International Rule 4, except that the minimum vertical separation of lights and shapes has been reduced to 3 feet.

RULE 5

(a) A sailing vessel underway and any vessel or seaplane being towed astern or alongside, other than a barge or log raft, shall carry the same lights as are prescribed by Rule 2 for a power-driven vessel or a seaplane underway, respectively, with the exception of the white lights prescribed therein, which they shall never carry. They shall also carry stern lights as specified in Rule 10.

(b) In addition to the lights prescribed in section (a), a sailing vessel may carry on the top of the foremast two lights in a vertical line one over the other, sufficiently separated so as to be clearly distinguished. The upper light shall be red and the lower light shall be green. Both lights shall be constructed and fixed as prescribed in Rule 2(a)(i) and shall be visible at a distance of at least 2 miles.

(c) A vessel being pushed ahead shall carry, at the forward end, on the starboard side a green light and on the portside a red light, which shall have the same characteristics as the lights prescribed in Rule 2(a) (iv) and (v) and shall be screened as provided in Rule 2(a)(vi), provided that any number of vessels pushed ahead in a group shall be lighted as one vessel.

(d) Between sunrise and sunset a vessel being towed astern, if the length of the tow exceeds 600 feet, shall carry where it can best be seen a black diamond shape at least 2 feet in diameter.

REMARKS

Barges and log rafts would continue to be lighted as specified by regulations.

RULE 6

(a) When it is not possible on account of bad weather or other sufficient cause to fix the green and red sidelights, these lights shall be kept at hand lighted and ready for immediate use, and shall, on the approach of or to other vessels, be exhibited on their respective sides in sufficient time to prevent collision, in such man-

ner as to make them most visible, and so that the green light shall not be seen on the portside nor the red light on the starboard side, nor, if practicable more than 22½ degrees (2 points) abaft the beam on their respective sides.

(b) To make the use of these portable lights more certain and easy, the lanterns containing them shall each be painted outside with the color of the lights they respectively contain, and shall be provided with proper screens.

RULE 7

Power-driven vessels of less than 65 feet in length, vessels under oars or sails of less than 40 feet in length, and rowing boats, when underway shall not be required to carry the lights prescribed in Rules 2 and 5, but if they do not carry them they shall be provided with the following lights:

(a) Power-driven vessels of less than 65 feet in length shall carry—

(i) In the forepart of the vessel, on the centerline, where it can best be seen, a 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 2 miles. A second light of the same character and construction as the light prescribed above may be carried on the centerline aft and higher than that light so that the two lights form a central range of lights. If the optional range light is carried, it may be constructed to show its light all round the horizon. Further, if such an all round light is carried, the stern light prescribed in Rule 10 shall not be carried.

(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 22½ degrees (2 points) abaft the beam on their respective sides. Such lantern shall be carried below the white light or lights.

(b) RESERVED

(c) RESERVED

(d) Vessels of less than 40 feet in length, under oars or sails, except as provided in section (f), shall carry either the red and green sidelights of subsection (a)(ii) or, 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 portside, 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 portside nor the red light on the starboard side.

(e) The vessels referred to in this Rule when being towed shall carry the sidelights or the combined lantern prescribed in sections (a) or (d) of this Rule, as appropriate, and a stern light as prescribed in Rule 10. When being pushed ahead they shall carry at the forward end the sidelights or combined lantern prescribed in sections (a) or (d) of this Rule, as appropriate, provided that any number of vessels referred to in this Rule when pushed ahead in a group shall be lighted as one vessel under this Rule unless the overall length of the group exceeds 65 feet when the provisions of Rule 5(c) shall apply.

(f) 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.

(g) 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) and the size of their day signals may be less than is prescribed in Rules 4(c) and 11(c).

REMARKS

This proposed Rule would require the lights of International Rule 7, with certain relaxations and options. The relaxations are the reduction of visibility of the 20 point light from 3 miles to 2 miles and the removal of a vertical spacing requirement between that light and the sidelights. The options are the addition of an extra 20 point light to form a central range and, if this range is carried, the substitution of a 32 point light for the after range light and stern light. The proposal would allow the present lights for motorboats 26 feet or more in length. Further, it would give every boatsman the option of using separate sidelights or a combination lantern.

RULE 8

(a) A power-driven pilot-vessel when engaged on pilotage duty and underway:

(i) Shall carry a white light at the masthead at a height of not less than 20 feet above the hull, visible all round the horizon at a distance of at least 3 miles and at a distance of 8 feet below it a red light similar in construction and character. If such a vessel is of less than 65 feet in length she may carry the white light at a height of not less than 9 feet above the gunwale and the red light at a distance of 4 feet below the white light.

(ii) Shall carry the sidelights or lanterns prescribed in Rule 2(a) (iv) and (v) or Rule 7(a)(ii) or (d), as appropriate, and the stern light prescribed in Rule 10.

(iii) Shall show one or more flareup lights at intervals not exceeding 10 minutes. An intermittent white light visible all round the horizon may be used in lieu of flareup lights.

(b) A sailing pilot-vessel when engaged on pilotage duty and underway:

(i) Shall carry a white light at the masthead visible all round the horizon at a distance of at least 3 miles.

(ii) Shall be provided with the sidelights or lantern prescribed in Rules 5(a) or 7(d), as appropriate, and shall, on the near approach of or to other vessels, have such lights ready for use, and shall show them at short intervals to indicate the direction in which she is heading, but the green light shall not be shown on the portside nor the red light on the starboard side. She shall also carry the stern light prescribed in Rule 10.

(iii) Shall show one or more flareup lights at intervals not exceeding 10 minutes.

(c) A pilot-vessel when engaged on pilotage duty and not underway shall carry the lights and show the flares prescribed in sections (a)(i) and (iii) or (b) (i) and (iii), as appropriate, and if at anchor shall also carry the anchor lights prescribed in Rule 11.

(d) A pilot-vessel when not engaged on pilotage duty shall show the lights or shapes for a similar vessel of her length.

RULE 9

(a) Fishing vessels when not engaged in fishing shall show the lights or shapes for similar vessels of their length.

(b) Vessels engaged in fishing, when underway or at anchor, shall show only the lights and shapes prescribed in this Rule, which lights and shapes shall be visible at a distance of at least 2 miles.

(c)(i) Vessels when engaged in trawling, by which is meant the dragging of a dredge net or other apparatus through the water, shall carry two lights in a vertical line, one over the other, not less than 4 feet nor more than 12 feet apart. The upper of these lights shall be green and the lower light white and each shall be visible all round the horizon. The lower of these two lights shall be carried at a height above the sidelights not less than twice the distance between the two vertical lights.

(ii) barges of 150 feet or upwards in length may carry and exhibit the single white light prescribed by section (a) in lieu of the two white lights prescribed by section (b) of this rule; and

(iii) where two or more barges are tied together and anchored as a unit, the anchor light prescribed by this rule need be displayed only on the vessel having its anchor down.

RULE 12

Every vessel or seaplane on the water may, if necessary in order to attract attention, in addition to the lights which she is by these Rules required to carry, show a flareup light or use a detonating or other efficient sound signal that cannot be mistaken for any signal authorized elsewhere under these Rules.

RULE 13

(a) Nothing in these Rules shall interfere with the operation of any special rules made by the Government of any nation with respect to additional station and signal lights for ships of war, for vessels sailing under convoy, for fishing vessels engaged in fishing as a fleet or for seaplanes on the water.

(b) Whenever the Secretary of the Navy or the Secretary of the Treasury shall have determined that a Navy or Coast Guard vessel 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, such vessel shall comply with such other provisions in regards to the number, position, range or arc of visibility of lights or shapes as the Secretary of the Navy or the Secretary of the Treasury shall have determined to be the closest possible compliance with these Rules in respect of that vessel.

RULE 14

A vessel proceeding under sail, when also being propelled by machinery, shall carry in the daytime forward, where it can best be seen, one black conical shape, point downwards, not less than 2 feet in diameter at its base.

PART C.—SOUND SIGNALS AND CONDUCT IN RESTRICTED VISIBILITY PRELIMINARY

1. The possession of information obtained from radar does not relieve any vessel of the obligation of conforming strictly with the Rules and, in particular, the obligations contained in Rules 15 and 16.

2. The Annex to the Rules contains recommendations intended to assist in the use of radar as an aid to avoiding collision in restricted visibility.

RULE 15

(a) *A power-driven vessel of 40 feet or more in length shall be provided with an efficient whistle, sounded by steam or by some substitute for steam, so placed that the sound may not be intercepted by any obstruction, and with an efficient foghorn and also with an efficient bell. A sailing vessel of 40 feet or more in length shall be provided with a similar foghorn and bell.*

(b) All signals prescribed in this Rule for vessels underway shall be given—

(i) by power-driven vessels on the whistle;

(ii) by sailing vessels on the foghorn;

(iii) by vessels towed on the whistle or foghorn.

(c) In fog, mist, falling snow, heavy rainstorms, or any other condition similarly restricting visibility, whether by day or night, the signals prescribed in this Rule shall be used as follows:

(i) *A power-driven vessel making way through the water shall sound at intervals of not more than 1 minute a prolonged blast.*

(ii) *A power-driven vessel underway, but stopped and making no way through the water, shall sound at intervals of not more than 1 minute two prolonged blasts, with an interval of about 1 second between them.*

(iii) A sailing vessel underway shall sound, at intervals of not more than 1 minute, when on the starboard tack one blast, when on the port tack two blasts in succession, and when with the wind abaft the beam three blasts in succession.

(iv) A vessel when at anchor shall at intervals of not more than 1 minute ring the bell rapidly for about 5 seconds. In vessels of more than 350 feet in length the bell shall be sounded in the forepart of the vessel, and in addition there shall be sounded in the after part of the vessel, at intervals of not more than 1 minute for about 5 seconds, a gong or other instrument, the tone and sounding of which cannot be confused with that of the bell. Every vessel at anchor may in addition, in accordance with Rule 12, sound three blasts in succession namely, one short, one prolonged, and one short blast, to give warning of her position and of the possibility of collision to an approaching vessel. However, vessels not more than 65 feet in length and barges shall not be required to sound the signals of this subsection when anchored in a special anchorage area established pursuant to Rule 11(j).

(v) A vessel when towing, a vessel engaged in laying or in picking up a submarine cable or navigation mark, and a vessel underway which is unable to get out of the way of an approaching vessel through being not under command or unable to maneuver as required by these Rules shall, instead of the signals prescribed in subsections (i), (ii), and (iii) sound, at intervals of not more than 1 minute, three blasts in succession, namely, one prolonged blast followed by two short blasts.

(vi) A vessel towed, or, if more than one vessel is towed, only the last vessel of the tow, if manned, shall, at intervals of not more than 1 minute, sound four blasts in succession, namely, one prolonged blast followed by three short blasts. When practicable, this signal shall be made immediately after the signal made by the towing vessel.

(vii) A vessel aground shall give the bell signal and, if required, the gong signal, prescribed in subsection (iv) and shall, in addition, give three separate and distinct strokes on the bell immediately before and after such rapid ringing of the bell.

(viii) A vessel engaged in fishing when underway or at anchor shall at intervals of not more than 1 minute sound the signal prescribed in subsection (v). A vessel when fishing with trolling lines and underway shall sound the signals prescribed in subsections (i), (ii), or (iii) as may be appropriate.

(ix) A vessel of less than 40 feet in length, a rowing boat, or a seaplane on the water, shall not be obliged to give the above-mentioned signals but if she does not, she shall make some other efficient sound signals at intervals of not more than 1 minute.

(x) A power-driven pilot-vessel when engaged on pilotage duty may, in addition to the signals prescribed in subsections (i), (ii), and (iv), sound an identity signal consisting of four short blasts.

RULE 16

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

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

(c) A power-driven vessel which detects the presence of another vessel forward of her beam before hearing her fog signal or sighting her visually may take early and substantial action to avoid a close quarters situation but, if this cannot be avoided, she shall, so far as the circumstances of the case admit, stop her engines in proper time to avoid collision and then navigate with caution until danger of collision is over.

PART D.—STEERING AND SAILING RULES
PRELIMINARY

1. In obeying and construing these Rules, any action taken should be positive, in ample time, and with due regard to the observance of good seamanship.

2. Risk of collision can, when circumstances permit, be ascertained by carefully watching the compass bearing of an approaching vessel. If the bearing does not appreciably change, such risk should be deemed to exist.

3. Mariners should bear in mind that seaplanes in the act of landing or taking off, or operating under adverse weather conditions, may be unable to change their intended action at the last moment.

4. Rules 17 to 24 apply only to vessels in sight of one another.

RULE 17

(a) When two sailing vessels are approaching one another, so as to involve risk of collision, one of them shall keep out of the way of the other as follows:

(i) When each has the wind on a different side, the vessel which has the wind on the portside shall keep out of the way of the other.

(ii) When both have the wind on the same side, the vessel which is to windward shall keep out of the way of the vessel which is to leeward.

(b) For the purposes of this Rule the windward side shall be deemed to be the side opposite to that on which the mainsail is carried or, in the case of a square-rigged vessel, the side opposite to that on which the largest fore-and-aft sail is carried.

RULE 18

When two power-driven vessels are meeting end on, or nearly end on, so as to involve risk of collision, each shall alter her course to starboard, so that each may pass on the portside of the other. This Rule only applies to cases where vessels are meeting end on, or nearly end on, in such a manner as to involve risk of collision, and does not apply to two vessels which must, if both keep on their respective course, pass clear of each other. The only cases to which it does apply are when each of two vessels is end on, or nearly end on, to the other; in other words, to cases in which, by day, each vessel sees the masts of the other in a line, or nearly in a line, with her own; and by night, to cases in which each vessel is in such a position as to see both the sidelights of the other. It does not apply, by day, to cases in which a vessel sees another ahead crossing her own course; or, by night, to cases where the red light of one vessel is opposed to the red light of the other or where the green light of one vessel is opposed to the green light of the other or where a red light without a green light or a green light without a red light is seen ahead, or where both green and red lights are seen anywhere but ahead.

(b) For the purposes of this Rule and Rules 19 to 29 inclusive, except Rule 20(c) and Rule 28, a seaplane on the water shall be deemed to be a vessel, and the expression "power-driven vessel" shall be construed accordingly.

REMARKS

This Rule would not apply in rivers where the current adversely affects the movements of vessels so that it is not safe and practicable for them to pass port-to-port. See Rule 25.

RULE 19

When the two power-driven vessels are crossing, so as to involve risk of collision, the vessel which has the other on her own starboard side shall keep out of the way of the other.

RULE 20

(a) When a power-driven vessel and a sailing vessel are proceeding in such directions as to involve risk of collision, except as provided for in Rules 24 and 26, the power-driven vessel shall keep out of the way of the sailing vessel.

(b) (i) This Rule shall not give to a sailing vessel the right to hamper, in a narrow channel, the safe passage of a power-driven vessel which can navigate only inside such channel.

(ii) This Rule shall not give to a sailing vessel the right to hamper the safe passage of a vessel with tow that is ascending or descending a river.

(c) A seaplane on the water shall, in general, keep well clear of all vessels and avoid impeding their navigation. In circumstances, however, where risk of collision exists, she shall comply with these rules.

(d) All high-speed nondisplacement craft as designated by the Secretary of the Department in which the Coast Guard is operating shall, when it is safe and practicable to do so, keep well clear of all vessels and avoid impeding their navigation.

Alternate in Lieu of Rule 20(c) and (d):

(c) Seaplanes on the water and all high-speed, nondisplacement craft shall, in general, keep well clear of all vessels and avoid impeding their navigation. In circumstances, however, where risk of collision exists, they shall comply with these Rules.

RULE 21

Where by any of these Rules one of two vessels is to keep out of the way, the other shall keep her course and speed. When, from any cause, the latter vessel finds herself so close that collision cannot be avoided by the action of the giving-way vessel alone, she also shall take

757-342—65——2

such action as will best aid to avert collision (see Rules 27 and 29).

RULE 22

Every vessel which is directed by these Rules to keep out of the way of another vessel shall, so far as possible, take positive early action to comply with this obligation, and shall, if the circumstances of the case admit, avoid crossing ahead of the other.

RULE 23

Every power-driven vessel which is directed by these Rules to keep out of the way of another vessel shall, on approaching her, if necessary, slacken her speed or stop or reverse.

RULE 24

(a) Notwithstanding anything contained in these Rules, every vessel overtaking any other shall keep out of the way of the overtaken vessel.

(b) Every vessel coming up with another vessel from any direction more than 22½ degrees (2 points) abaft her beam; i.e., in such a position, with reference to the vessel which she is overtaking, that at night she would be unable to see either of that vessel's sidelights, shall be deemed to be an overtaking vessel; and no subsequent alteration of the bearing between the two vessels shall make the overtaking vessel a crossing vessel within the meaning of these Rules, or relieve her of the duty of keeping clear of the overtaken vessel until she is finally past and clear.

(c) If the overtaking vessel cannot determine with certainty whether she is forward of or abaft this direction from the other vessel, she shall assume that she is the overtaking vessel and keep out of the way.

(d) When a power-driven vessel is overtaking another such vessel so as to involve risk of collision, and intends to pass the overtaken vessel, she shall indicate her intent by a whistle signal, to which the overtaken vessel shall immediately respond.

RULE 25

(a) In a narrow channel every power-driven vessel when proceeding along the course of the channel shall, when it is safe and practicable, keep to that side of the fairway or mid-channel which lies on the starboard side of such vessel.

(b) Whenever a power-driven vessel is nearing a bend in a channel where a vessel approaching from the other direction cannot be seen, such power-driven vessel, when she shall have arrived within one-half (½) mile of the bend, shall give a signal by one prolonged blast on her whistle which signal shall be answered by a similar blast given by any approaching power-driven vessel that may be within hearing around the bend. Regardless of whether an approaching vessel on the farther side of the bend is heard, such bend shall be rounded with alertness and caution.

(c) (i) In a narrow channel a power-driven vessel of less than 65 feet in length shall not hamper the safe passage of a vessel which can navigate only inside such channel.

(c) (ii) A power-driven vessel of less than 65 feet in length shall not hamper the safe passage of a vessel with tow that is ascending or descending a river.

REMARKS

The narrow channel rule is herein made applicable to all areas. However, as it applies where it is safe *and* practicable for vessels to keep to the starboard side, it would be necessary to promulgate regulations preserving or improving the Western Rivers and Great Lakes Rules for rivers in which current adversely affects vessel movement. Such a regulation could be as follows:

> In all rivers in which the current adversely affects the movement of a vessel so that it is not safe and practicable to adhere to her own starboard side, when two power-driven vessels are meeting, the descending power-driven vessel shall have the right-of-way, and shall, before the vessels shall have arrived within the distance of one-half mile of each other, give the signal necessary to indicate on which side she elects to pass.

RULE 26

All vessels not engaged in fishing, except vessels to which the provisions of Rule 4 apply, shall, when underway, keep out of the way of vessels engaged in fishing. This Rule shall not give to any vessel engaged in fishing the right of obstructing a fairway used by vessels other than fishing vessels.

RULE 27

In obeying and construing these Rules due regard shall be had to all dangers of navigation and collision, and to any special circumstances, including the limitations of the craft involved, which may render a departure from the above Rules necessary in order to avoid immediate danger.

PART E.—SOUND SIGNALS FOR VESSELS IN SIGHT OF ONE ANOTHER

RULE 28

When vessels are in sight of one another, whistle signals shall be sounded by all vessels 26 feet or more in length as follows:

(a) A power-driven vessel meeting another power-driven vessel so as to involve risk of collision shall, in taking any course required or authorized by these Rules, indicate that course by the following signals on her whistle, namely—

One short blast to mean "I intend to pass you on my portside."

Two short blasts to mean "I intend to pass you on my starboard side."

A power-driven vessel hearing one of the above signals from a meeting vessel shall immediately reply with the same signal or the danger signal.

(b) A power-driven vessel overtaking and intending to pass another power-driven vessel shall indicate that intent by sounding either of the signals prescribed in subparagraph (a). A power-driven vessel underway that is being overtaken and hears one of these signals from the overtaking vessel shall immediately respond with the same signal or the danger signal.

(c) A power-driven vessel which is in a crossing situation and is required to maintain course and speed may indicate her intent to do this by sounding one short blast on her whistle.

(d) Whenever a power-driven vessel's engines are going full speed astern, she shall so indicate by sounding three short blasts on her whistle.

Alternate to Rule 28(d):

Whenever a power-driven vessel's engines are going astern, she shall so indicate by sounding three short blasts on her whistle.

(e) Whenever a power-driven vessel is in doubt about the intention of another vessel, or is in doubt whether the intention of another vessel is safe, or is in doubt whether sufficient action is being taken by the other vessel to avert collision, she shall indicate such doubt by giving at least five short and rapid blasts on the whistle, the danger signal. The giving of such a signal shall not relieve a vessel of her obligations under Rules 27 and 29 or any other Rule, or of her duty to indicate any action or intention under these Rules by giving the appropriate sound signals laid down in this Rule.

(f) Any whistle signal mentioned in this Rule may be further indicated by a visual signal consisting of a white light visible all round the horizon at a distance of at least 5 miles, and so devised that it will operate simultaneously and in conjunction with the whistle-sounding mechanism and remain lighted and visible during the same period as the sound signal.

Alternate to Rule 28(f)

Change "may" to "shall". The heavy dependence upon intent whistle signals in U.S. waters justifies this slight deviation from International Rules.

PART F.—MISCELLANEOUS

RULE 29

Nothing in these Rules shall exonerate any vessel, or the owner, master, or crew thereof, from the consequences of any neglect to carry lights or signals, or of any neglect to keep a proper lookout, or of the neglect of any precaution which may be required by the ordinary practice of seamen, or by the special circumstances of the case.

RULE 30

The exhibition of any light on board a vessel of war of the United States or a Coast Guard vessel may be suspended whenever, in the opinion of the Secretary of the Navy, the Commander of a squadron, or the commanding officer of a vessel acting singly, the special character of the service may require it.

RULE 31

DISTRESS SIGNALS

(a) When a vessel or seaplane on the water is in distress and requires assistance from other vessels or from the shore, the following shall be the signals to be used or displayed by her, either together or separately, namely:

(i) A gun or other explosive signal fired at intervals of about a minute.

(ii) A continuous sounding with any fog-signalling apparatus.

(iii) Rockets or shells, throwing red stars fired one at a time at short intervals.

(iv) A signal made by radiotelegraphy or by any other signalling method consisting of the group . . . – – – . . . in the Morse Code.

(v) A signal sent by radiotelephony consisting of the spoken word "Mayday".

(vi) The International Code Signal of distress indicated by N.C.

(vii) A signal consisting of a square flag having above or below it a ball or anything resembling a ball.

(viii) Flames on the vessel (as from a burning tar barrel, oil barrel, etc.).

(ix) A rocket parachute flare or a hand flare showing a red light.

(x) A smoke signal giving off a volume of orange-colored smoke.

(xi) Slowly and repeatedly raising and lowering arms outstretched to each side.

(b) The use of any of the foregoing signals, except for the purpose of indicating that a vessel or seaplane is in distress, and the use of any signals which may be confused with any of the above signals, is prohibited.

Annex to the Rules

Recommendations on the Use of Radar Information as an Aid to Avoiding Collisions at Sea

(1) Assumptions made on scanty information may be dangerous and should be avoided.

(2) A vessel navigating with the aid of radar in restricted visibility must, in compliance with Rule 16(a), go at a moderate speed. Information obtained from the use of radar is one of the circumstances to be taken into account when determining moderate speed. In this regard it must be recognized that small vessels, small icebergs and similar floating objects may not be detected by radar. Radar indications of one or more vessels in the vicinity may mean that "moderate speed" should be slower than a mariner without radar might consider moderate in the circumstances.

(3) When navigating in restricted visibility the radar range and bearing alone do not constitute ascertainment of the position of the other vessel under Rule 16(b) sufficiently to relieve a vessel of the duty to stop her engines and navigate with caution when a fog signal is heard forward of the beam.

(4) When action has been taken under Rule 16(c) to avoid a close quarters situation, it is essential to make sure that such action is having the desired effect. Alterations of course or speed or both are matters as to which the mariner must be guided by the circumstances of the case.

(5) Alteration of course alone may be the most effective action to avoid close quarters provided that—

(a) There is sufficient sea room.
(b) It is made in good time.
(c) It is substantial. A succession of small alterations of course should be avoided.
(d) It does not result in a close quarters situation with other vessels.

(6) The direction of an alteration of course is a matter in which the mariner must be guided by the circumstances of the case. An alteration to starboard, particularly when vessels are approaching apparently on opposite or nearly opposite courses, is generally preferable to an alteration to port.

(7) An alteration of speed, either alone or in conjunction with an alteration of course, should be substantial. A number of small alterations of speed should be avoided.

(8) If a close quarters situation is imminent, the most prudent action may be to take all way off the vessel.

1960 AND 1948 INTERNATIONAL RULES COMPARED: REVISIONS OF RULES 4, 5 AND 6 EXPLAINED

This third article of a series continues the comparison of the 1948 International Rules of the Road presently in use with the revised 1960 International Rules which will become effective on 1 September 1965.

In the following presentation, the 1960 Rule appears in standard roman type unless it represents a substantial revision of the 1948 Rule. A 1960 Rule substantially revising a 1948 Rule is printed in boldface type immediately followed by the superseded 1948 Rule. A résumé of primary changes follows the rule presentation.

PART B.—LIGHTS AND SHAPES

RULE 4
1960 INTERNATIONAL RULES

(a) A vessel which is not under command shall carry, where they can best be seen, and, if a power-driven vessel, in lieu of the lights prescribed in Rule 2(a) (i) and (ii), two red lights in a vertical line one over the other not less than 6 feet apart, and of such a character as to be visible all round the horizon at a distance of at least 2 miles. By day, she shall carry in a vertical line one over the other not less than 6 feet apart, where they can best be seen, two black balls or shapes each not less than 2 feet in diameter.

(Same as 1948 Rule)

(b) A seaplane on the water which is not under command may carry, where they can best be seen, and in lieu of the light prescribed in Rule 2(b)(i) two red lights in a vertical line, one over the other, not less than 3 feet apart, and of such a character as to be visible all round the horizon at a distance of at least 2 miles, and may by day carry in a vertical line one over the other not less than 3 feet apart, where they can best be seen, two black balls or shapes, each not less than 2 feet in diameter.

Changed, 1948 Rule read:

(b) A seaplane on the water which is not under command may carry, where they can best be seen, two red lights in a vertical line, one over the other, not less than 3 feet apart, and of such a character as to be visible all round the horizon at a distance of at least 2 miles, and may by day carry in a vertical line one over the other not less than 3 feet apart, where they can best be seen, two black balls or shapes, each not less than 2 feet in diameter.

(c) A vessel engaged in laying or in picking up a submarine cable or navigation mark, or a vessel engaged in surveying or underwater operations, or a vessel engaged in replenishment at sea, or in the launching or recovery of aircraft when from the nature of her work she is unable to get out of the way of approaching vessels, shall carry, in lieu of the lights prescribed in Rule 2(a) (i) and (ii), or Rule 7(a) (i), three lights in a vertical line one over the other so that the upper and lower lights shall be the same distance from, and not less than 6 feet above or below, the middle light. The highest and lowest of these lights shall be red, and the middle light shall be white, and they shall be of such a character as to be visible all round the horizon at a distance of at least 2 miles. By day, she shall carry in a vertical line one over the other not less than 6 feet apart, where they can best be seen, three shapes each not less than 2 feet in diameter, of which the highest and lowest shall be globular in shape and red in colour, and the middle one diamond in shape and white.

Changed, 1948 Rule read:

(c) A vessel engaged in laying or in picking up a submarine cable or navigation mark, or a vessel engaged in surveying or underwater operations when from the nature of her work she is unable to get out of the way of approaching vessels, shall carry, in lieu of the lights specified in Rule 2(a) (i) and (ii), three lights in a vertical line one over the other not less than 6 feet apart. The highest and lowest of these lights shall be red, and the middle light shall be white, and they shall be of such a character as to be visible all round the horizon at a distance of at least 2 miles. By day, she shall carry in a vertical line one over the other not less than 6 feet apart, where they can best be seen, three shapes each not less than 2 feet in diameter, of which the highest and lowest shall be globular in shape and red in colour, and the middle one diamond in shape and white.

(d)(i) A vessel engaged in minesweeping operations shall carry at the fore truck a green light, and at the end or ends of the fore yard on the side or sides on which danger exists, another such light or lights. These lights shall be carried in addition to the light prescribed in Rule 2(a)(i) or Rule 7(a)(i), as appropriate, and shall be of such a character as to be visible all round the horizon at a distance of at least 2 miles. By day she shall carry black balls, not less than 2 feet in diameter, in the same position as the green lights.

(ii) The showing of these lights or balls indicates that it is dangerous for other vessels to approach closer than 3,000 feet astern of the minesweeper or 1,500 feet on the side or sides on which danger exists.

New, No. 1948 counterpart

(e) The vessels and seaplanes referred to in this Rule, when not making way through the water, shall show neither the coloured sidelights nor the stern light, but when making way they shall show them.

Changed 1948 Rule read:

(d) The vessels and seaplanes referred to in this Rule, when not making way through the water, shall not carry the coloured sidelights, but when making way they shall carry them.

(f) The lights and shapes prescribed in this Rule are to be taken by other vessels and seaplanes as signals that the vessel or seaplane showing them is not under command and cannot therefore get out of the way.

(Same as (e) of 1948 Rules)

(g) These signals are not signals of vessels in distress and requiring assistance. Such signals are contained in Rule 31.

(Same as (f) of 1948 Rules)

PRIMARY CHANGES

1. A seaplane on the water is now prohibited from showing the 220° white light of Rule 2 when showing the optional two red "not under command" lights of this Rule.

2. The two categories of vessels engaged in replenishment at sea and in the launching or recovery of aircraft have been added to the list of vessels which show a red-white-red vertical array of lights or shapes when they cannot get out of the way due to the nature of their work.

3. The Rule now specifies that the red-white-red lights shall be equally spaced and that vessels of less than 65 feet in length engaged in such encumbering occupations shall not show the white masthead light of Rule 7(a)(i).

4. There is a new provision requiring a vessel engaged in minesweeping operations to show green lights at the foremast in addition to regular running lights; by day, black balls are required in the same position as the

green lights. Additionally, the Rule now shows minimum distances inside of which it is dangerous to approach operating minesweepers.

5. The 1960 Rule provides that vessels and seaplanes of this Rule shall not show the stern light when dead in the water. This is in addition to the provision of the 1948 Rule prohibiting the showing of sidelights when so stopped.

RULE 5

1960 INTERNATIONAL RULES

(a) A sailing vessel under way and any vessel or seaplane being towed shall carry the same lights as are prescribed in Rule 2 for a power-driven vessel or a seaplane under way, respectively, with the exception of the white lights prescribed therein, which they shall never carry. They shall also carry stern lights as prescribed in Rule 10, provided that vessels towed, except the last vessel of a tow, may carry, in lieu of such stern light, a small white light as prescribed in Rule 3(b).

(Substantially same as 1948 Rule)

(b) In addition to the lights prescribed in section (a), a sailing vessel may carry on the top of the foremast two lights in a vertical line one over the other, sufficiently separated so as to be clearly distinguished. The upper light shall be red and the lower light shall be green. Both lights shall be constructed and fixed as prescribed in Rule 2(a)(i) and shall be visible at a distance of at least 2 miles.

(New, no 1948 Counterpart)

(c) A vessel being pushed ahead shall carry, at the forward end, on the starboard side a green light and on the port side a red light, which shall have the same characteristics as the lights prescribed in Rule 2(a)(iv) and (v) and shall be screened as provided in Rule 2(a)(vi), provided that any number of vessels pushed ahead in a group shall be lighted as one vessel.

(Same as (b) of the 1948 Rules)

(d) Between sunrise and sunset a vessel being towed, if the length of the tow exceeds 600 feet, shall carry where it can best be seen a black diamond shape at least 2 feet in diameter.

(New, no 1948 counterpart)

PRIMARY CHANGES

1. A sailing vessel *may* now show as special identifying lights, a red and green light in a vertical line, red uppermost, top of the foremast.

2. During daylight hours, a vessel towed is required to show a day shape if the tow is over 600 feet in length. Further, if the tow exceeds this length, Rule 3 requires the vessel towing to carry the same day shape. These provisions do not apply to a tow being pushed ahead.

RULE 6
1960 INTERNATIONAL RULES

(a) When it is not possible on account of bad weather or other sufficient cause to fix the green and red sidelights, these lights shall be kept at hand lighted and ready for immediate use, and shall, on the approach of or to other vessels, be exhibited on their respective sides in sufficient time to prevent collision, in such manner as to make them most visible, and so that the green light shall not be seen on the port side nor the red light on the starboard side, nor, if practicable, more than 22½° (2 points) abaft the beam on their respective sides.

(Substantially same as 1948 Rule)

(b) To make the use of these portable lights more certain and easy, the lanterns containing them shall each be painted outside with the colour of the lights they respectively contain, and shall be provided with proper screens.

(Same as 1948 Rule)

PRIMARY CHANGES

1. Although the opening phrase "In small vessels" has been deleted from the 1960 International Rule 6, it appears that the Rule continues to apply primarily to this class of vessels.

POOR MAINTENANCE PLUS EXPLOSIVE VAPORS CAUSE EXHAUST VENT EXPLOSION

An explosion and fire recently occurred in the pumproom of an American tank vessel while she lay alongside a refinery dock just prior to getting underway with a full cargo of gasoline and kerosene. The fire was quickly extinguished by the fixed CO_2 system. Little damage was inflicted to the vessel, but, two crewmembers who, in a state of panic, attempted to abandon the vessel by climbing down the stern lines, fell into the water. One was injured and the other drowned.

When the loading of the vessel had neared completion, the mate on watch entered the pnmproom preparatory to securing the valves. He found the space to be extremely "gassy" and he noticed a slight amount of gasoline in the bilges. It was apparent that the vent blower was not operating.

Returning topside he reported the matter to the ship's engineers. Investigation disclosed that the steam valve to the turbine type blower was open but that the fan was not running. In the meantime, loading operations had been completed except for securing the pnmproom. The first and second assistant engineers entered the pumproom and removed the blower access door from the blower housing exposing the exhanst blower assembly. After cracking the steam valve failed to turn the blower, an engineer reached into the blower housing with a pair of channel lock pliers to give the blower fan a push in an attempt to start it rotating. As he did so, the blower commenced to turn, throwing out particles of rust and making a sound of metal rubbing against metal. This was immediately followed by an explosion from inside the vent housing.

The crew responded immediately; doors and skylights were closed, CO_2 was released to the pumproom space, steam-smothering master valve to the cargo tanks was opened, firehoses were laid out, and the fire was contained and quickly extinguished. The fire had been confined to the upper portion of the room in the vicinity of exhaust ducting. The duct itself showed evidence of intense heat; the lower level of the pumproom showed no evidence of fire or explosion.

The pumproom exhaust blower was a steam turbine blower which was installed 3 years prior as a replacement for the original. The fan impeller was of aluminum or aluminum alloy, and the fan ring and inlet bell assembly were of ferrous material. No trouble had been experienced with this blower since its installation.

After the fire, an inspection of the blower disclosed the following:

a. The surface of the aluminum fan was covered with a very heavy coating of rough aluminum oxide. The outer edges of the fan blades showed evidence of having rubbed against the inside of the rusty fan ring.

b. Four of the five fan blades were cracked at the root of each blade and ran nearly halfway across its width. They did not appear to be new cracks.

c. The ferrous fan ring showed evidence that the fan blades had been rubbing around its inside periphery.

d. The steam turbine and bearings appeared to be in good condition and showed no evidence of overheating.

This casualty forcefully points up the fact that periodic inspection and preventive maintenance by vessel personnel are necessary.

EXPANDED COMMERCIAL VESSEL CASUALTY STATISTICS FOR 1964

Commencing with fiscal year 1946, the Coast Guard has provided the marine industry and other interested parties statistical summaries of marine casualties for their use and general information. The Casualty Review Branch at Coast Guard Headquarters reviews all reports, records, and statistical data concerning marine casualties that come within their jurisdiction.

Its primary function is the analysis of the accidents and the compilation of statistics for use in the development, improvement and enforcement of material and operational safety standards. The objective is to minimize the probability of similar casualties in the future through a study of the causes and effects, and the instituting of corrective action wherever practicable. These statistics and studies determine those areas where corrective action is most needed and what regulations, laws, standards, instructions or policies should be initiated, amended or eliminated to achieve that objective.

As a result of this study, it was decided to use a punchcard statistical recording system and automated data processing to provide the annual statistical reports and special studies. During this feasibility study all phases of casualty analysis was reviewed looking toward the needs and requirements of marine safety for the Coast Guard and the allied marine industries. New forms, Report of Vessel Casualty or Accident (CG–2692) and Report of Personal Injury or Loss of Life (CG–924E) were developed to provide the information deemed necessary and were distributed during late 1961. Commencing 1 July 1962, fiscal year 1963, additional data was recorded and the automated data processing system was implemented. During this trial and transitional period the full utilization of data inputs were not realized and the annual statistical report was expanded only slightly. However, detailed statistical studies involving fishing vessels and towing vessels were completed, in addition to other miscellaneous studies.

While becoming familiar with this new system, steps were taken to develop and expand statistical summaries of marine casualties utilizing many of the data inputs. Consequently, the statistical summaries of marine casualties were vastly expanded for fiscal year 1964 to include information never previously published nor readily available. The potential of this new system is enormous and has not been fully realized. Continued use and familiarization with automated data processing procedures will greatly expand marine casualty analysis to facilitate safety engineering applications.

Deaths Aboard Commercial Vessels in 1964 Noted

It is again worthy of note and a reflection upon the safety and proficiency of the oceangoing U.S. passenger vessel fleet that no passengers lost their lives as a result of marine casualties during the last 3 fiscal years. The collision involving the passenger vessel *Alcoa Corsair* and the Italian freighter *Lorenzo Marcello* in the Mississippi River in 1961 took the lives of five persons. Since 1951, these lives were the only ones lost as a result of marine casualties to large passenger vessels.

The record of the smaller passenger vessels, those not more than 65 feet in length and carrying more than six persons for hire, has been marred during this fiscal year by the capsizing of the motorboat *Two Georges* with the resultant loss of five lives. The motorboat was returning from a party fishing trip when she capsized while attempting to cross the bar offshore from the South Lake Worth Inlet, Fla., commonly known as Boynton Inlet. In 1962, a similar casualty occurred in the same place when the party fishing motorboat *Kit Dan* broached-to and seven persons were thrown into the sea with the resultant drowning of one passenger. It is significant to note however, that since these vessels came within the inspection laws and regulations administered by the Coast Guard in July 1958 that the toll in death has been signally reduced. During the preceding fiscal years 1956, 1957, and 1958 there were respectively 137, 138, and 141 lives lost as a result of various marine casualties to small uninspected passenger motorboats.

The explosion and fire and subsequent sinking of seagoing drilling barge *C. P. Baker* while engaged in drilling an oil well in the Gulf of Mexico, accounted for the greatest single loss of life, with a total of 22 persons dead or missing. In addition, there were five other casualties which occurred during fiscal year 1964 which were of major significance and were investigated by formal Marine Boards of Investigation. Two of these casualties involved tank vessels: the explosion of the *Bunker Hill* in Puget Sound on 6 March 1964 resulting in the loss of the vessel and five crewmembers, and the explosion of the *San Jacinto* off Cape Hatteras on 26 March 1964 resulting in the loss of one life. The other major casualties were: the collision of the American tanker *Dynafuel* and the Norwegian freighter *Fernview* in Buzzards Bay on 14 November 1963 with no loss of life, the explosion of the rail car barge *Palmer* at Alameda, Calif., on 19 March 1964 with the loss of two lives, and as noted above the capsizing of the small passenger vessel *Two Georges* at Boynton Inlet, Fla., with the loss of five lives.

It is significant to note that during the year, as in earlier years, the greatest single toll of deaths occurred as a result of casualties to fishing vessels. This year there was a resultant loss of 69 persons of which 51 were attributable to founderings and capsizings. Some of these casualties occurred during adverse weather conditions, however, the underlying cause was the failure of hull, hull fastenings or hull fittings. It is only proper to mention that 10 of the 69 deaths were attributable directly to the Alaskan earthquake.

Fires and explosions, as usual, account for a significant amount of deaths and totaled 49 lives. In addition to the six lives lost in the *Bunker Hill* and *San Jacinto* disasters, three more lives were lost on tank vessels and one life was lost on a tank barge. The small inland tanker *Newark* while loading a cargo of fuel oil suffered a flash fire and explosion causing fatal burns and injuries to two crewmembers. A large tanker, the *Cities Service Norfolk*, while discharging gasoline suffered an explosion and flash fire in the amidship pumproom. The resultant force catapulted an able seaman into a railing, killing him almost instantly. On the tank barge *Murray Mac* a shipyard worker was killed when an explosion occurred during hot work repairs to the bottom of her hollow skeg. Included in this total are the 22 lives lost from the *C. P. Baker* disaster, previously mentioned.

(Continued on page 17)

STATISTICAL SUMMARY OF DEATHS ON BOARD COMMERCIAL VESSELS*

(Not Involving a Vessel Casualty)

1 July 1963 to 30 June 1964

Fiscal year 1964

Cause of death

		Nature of death																							
		Natural cause	Homicide	Suicide	Disappearance	Slips and falls—ladders	Slips and falls—gangways	Slips and falls—on deck	Slips and falls—other	Falls from vessel—into water	Falls into holds or tanks	Struck by objects; falling, dropped or moving	Exposure and asphyxiation	Struck against, crushed, bumped into objects	Operating machinery and tools	Burns and scalds (other than electrical)	Electrical shock and burns	Caught in lines, chains or wire ropes	Pinching and crushing	Heavy weather	Overexertion, sprains, and strains	Cuts, lacerations, bruises, and punctures	Altercations and misconduct	Unknown or insufficient information
Total		223	7	23	2	9	4	----	8	93	24	21	11	3	----	----	2	----	4	----	----	----	----	1
	Types of vessels involved																							
	Inspected vessels:																							
19	Intoxication	4	1	----	----	2	1	----	2	6	1	----	2	----	----	----	----	----	----	----	----	----	----	----
225	Physical deficiency or handicap	218	----	2	----	----	----	----	1	4	----	----	----	----	----	----	----	----	----	----	----	----	----	----
1	Unsafe movement or posture	----	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
30	Psychological	----	----	21	1	----	----	----	----	8	----	----	----	----	----	----	----	----	----	----	----	----	----	----
19	Unsafe practice	----	----	----	----	1	1	----	1	7	5	----	3	----	----	----	----	----	1	----	----	----	----	----
1	Violation of law or regulation	----	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
86	Human errors	----	4	----	1	6	1	----	1	53	12	6	1	----	----	----	----	----	1	----	----	----	----	----
2	Decks—Slippery or cluttered	----	----	----	----	----	----	----	----	2	----	----	----	----	----	----	----	----	----	----	----	----	----	----
7	Weather conditions	----	----	----	----	----	1	----	----	6	----	----	----	----	----	----	----	----	----	----	----	----	----	----
3	Inadequate lighting	----	----	----	----	----	----	----	----	----	2	----	----	1	----	----	----	----	----	----	----	----	----	----
3	Inadequate rails or guards	----	----	----	----	----	----	----	----	2	1	----	----	----	----	----	----	----	----	----	----	----	----	----
10	Failure of equipment	1	----	----	----	----	----	----	----	2	1	5	----	----	----	----	----	----	----	----	----	----	----	1
16	Inadequate supervision	----	----	----	----	----	----	----	1	1	----	6	5	1	----	----	----	----	2	----	----	----	----	----
7	Inadequate tools or equip	----	----	----	----	----	----	----	1	----	2	1	----	1	----	----	2	----	----	----	----	----	----	----
2	Inadequate protective equip	----	----	----	----	----	----	----	1	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----
2	Improper use of tools or equip	----	----	----	----	----	----	----	----	----	----	2	----	----	----	----	----	----	----	----	----	----	----	----
2	Miscellaneous causes	----	----	----	----	----	----	----	----	1	----	1	----	----	----	----	----	----	----	----	----	----	----	----
	Time of day																							
226	Daytime	118	4	11	2	5	----	----	4	41	14	11	7	3	----	----	2	----	3	----	----	----	----	1
187	Nighttime	93	3	10	----	4	4	----	4	45	10	9	4	----	----	----	----	----	1	----	----	----	----	----
22	Twilight	12	----	2	----	----	----	----	----	7	----	1	----	----	----	----	----	----	----	----	----	----	----	----
	Particulars of deceased																							
	Papers of deceased:																							
58	Licensed by Coast Guard	45	1	3	----	1	----	----	----	3	4	----	1	----	----	----	----	----	----	----	----	----	----	----
166	Documented by Coast Guard	103	4	13	----	7	4	----	6	18	3	2	4	1	----	----	----	----	1	----	----	----	----	----
180	No license or document	72	2	7	2	1	----	----	2	61	8	15	4	1	----	----	2	----	2	----	----	----	----	1
31	Other—unknown—foreign	3	----	----	----	----	----	----	----	11	9	4	2	1	----	----	----	----	1	----	----	----	----	----
	Status or capacity on vessel:																							
63	Passenger	49	----	5	1	----	----	----	----	8	----	----	----	----	----	----	----	----	----	----	----	----	----	----
40	Longshoreman—Harbor Worker	2	----	----	----	1	----	----	1	5	12	13	3	----	----	----	1	----	2	----	----	----	----	----
323	Crewmember	169	7	18	1	8	4	----	7	78	12	5	8	3	----	----	1	----	2	----	----	----	----	----
9	Other	3	----	----	----	----	----	----	----	2	----	3	----	----	----	----	----	----	----	----	----	----	----	1
	Activity engaged in:																							
187	Off duty	115	6	17	1	4	4	----	3	34	1	----	2	----	----	----	----	----	----	----	----	----	----	----
74	Deck department duties	23	----	----	----	1	----	----	3	30	8	2	4	1	----	----	1	----	1	----	----	----	----	----
27	Engine department duties	16	----	1	----	2	----	----	1	2	2	----	2	1	----	----	----	----	----	----	----	----	----	----
13	Stewards department duties	8	----	----	----	1	----	----	----	4	----	----	----	----	----	----	----	----	----	----	----	----	----	----
31	Handling cargo	----	----	----	----	1	----	----	----	3	9	13	1	----	----	----	1	----	3	----	----	----	----	----
27	Fishing	17	1	----	----	----	----	----	----	6	----	2	----	1	----	----	----	----	----	----	----	----	----	----
55	Passenger	41	----	5	1	----	----	----	----	8	----	----	----	----	----	----	----	----	----	----	----	----	----	----
21	Other and unknown	3	----	----	----	----	----	----	1	6	4	4	2	----	----	----	----	----	----	----	----	----	----	1
	Location of vessel:																							
160	At dock	64	2	6	----	5	4	----	6	29	14	16	8	----	----	----	2	----	4	----	----	----	----	----
40	At anchor	13	1	1	1	1	----	----	----	16	3	1	2	1	----	----	----	----	----	----	----	----	----	----
235	Underway	146	4	16	1	3	----	----	2	48	7	4	1	2	----	----	----	----	----	----	----	----	----	1
	Part of body involved																							
37	Head and upper limbs	----	2	2	----	4	2	----	2	3	13	7	----	1	----	----	----	----	1	----	----	----	----	----
----	Back and lower limbs	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
28	Multiple injuries	----	----	----	----	1	1	----	3	4	8	8	----	1	----	----	----	----	2	----	----	----	----	----
201	Death—heart	200	----	----	----	----	----	----	----	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----
101	Death—drowning	----	----	14	1	1	1	----	1	82	----	1	----	----	----	----	----	----	----	----	----	----	----	----
68	Death—disease, other	23	5	7	1	3	----	----	2	3	3	5	11	1	----	----	2	----	1	----	----	----	----	1

STATISTICAL SUMMARY OF PERSONNEL INJURIES ON BOARD ALL COMMERCIAL VESSELS*

(Not Involving a Vessel Casualty)

1 July 1963 to 30 June 1964 Fiscal year 1964 Cause of injury	Nature of injury																	
	Slips and falls—ladders	Slips and falls—gangways	Slips and falls—on deck	Slips and falls—other	Falls from vessel—into water	Falls into holds or tanks	Struck by objects; falling, dropped or moving	Exposure and asphyxiation	Struck against, crushed, pumped into objects	Operating machinery and tools	Burns and scalds (other than electrical)	Electrical shock and burns	Caught in lines, chains, or wire ropes	Pinching and crushing	Heavy weather	Overexertion, sprains and strains	Cuts, lacerations, bruises and punctures	Altercations and misconduct	Unknown or insufficient information
Totals	175	17	230	223	22	17	323	4	151	57	70	7	39	127	5	200	95	100	45
65 Intoxication	13	6	8	16	5		1		3		1			2		1	2	5	2
31 Physical deficiency or handicap	4	2	3	8			1		3		1					4	4		1
131 Unsafe movement or posture	5		4	7	1		5		2					1		105	1		
8 Psychological-immaturity, insanity																	6	1	1
141 Unsafe practice	29	1	4	26	5	2	28		2	5	9	3	4	9		9	4		1
Violation of law or regulation																			
921 Human errors	86	6	111	95	4	5	147	2	87	16	31		21	84		52	47	94	33
64 Decks—Slippery or cluttered	5		44	3	1	1	3						1			5	1		
141 Weather conditions	9		33	25	2		14		29		2			12	5	3	4		3
44 Poor maintenance or housekeeping	3		18	10			1		2		1	1				4	4		
14 Inadequate lighting	1		1	5		6										1			
17 Inadequate rails or guards	4	2		3	1	1			1				1	2		1	1		
78 Failure of equipment	2		1	6		2	45	1	4	2	7	1	1	2			3		1
80 Inadequate supervision			1	10	1		29	1	8		7		7	7		4	5		
3 Inadequate life preservers							1				1			1					
50 Inadequate tools or equipment	9		1	4	1		11		4	5	4	1	1	4		2	3		
23 Inadequate protective equipment	3		1	2			15										2		
89 Improper use of tools or equipment	2			2	1		19		6	29	6	1	3	3		9	8		
7 Miscellaneous causes				1			3												3
Types of vessels involved																			
Inspected vessels:																			
276 Passenger and ferry—large	31	2	61	27		2	38		23	6	6	2	3	15	2	19	11	16	12
16 Passenger and ferry—small	2		4	3			3		2		1			1					
1284 Freight ships and barges	122	14	129	164	8	12	207	3	107	41	51	5	20	89	3	154	64	67	24
166 Tankships and barges	14	1	25	14	6		33	1	9	3	6		4	7		13	12	11	7
30 Public	1		4	5			7		3	1	1					3	2	3	
17 Miscellaneous	3						6		1					1		4	1	1	
Uninspected vessels:																			
52 Fishing			2	3	3		13		2	3			6	8		5	4	1	2
42 Tugs	1		3	3	3	2	11		1	2	5		5	3		2		1	
7 Foreign	1			1	1	1	2							1					
17 Miscellaneous			2	3	1		3		3	1			1	2			1		
Time of day																			
1290 Daytime	105	8	140	137	11	10	238	2	104	48	53	6	22	95	5	153	68	47	38
541 Nighttime	65	9	84	78	10	7	68	2	38	7	14	1	14	28		39	23	49	5
76 Twilight	5		6	8	1		17		9	2	3		3	4		8	4	4	2
Particulars of person injured																			
Papers of person injured:																			
174 Licensed by Coast Guard	18	2	16	25	3	2	26		10	11	19	1	2	10		19	6	2	2
1612 Documented by Coast Guard	154	15	201	183	14	11	271	4	131	40	47	6	26	106	5	176	85	96	41
118 No license or document	3		13	15	5	3	24		10	6	4		11	11		5	4	2	2
3 Other—unknown—foreign						1	2												
Status or capacity on vessel:																			
23 Passenger	2		7	9			2		2					1					
5 Longshoreman—harbor worker							4				1								
1871 Crewmember	172	17	222	214	22	17	313	4	148	57	69	7	39	126	5	200	95	100	44
8 Other	1		1				4		1										1
Activity engaged in:																			
375 Off duty	70	15	46	65	9		11	1	24	1	1			23		24	20	62	3
775 Deck department duties	44	2	93	84	11	16	209	1	59	22	8		29	46	2	101	30	13	5
414 Engine department duties	41		35	50		1	50	1	36	33	44	7	3	22	1	54	24	6	6
259 Stewards, department duties	17		45	13			31	1	24	1	17			27	2	16	16	19	30
11 Handling cargo							8						2	1					
33 Fishing			2	2	1		9		2				5	4		2	5		1
13 Drills			2	2					3					3		3			
20 Passenger	2		6	7			2		2					1					
7 Other and unknown	1		1		1		3		1										
Location of vessel:																			
721 At dock	78	14	59	75	13	7	147	1	48	16	30	1	19	35		77	31	54	16
123 At anchor	8	2	14	14	3	1	26		3	5	5	1	1	15		12	6	5	2
1063 Underway	89	1	157	134	6	9	150	3	100	36	35	5	19	77	5	111	58	41	27
Unknown																			

STATISTICAL SUMMARY OF PERSONNEL INJURIES ON BOARD ALL COMMERCIAL VESSELS*—CONTINUED

	1 July 1963 to 30 June 1964 Fiscal year 1694 Cause of injury	Nature of injury—Continued																		
		Slips and falls—ladders	Slips and falls—gangways	Slips and falls—on deck	Slips and falls—other	Falls from vessel—into water	Falls into holds or tanks	Struck by objects: falling, dropped or moving	Exposure and asphyxiation	Struck against, crushed, bumped into objects	Operating machinery and tools	Burns and scalds (other than electrical)	Electrical shock and burns	Caught in lines, chains, or wire ropes	Pinching and crushing	Heavy weather	Overexertion, sprains and strains	Cuts, lacerations, bruises and punctures	Altercations and misconduct	Unknown or insufficient information
	Part of body injured:																			
156	Head and neck	15		12	20	1	1	38		21	1	7	1		1		1	5	29	3
50	Eye and face			4	3			25		1	1	3	1						8	4
175	Arm and shoulder	16	4	29	26	1		31		19	5	7		1	2	2	13	8	4	7
391	Hand	13		28	17	2	1	49		30	40	9	2	27	100		7	47	6	13
262	Leg and hip	19	3	56	40	5	5	49		30	4	5		3	7	1	16	8	7	4
323	Foot	37	4	28	41	1	2	83		7	3	14		6	11		58	15	6	7
227	Back	32	2	41	35	4		10		15		3		1	1		74	1	8	
170	Body—external	21	3	17	25	4	3	24		12	1	22	3	1		1	2	6	24	1
98	Body—internal	19		12	13	2	3	12		14	1				5		4	5	6	2
27	Hernia			2	1					2							22			
15	Multiple body injuries	3	1	1	2		2	2			1					1			1	1
13	All other injuries					2			4								3		1	3
	Additional contributing factors to cause of injury																			
222	Human element	16	3	43	25	1	4	22		13	7	5	1	2	9	1	16	8	42	4
18	Decks-slippery or cluttered	2		9	5	1											1			
37	Weather conditions	4		11	8			4		2					4		2	1		1
12	Poor maintenance or housekeeping	1		6	1			1		1								1		1
2	Inadequate lighting						1							1						
7	Inadequate rails or guards				2	1	3				1									
1	Failure of equipment	1																		
14	Inadequate supervision	1			2		1	4				2	1		1		1	1		
19	Inadequate tools or equip	6			4			2			2				2		2			1
3	Inadequate protective equip			1				1												1
19	Improper use of tools or equip	2			2	1		5		2	1	1			1		2	2		
4	Causes not otherwise classified	2						1		1										
20	Hull structure	1		5	5					5					1		2			1
82	Holds, hatches, tanks	4		6	26		10	14	1	4		2			4		11			
97	Ladders, gangways, stairs	49	7	4	8	3		6		5		2			4		5	4		
94	Masts, booms, cargo gear			5	10			38		12	1			13	10		5			
32	Watertight closures			1	1			9		3					16		1			1
124	Living spaces	7		11	40			10	1	18		1			24		9	3		
35	Fishing equipment				3	1		12		1				6	4		4	4		
12	Navigational equipment			2	2		1	1		2					1					3
12	Lifesaving equipment	1			3			2		1					3		2			
5	Firefighting equipment			1				2		2										
1	Communications equipment							1												
4	Yard repairs				1			2									1			
75	Improper loading, stowage, and ventilation	3		8	10		1	18		7		3		2	4		11	7		1
15	Ground tackle	1		1		1		4		1		2		1	3			1		
20	Tugs and towing equipment			2	1	1		8		1	1			4	1		1			
136	Mooring equipment	2		7	5	1		77		13		1		13	4		10	3		
121	Miscellaneous deck department equipment	7		11	12	5		31		5	16	1			5		18	10		
5	Main propulsion machinery									1	1	1			2					
58	Boiler parts and accessories	1			1			9		4	1	34			1		5	2		
178	Auxiliary machinery	15		9	31			17		24	28	8		1	11		23	10		1
21	Electrical equipment	1			1			3		1	2	2	6				2	3		
138	Galley equipment	4		21	3			22	1	9	1	15			14		8	12		28

*Statistics concerning recreation and pleasure boating accidents are published in CG-357.

STATISTICS

(*Continued from page 14*)

Worthy of further note are two casualties involving fires and explosions as a direct result of the ignition of paint vapors. The newly constructed and freshly painted rail car barge *Palmer* was completing her fitting out preparatory to leaving the yard. While a shoreworker used an acetylene cutting torch to fit up a manhole cover there was an explosion. This resulted in the loss of 2 lives, injuries to 19 persons, and considerable damage to the vessel and surrounding shoreside facilities. The other casualty involved the freighter *President Pierce* when she experienced a flash fire in a freshly painted lower 'tween deck space. The ignition of an accumulation of paint vapors caused severe burns to two crewmembers, one of whom subsequently died.

The boiler explosions of steamboats and attendant disastrous loss of life during the 1800's have all but disappeared from the marine scene today. There was however, during this year a boiler casualty which did result in a death. An improperly plugged water tube burst allowing steam and hot water into the fireroom causing fatal burns to a coal passer and lesser burns to others.

Deaths on board inspected and uninspected vessels that did not involve a casualty to a vessel totaled 435. Deaths as the result of natural causes, homicides, suicides and disappearances totaled 255. Personnel accidents such as slips and falls, falls into cargo holds, and other incidents not connected with vessel casualties accounted for 180 deaths. The overall total number of deaths as a result of vessel casualties and personnel casualties totaled 626.

STATISTICAL SUMMARY OF CASUALTIES TO COMMERCIAL VESSELS*

1 July 1963 to 30 June 1964 Fiscal year 1964	Nature of casualty																	
	Collisions; crossing, meeting and overtaking	Collisions, while anchored, docking or undocking	Collision, fog	Collisions with piers and bridges	Collisions, all others	Explosion and/or fires—cargo	Explosion and/or fires—vessel's fuel	Explosion and/or fire—Boilers, pressure vessel	Explosion and/or fire—Structure, equipment, all others	Grounding with damage	Grounding without damage	Founderings, capsizings and floodings	Heavy weather damage	Cargo damage	Material failure—structure and equipment	Material failure—machinery and engineering equipment	Casualty not otherwise classified	Total
Number of casualties	172	135	35	281	258	37	33	7	133	306	257	223	49	6	133	177	64	2,308
Number of vessels involved	492	303	83	376	348	39	34	7	150	373	275	243	55	7	137	179	77	3,178
Number of inspected vessels involved	165	124	29	209	139	29	8	6	42	160	202	30	42	6	117	154	22	1,484
Number of uninspected vessels involved	327	179	54	167	209	10	26	1	108	213	73	213	13	1	20	25	55	1,694
Primary cause																		
Personnel fault:																		
Pilots—State	12		9	4	2					2	3						1	33
Pilots—Federal	2	3	3	1	1					1	2						1	14
Licensed Officers—documented Seaman	46	8	16	4	12		1	2	5	35	7	3			6	14	3	162
Unlicensed—undocumented persons	96	20	8	16	29		6		6	61	6	21			1	2	4	276
All others	34	17	10	8	17	15			15	12	6	4		2	6	6	2	154
Error in judgment—calculated risk	12	24	5	69	15					32	50	2			3		1	213
Restricted maneuvering room	26	34		85	23					24	38							230
Storms—adverse weather	6	15	2	26	31					37	18	54	51	5	27	1	1	274
Unusual currents	5	2		29	5					6	5	7			1			60
Sheer, suction, bank cushion	13	1		5	1					7	5							32
Depth of water less than expected		1		2						68	96	1						168
Failure of equipment	9	14		26	9	2	1	2	17	36	15	18			69	125		343
Unseaworthy—lack of maintenance	1	1		1	2	6	25	3	80	5	2	95	3		20	28		272
Floating debris — submerged object					105					1	2	7				2	1	118
Inadequate tug assistance	8	11		33	13					9	7	10			1		2	94
Fault on part of other vessel or person	220	151	30	67	83	8	1		24	37	12	17			1		19	670
Unknown—insufficient information	2	1				8			3		1	4	1		2	1	42	65
Additional contributing factors to cause of casualty																		
Hull and associated parts:																		
Plates and framing—steel		2		2	16				1	5	1	36	15		31		1	110
Planks and framing—wood					16					2		56	2					76
Tanks					1	4	2		1			2		1	3		2	16
Holds and hatches						6			1									7
Superstructure—bulkheads decks						1	2		2			6	12	1	1		1	26
Ladders, gangways, rails, and guards																	1	1
Masts, booms, and cargo gear												1	1		11		2	15
Rudder and stern tube																		
Watertight closures												28			2			30
Quarters and living spaces									10				2			1		13
Navigation and safety:																		
Lookout	25	8	4	1	3					4							1	56
Docks-piers—congested area	21	62	1	126	19					24	33	1					1	288
Channels—restricted areas	84	10	13	30	20					59	66	2					2	286
Buoys—aids to navigation		3		2	15					19	15							54
Excessive speed	25	4	25	6	5					1		1					4	71
Poor visibility	10	3	32	6	8					29	22							110
Steering gear	11	5		3	10					19	12	4	1		15	10		90
Radar	3		9	1	1					3	3				1			21
Fathometer—depth of water					8					3								11
Engine order telegraph	1	3		4														8
Navigation equipment—other			4	3	2					27	1	2			1			40
Navigation lights	25	8		1	13						1							48
Navigation signals	133	10	18	4	3					1	2						2	173
Weather (generally)	9	21		67	34				1	43	24	37	2			2	16	256
Currents and tides	8	19		57	7				1	16	21	13			1		13	156
Lifesaving equipment									2			3	14		10			29
Firefighting equipment						3	1		2									6
Miscellaneous:																		
Yard repairs				1		6			12			1		1	2	8	1	32
Improper loading or storage		3		1		24	3		2	2		30	5	6	4	2	5	87
Tug assisting	174	74	17	133	79	3				85	23	25	3		2		4	622
Anchor equipment	1	9	4	2	1					25	5	4	2		39	4	4	100
Towing equipment	4	10		11	13					16	5	12	1		2		2	76
Mooring equipment		2		4	10					10	4	18	4		1		5	58
Fishing equipment	2				3					2	1	7			5		2	22
Deck equipment—all other																		

STATISTICAL SUMMARY OF CASUALTIES TO COMMERCIAL VESSELS*—Continued

1 July 1963 to 30 June 1964 Fiscal year 1964	Nature of casualty—Continued																	
	Collisions; crossing, meeting and overtaking	Collisions, while anchored, docking or undocking	Collision, fog	Collisions with piers and bridges	Collisions, all others	Explosion and/or fires—cargo	Explosion and/or fires—vessel's fuel	Explosion and/or fire—Boilers, pressure vessel	Explosion and/or fire—Structure, equipment, all others	Grounding with damage	Grounding without damage	Founderings, capsizings and floodings	Heavy weather damage	Cargo damage	Material failure—structure and equipment	Material failure—machinery and engineering equipment	Casualty not otherwise classified	Total
Engineering:																		
Main propulsion machinery	5	8		17	43		18		8	17	6	14	2		9	80	4	231
Boiler parts and accessories						2	9	9	14		1	7	1		6	76		125
Machinery—all other							1		2			18	1					22
Tools and working spaces						1	13		34	1	1	1				1		52
Generators and other electrical equipment				1		3	2		33	1					3	32		75
Wiring, lights, controls				1	1	2			23		2				3	3		35
Steward's department:																		
Galley and steward's department equipment						1		1	22									24
Type of vessel																		
Inspected vessels:																		
Passenger and ferry—large	7	4	2	8	9		1	1	5	5	11		2		1	8		64
Passenger and ferry—small	8	3	2	2	14		3		10	11	8	12	1		6	11	4	95
Freight	27	56	11	118	56	20		5	17	60	121	5	26	4	78	83	9	696
Cargo barge	10	11	3	8	11				2	11	4	6	2	2	3			73
Tankships	24	28	2	31	24	3	4		6	28	51	3	8		19	44	6	281
Tank barge	85	14	6	38	18	6				39	4	3	1		2		2	218
Public	2	5	1		3					2	3		1		5	6		28
Miscellaneous	2	3	2	4	4				2	4		1	1		3	2	1	29
Uninspected vessels:																		
Fishing	45	27	3	6	49	1	20		69	87	7	89	3		10	18	37	471
Tugs	155	54	16	94	76	2	2	1	25	67	20	49	3		4	7	4	579
Foreign	43	56	23	22	19	4	1		4	28	36	4			2		2	244
Cargo barge	55	12	5	39	41	3			2	19	7	50	7	1	3		10	254
Miscellaneous	29	30	7	6	24		3		8	12	3	21			1		2	146
Gross tonnage																		
300 tons or less	224	108	26	108	163	4	29	1	113	168	41	178	9	1	24	38	46	1281
Over 300 to 1,000 tons	123	38	16	70	66	4		1	6	53	24	52	5		7	10	15	490
Over 1,000 to 10,000 tons	119	104	33	147	82	25	2	5	24	107	140	10	25	5	73	63	12	976
Over 10,000 tons	26	53	8	51	37	6	3		7	45	70	3	16	1	33	68	4	431
Length																		
Less than 100 feet	195	90	22	88	136	4	28	1	108	155	30	170	5	1	18	31	45	1,127
100 to less than 300 feet	212	72	26	120	108	9	1	1	13	105	41	64	16	2	14	19	17	840
300 to less than 500 feet	52	85	26	70	51	22	1	4	22	57	118	6	16	3	64	55	9	661
500 feet and over	33	56	9	98	53	4	4	1	7	56	86	3	18	1	41	74	6	550
Age																		
Less than 10 years	178	89	25	109	91	12	6	1	30	105	66	43	12	2	19	25	19	832
10 to less than 20 years	153	96	27	125	112	16	14	2	54	110	87	75	18	4	49	77	31	1,050
20 to less than 30 years	85	63	20	68	87	7	6	3	34	80	78	55	18		51	59	16	730
30 years and over	76	55	11	74	58	4	8	1	32	78	44	70	7	1	18	18	11	566
Location of casualty																		
Inland—Atlantic	44	46	9	50	47	8	9	3	25	74	84	45	2		15	29	7	497
Inland—Gulf	49	25	6	54	46	5	5		33	39	45	25	1		5	5	5	348
Inland—Pacific	8	21	5	34	47	5	6	1	29	53	27	33	4	1	18	22	41	355
Ocean—Atlantic	10	1	3		12	3	2		14	8	4	21	20	3	23	40	2	166
Ocean—Gulf	4	3	2	1	15	2	5		9	14	8	19	1		5	10		98
Ocean—Pacific	9		1	3	21	3	3	1	6	28	1	30	13	1	24	37	2	183
Great Lakes	10	8		74	21	2	1	1	5	38	44	6	2		11	4	2	229
Western rivers	29	6	6	36	26	4	2		6	25	8	42	1		2		2	195
Ocean—other			1	1	2	1			1	4		1	1		10	9		31
Foreign waters	9	25	2	28	21	4		1	5	23	36	1	4	1	22	21	3	206
Time of day																		
Daylight	82	79	29	165	147	23	21	5	70	130	141	116	28	4	95	97	34	1,266
Nighttime	86	51	6	94	100	11	10	2	56	162	105	91	17		38	61	26	916
Twilight	4	5		22	11	3	2		7	14	11	16	4	2	2	19	4	126
Estimated losses—units of thousands																		
Vessel	5,009	1,710	3,410	1,651	2,475	494	2,353	148	10,802	12,686	11	6,145	479	365	1,134	3,224	1,114	53,210
Cargo	694	4	105	21	71	652	23		48	9,536		1,084	92	307	61	19	222	12,939
Property	8	81		1,636	295		15		50	26		13	10		32		40	2,206
Vessels totally lost																		
Inspected	1		1		3	1	3		9	7		10			1		2	38
Uninspected	26	6	4	3	28	1	22	1	56	53		113	2			1	36	352

*Statistics concerning recreation and pleasure boating accidents are published in CG-357.

STATISTICAL SUMMARY OF DEATHS/INJURIES DUE TO A VESSEL CASUALTY*

1 July 1963 to 30 June 1964

Fiscal year 1964

	Nature of casualty																	
	Collision: crossing meeting and overtaking	Collision, while anchored, docking or undocking	Collision, fog	Collisions with piers and bridges	Collisions, all others	Explosion and/or fires—cargo	Explosion and/or fires—vessel's fuel	Explosion and/or fire—boilers, pressure vessel	Explosion and/or fire—structure, equipment, all others	Grounding with damage	Grounding without damage	Founderings, capsizings, and floodings	Heavy weather damage	Cargo damage	Material failure—structure and equipment	Material failure—machinery and engineering equipment	Casualty not otherwise classified	
Number of casualties	16	3	6	4	6	7	12	2	10	5	1	42	2	1	8	5	7	137
Number of inspected vessels involved	1	0	7	2	0	7	23	1	58	0	0	7	2	0	5	8	6	127
Number of uninspected vessels involved	18	7	11	9	6	5	20	1	10	5	1	80	0	2	10	2	10	197
Number of persons deceased/injured	10/9	2/5	12/6	6/5	5/1	7/5	9/34	1/1	32/36	4/1	0/1	80/8	0/2	2/0	4/11	2/8	16/0	191/133
Primary cause																		
Personnel fault:																		
Pilots—State																		
Pilots—Federal																		
Licensed officer—documented seaman	3		5		1		1		1			1				1		13
Unlicensed—undocumented persons	3	2		1	3		4		1	2		4				1	1	22
All others	9		1	1		3			3			1			1		1	20
Error in judgement—calculated risk				1	1						1							3
Restricted manuevering room																		
Storms—adverse weather										1		23	2	1				27
Unusual currents																		
Sheer, suction, bank cushion																		
Depth of water less than expected										2								2
Failure of equipment		1		1		2		1	2			1			6	2		16
Unseaworthy—lack of maintenance							7	1	2			11				1		22
Floating debris—subinerged object																		
Inadequate tug assistance	1				1							1						3
Fault on part of other vessel or person						1												1
Unknown—insufficient information						1			1						1		5	8
Type of vessel involved																		
Inspected vessels:																		
Passenger and ferry—large	1		1	2			1	1										6
Passenger and ferry—small			2				2					6					1	11
Freight									2			1			4	3	5	15
Cargo barge									13									13
Tankships			4			1	20									5		30
Tank barges						6												6
Public																		
Miscellaneous									43				2		1			46
Uninspected vessels:																		
Fishing	3	1	1	3	3		13		6	3		53			1	2	10	99
Tugs	5			6	1			1		2	1	18						34
Foreign	3		5		1	1						1			3			14
Miscellaneous	7	6	5		1	4	7		4			8		2	6			50
Particulars of person deceased/injured																		
Papers of deceased injured:																		
Licensed by Coast Guard							5/1		0/2			7/0			0/3	0/4	1/0	13/10
Documented by Coast Guard			0/4		1/0	1/0	3/12	0/1	12/1		0/1	2/0	0/2		0/2	1/3	2/0	22/26
No license or document	10/8	2/5	7/2	6/5	3/1	6/0	1/21	1/0	20/33	4/1		69/8		2/0	0/4	1/1	13/0	145/89
Other—unknown—foreign	0/1		5/0		1/0	0/5						1/0			4/2			11/8
Status or capacity on vessel:																		
Passenger	1/0	2/2	2/0	0/2			1/5					5/1						11/10
Longshoreman—harbor worker						5/5			2/11			3/0			0/4		2/0	12/20
Crewmember	5/5	0/3	9/6		5/1	2/0	8/28	1/1	19/6	3/1	0/1	65/7	0/2	2/0	2/6	2/8	11/0	134/75
Other	4/4		1/0	6/3			0/1		11/19	1/0		6/0			2/1		3/0	34/28
Activity engaged in:																		
Off duty	0/3	0/3	0/2				0/11		3/0			6/0				1/1	3/0	13/20
Deck department duties	3/0		4/1		4/1	2/0	6/7	1/0	4/2	1/1	0/1	26/3	0/1		4/2	1/2	3/0	59/21
Engine department duties	0/2						1/2	0/1	5/2			3/1	0/1			0/5		9/14
Stewards department duties			0/3				1/0		3/0									4/3
Handling cargo						2/0								2/0	0/4		2/0	6/4
Fishing	1/0		3/0		1/0		0/2		0/2	2/0		36/3					4/0	47/7
Drills															0/5			0/5
Passenger	1/0		2/0	0/2			1/5					5/1						9/8
Other and unknown	5/4	2/2	3/0	6/3		3/5	0/7		17/30	1/0		3/0					4/0	44/51
Location of vessel:																		
At dock		0/3				4/5	3/18	1/0	6/13			7/1			2/2	0/5	10/0	33/47
At anchor		2/2					0/2	0/1	22/19			5/0		2/0	0/4	1/1		32/29
Underway	10/9		12/6	6/5	5/1	3/0	6/14		4/4	4/1	0/1	67/7	0/2		2/5	1/2	6/0	126/57
Unknown																		
Part of body involved																		
Head and upper limbs	0/3		0/2	0/3	3/0	2/1	0/4		0/7	0/1		1/0			2/5	0/2		8/23
Back and lower limbs	1/1	0/2	0/1	0/1		0/3	0/1		0/5		0/1	0/1	0/2		0/3	0/3		1/24
Multiple injuries (internal and external)	0/5	0/1	0/3	0/1	0/1	3/1	2/29	1/1	2/4	2/0		0/5			1/3	0/2	2/0	13/56
Death—heart							1/0					1/0					1/0	3/0
Death—drowning	9/0	2/0	9/0	6/0	1/0	2/0				2/0		49/1		2/0	1/0		6/0	89/1
Death—disease, other		0/2	3/0		1/0		6/0		30/20			28/1				2/1	7/0	77/24

*Statistics concerning recreation and pleasure boating accidents are published in CG-357.

nautical queries

DECK

Q. a. In addition to sufficient air tankage to float a lifeboat when filled with water and open to the sea, what quantity of air tankage is required for each person permitted in the boat?

b. How are air tanks of lifeboats tested?

A. a. One cubic foot per person.

b. Each air tank shall be fitted with a standard ¼-inch pipe-size testing nipple with hexagonal cap. Cap to be of corrosion resistant material. The tank must withstand a test pressure of one pound per square inch.

Pressure of 1 pound per square inch may be applied by using a pneumatic pump with a gage, or by blowing into the nipple directly or through a rubber tube, or simply exposing the tank to a hot sun whereby the air in the tank is expanded. After a suitable interval if the pressure is maintained as would be indicated by the air escaping from the nipple after the cap is removed, the tank has no leak. Leaks would equalize the pressure in the tank with that of the atmosphere.

Where leakage exists, the exact location may be determined by using soapy water brushed over the suspected area while pressure over atmosphere is put on the tank, or by immersing the suspected area in water and watching for bubbles.

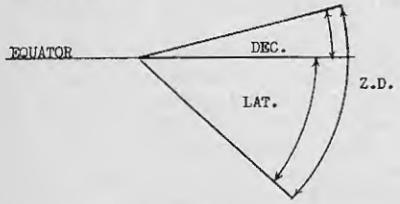
Q. On vessels fitted with power ventilation, where may the switches be found for shutting off the ventilation in the event of an emergency such as a fire?

A. All electrical ventilation systems shall be provided with remote control means for stopping the motors in case of fire or other emergency. For the machinery space ventilation, there shall be provided a control located in the passageway leading to, but outside of, the space. For all other ventilation systems, a control station shall be located in the fire control room or wheelhouse, if continuously manned both when underway and when at dock, or in an accessible position in the passageway leading to, but outside of, the space ventilated. These emergency control push button stations shall be protected by installing glass doors on which there will be marked: "In case of fire break glass and push button to stop ventilation."

MERIDIAN ALTITUDE—SUN

Q. Enroute from Wellington, New Zealand, to Melbourne, Australia, a meridian altitude of the sun was observed at D. R. Latitude 43°–15′ South with the sun bearing North. The observed altitude was 31°–53′.1 and the declination was 14°–43′.0 North.

REQUIRED: The Latitude at time of sight.



A. Ho	31°–53′.1	N
	89°–60′.0	
Z.D.	58°–06′.9	S
Dec.	14°–43′.0	N
Lat.	43°–23′.9	S

ENGINE

Q. Why is the exhaust temperature inherently lower on a two-cycle Diesel engine than on a four-cycle Diesel engine?

A. The exhaust temperature is lower on the two-cycle engine than the four-cycle engine because the scavenging air of the two-cycle engine cools off the exhaust gases.

Q. Describe the usual method of igniting the fuel in semidiesel or low-compression diesel engines.

A. Ignition in a semidiesel or low-compression diesel is usually caused by the fuel being sprayed against an uncooled portion of the combustion space. This uncooled portion is generally a hot bulb or plate and requires preheating from an outside source such as an electric plug or a blowtorch upon first starting the engine.

Q. What is the most significant difference between the Diesel and Otto cycle engine?

A. The most significant difference between the Diesel and Otto cycle engines is the method used for the ignition of the fuel. In the Diesel cycle, ignition takes place automatically by the heat of the compressed gases, whereas in the Otto cycle an outside source of heat is required to ignite the fuel charge.

Q. Will poor combustion have any pronounced effect upon the lower working parts of the engine, namely the bearings, crank boxes, connecting rod bearings?

A. In the trunk piston-type of engine all substances of a carbonaceous nature escaping by the piston find their way to the crankcase. They become mixed with the lubricating oil and if not removed, may prevent correct lubrication of the bearings. Removal from the crankcase of such carbonaceous substances is not always possible by filtration or centrifuging. Filters or centrifuges may have ample capacity to remove such substances but the oil in circulation does not always pick them up. Evidence of the truth of this statement can be found in the form of black mucky deposits coating the interior surfaces of the crankcase. If they become removed and are entrained in the oil, they may overtax the capacity of the filters or centrifuge. Excessive contamination of the lubricating oil shortens its life. The operator is tempted to use oil after it is no longer in fit condition to enter the bearing. For the reason mentioned and a number of others, the bearings and other working parts within the crankcase are likely to suffer as a result of poor combustion and its effect upon lubrication. Furthermore, the lowered mechanical efficiency of the engine reacts directly upon the bearings in the form of an overload. It frequently results in an excessive rate of wear. Conditions such as these may be traced to the fuel pump or spray nozzles. To avoid them the fuel injection system should receive careful attention.

Q. In a reheating-type condenser, state whether the following fluids will be at a higher, lower, or the same temperature as that of the condensate in the hotwell under normal operating conditions:

(a) The circulating water discharge.

(b) The exhaust steam in the exhaust trunk.

(c) The uncondensable vapors at the air outlet of the condenser.

(d) The inter-condenser drains.

A. (a) lower
(b) higher
(c) lower
(d) higher

AMENDMENTS TO REGULATIONS

[EDITOR'S NOTE.—The following regulations have been promulgated or amended since the last issue of the PROCEEDINGS. A complete text of the regulations may be found in the Federal Register indicated at the end of each article. Copies of the Federal Register containing the material referred to may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402.]

TITLE 46 CHANGES

SUSPENSION AND REVOCATION PROCEDURES REGULATIONS AMENDED TO REFLECT STATUTORY INTERPRETATIONS

By Commandant action of October 30, 1964, certain provisions of the regulations governing Marine Investigations and Suspension and Revocation Proceedings have been amended.

The sections affected are: 46 CFR 137.01–1(a)(1), 137.01–30(a)(3), 137.01–40(a) and 137.05–20(b).

The purpose of the amendments to 46 CFR 137.01–30(a)(3), 137.01–40(a), and 137.05–20(b) is to amend the wording to conform to the jurisdictional limitations in subsection 239(g) in Title 46, U.S. Code, while the amendment to 46 CFR 137.01–1(a) identifies what laws and regulations are included in the reference "title 52 of the Revised Statutes or of any of the regulations issued thereunder." These amendments constitute a statutory interpretation.

1. Section 137.01–1(a) is amended by adding a new subparagraph (1) reading as follows:

§ 137.01–1 Authority for regulations.

(a) * * *

(1) Where the provisions in Title 46, U.S. Code, section 239, or other laws or regulations contain a reference to "title 52 of the Revised Statutes or of any of the regulations issued thereunder," or one similar to it, it is deemed to be a general reference to the applicable provisions in Title 46, U.S. Code, sections 170, 214, 215, 222, 224, 224a, 226, 228, 229, 230–234, 239, 240, 361, 362, 364, 372, 375, 391, 391a, 392, 393, 399, 400, 402–414, 416, 435, 436, 451–453, 460, 461, 462, 467, 470–482, and 489–498, and the regulations issued thereunder, which are in this chapter.

(See F.R. November 5, 1964, for the text of the other sections referred to.)

TITLE 33 CHANGES

LARGER COAST GUARD CUTTERS EXEMPTED FROM CERTAIN NAVIGATIONAL LIGHTING RULES

Larger Coast Guard vessels of special construction cannot comply with certain applicable statutory requirements relating to the lights required to be displayed by public and private vessels when navigating on the high seas or navigable waters of the United States, its territories or possessions, without seriously affecting the characteristics and functions of the vessels concerned.

Changes in antennas on WPG and WAVP class Coast Guard Cutters required the relocation of masthead lights. The planned employment of these ships is such that it is not practical to modify the design to meet the requirements for vertical separation of range lights and minimum height of forward masthead lights without seriously compromising other important vessel characteristics.

Except for special-construction-lighting-exemptions Coast Guard vessels are in full compliance with the other provisions of the applicable International Rules or Inland Rules governing the areas where the vessels will be operated.

33 CFR Section 135.40 has been amended and 33 CFR 135.45 has been added to give public notice as to character and position of the navigational lights on these exempted vessels. These vessels, ranging in length from 255′ to 327′, operate to the greater degree on the high seas.

(See F.R. of November 5, 1964, for the text of these changes.)

ARTICLES OF SHIPS' STORES AND SUPPLIES

Articles of ships' stores and supplies certificated from October 1 to November 30, 1964, 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

Drew Chemical Corp., 522 Fifth Ave., New York, N.Y., Certificate No. 605, dated October 26, 1964, MICROMAG.

Pacific Chemical Co., 4501 Shilshole NW, Seattle, Wash., Certificate No 406 dated November 12, 1964, DEGREASER S_2.

Arco Chemical Corp., 400 Post Rd., Fairfield, Conn., Certificate No. 606, dated November 12, 1964, ARCO B.C.–1.

AFFIDAVITS

The following affidavits were accepted during the period from September 15, 1964, to November 15, 1964:

Summer Iron Works, Inc., Div. of Black Clawson Co., P.O. Box 1028, Everett, Wash., CASTINGS.

Greenville Tubes, Inc., P.O. Box 30, Greenville, Pa., TUBING.[1]

Seattle N.W. Screw Products Co., Inc., 1938 First Ave., South, Seattle 4, Wash., BOLTING.

The Anstice Co., Inc., 111 Humboldt St., Rochester, N.Y. 14609, CASTINGS.

Horace T. Potts Co., Speedline Division, Erie Ave. and D St., Philadelphia, Pa., 19134, FITTINGS.

Elliott Co., Div. of Carrier Corp., North Fourth St., Jeanette, Pa., 15644, FITTINGS.[2]

Mason-Neilan, Division of Worthington Corp., Norwood, Mass., VALVES.

Mercer Rubber Co., 136 Mercer St., Trenton, N.J., 08690, FITTINGS.[3]

Union Steel Corp., P.O. Box 726, New Market, N.J., 08854, PIPING and TUBING.[4]

The Annin Co., 1040 South Vail Ave., Montebello, Calif., VALVES.

Cameron Iron Works, Inc., P.O. Box 1212, Houston 1, Tex., VALVES.

Van Huffel Tube Corp., Warren, Ohio, TUBING.

Avondale Shipyards, Inc., P.O. Box 50280, New Orleans 50, La., VALVES, FITTINGS, AND FLANGES.

Wright-Austin Co., 5245 Wight St., Detroit, Mich., 48207, VALVES AND FITTINGS.[5]

Western Gear Corp., P.O. Box 859, Everett, Wash., VALVES, FITTINGS AND FLANGES.

The Wallingford Steel Co., Valley St., Wallingford, Conn., PIPING.[6]

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[1] Manufactured to ASTM A–213.
[2] Accepted for strainers only.
[3] Affidavit covers rubber expansion joints only limited to Class II piping at a maximum pressure of 150 psi and a maximum temperature of 180° F.
[4] Stainless steel products only—this pipe may be supplied for Class I applications only when a 100% radiographic inspection has been performed on all welded seams.
[5] Approval was granted on January 15, 1964.
[6] Accepted for pipe manufactured to ASTM A–312–100 percent radiographic examination required for pipe supplied for Class I piping.

MERCHANT MARINE SAFETY PUBLICATIONS

The following publications of marine safety rules and regulations may be obtained from the nearest marine inspection office of the U.S. Coast Guard. Because changes to the rules and regulations are made from time to time, these publications, between revisions, must be kept current by the individual consulting the latest applicable Federal Register. (Official changes to all Federal rules and regulations are published in the Federal Register, printed daily except Sunday, Monday, and days following holidays.) The date of each Coast Guard publication in the table below is indicated in parentheses following its title. The dates of the Federal Registers affecting each publication are noted after the date of each edition.

The Federal Register may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402. Subscription rate is $1.50 per month or $15 per year, payable in advance. Individual copies may be purchased so long as they are available. The charge for individual copies of the Federal Register varies in proportion to the size of the issue but will be 15 cents unless otherwise noted in the table of changes below. Regulations for Dangerous Cargoes, 46 CFR 146 and 147 (Subchapter N), dated January 1, 1964 and Supplement dated July 1, 1964 are now available from the Superintendent of Documents, price basic book: $2.50; supplement: 75 cents.

CG No.	TITLE OF PUBLICATION
101	Specimen Examination for Merchant Marine Deck Officers (7–1–63).
108	Rules and Regulations for Military Explosives and Hazardous Munitions (8–1–62).
115	Marine Engineering Regulations and Material Specifications (3–1–63), F.R. 8–20–63, 10–26–63, 6–5–64.
123	Rules and Regulations for Tank Vessels (4–1–64). F.R. 5–16–64, 6–5–64.
129	Proceedings of the Merchant Marine Council (Monthly).
169	Rules of the Road—International—Inland (6–1–62), F.R. 1–18–63, 5–23–63, 5–29–63, 7–6–63, 10–2–63, 12–13–63, 4–30–64, 11–5–64.
172	Rules of the Road—Great Lakes (6–1–62). F.R. 8–31–62, 5–11–63, 5–23–63, 5–29–63, 10–2–63, 10–15–63, 4–30–64, 11–5–64.
174	A Manual for the Safe Handling of Inflammable and Combustible Liquids (3–2–64).
175	Manual for Lifeboatmen, Able Seamen, and Qualified Members of Engine Department (9–1–60).
176	Load Line Regulation (7–1–63). F.R. 4–14–64, 10–27–64.
182	Specimen Examinations for Merchant Marine Engineer Licenses (7–1–63).
184	Rules of the Road—Western Rivers (6–1–62). F.R. 1–18–63, 5–23–63, 5–29–63, 9–25–63, 10–2–63, 10–15–63, 11–5–64.
190	Equipment Lists (4–2–62). F.R. 5–17–62, 5–25–62, 7–24–62, 8–4–62, 8–11–62, 9–11–62, 10–4–62, 10–30–62, 11–22–62, 11–24–62, 12–29–62, 1–4–63, 1–8–63, 2–7–63, 2–27–63, 3–20–63, 4–24–63, 6–11–63, 6–15–63, 6–22–63, 6–28–63, 8–10–63, 10–16–63, 11–23–63, 12–3–63, 2–5–64, 2–11–64, 3–12–64, 3–21–64, 3–27–64, 4–29–64, 5–6–64, 5–19–64, 5–26–64, 7–2–64, 7–18–64, 7–28–64, 10–21–64, 10–27–64.
191	Rules and Regulations for Licensing and Certificating of Merchant Marine Personnel (7–1–63). F.R. 9–18–63, 12–13–63, 6–5–64.
200	Marine Investigation Regulations and Suspension and Revocation Proceedings (10–1–63). F.R. 11–5–64.
220	Specimen Examination Questions for Licenses as Master, Mate, and Pilot of Central Western Rivers Vessels (4–1–57).
227	Laws Governing Marine Inspection (6–1–62).
239	Security of Vessels and Waterfront Facilities (7–1–64).
249	Merchant Marine Council Public Hearing Agenda (Annually).
256	Rules and Regulations for Passenger Vessels (4–1–64). F.R. 6–5–64.
257	Rules and Regulations for Cargo and Miscellaneous Vessels (9–1–64).
258	Rules and Regulations for Uninspected Vessels (1–2–64), F.R. 6–5–64, 6–6–64, 9–1–64.
259	Electrical Engineering Regulations (7–1–64).
266	Rules and Regulations for Bulk Grain Cargoes (7–1–64).
268	Rules and Regulations for Manning of Vessels (2–1–63).
269	Rules and Regulations for Nautical Schools (5–1–63). F.R. 10–2–63, 6–5–64.
270	Rules and Regulations for Marine Engineering Installations Contracted for Prior to July 1, 1935 (11–19–52). F.R. 12–5–53, 12–28–55, 6–20–59, 3–17–60.
293	Miscellaneous Electrical Equipment List (6–1–64).
320	Rules and Regulations for Artificial Islands and Fixed Structures on the Outer Continental Shelf (10–1–59). F.R. 10–25–60, 11–3–61, 4–10–62, 4–24–63, 10–27–64.
323	Rules and Regulations for Small Passenger Vessels (Under 100 Gross Tons) (2–3–64) F.R. 6–5–64.
329	Fire Fighting Manual for Tank Vessels (4–1–58).

CHANGES PUBLISHED DURING NOVEMBER 1964

The following have been modified by Federal Register:
CG–169, CG–172, CG–184, and CG–200 Federal Register, November 5, 1964.

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THE SHIPBOARD SAFETY COLORING BOOK