PROCEEDINGS OF THE
MERCHANT MARINE COUNCIL
UNITED STATES COAST GUARD

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

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

CG 129

Vol. 11 June 1954 No. 6

Proceedings of the

MERCHANT MARINE COUNCIL

Published monthly at Coast Guard Headquarters, Washington 25, D. C., under the auspices of the Merchant Marine Council, in the interest of safety at sea. Special permission for republication, either in whole or in part, with the exception of copyrighted articles or pictures, is not required provided credit is given to the Proceedings of the Merchant Marine Council.

The Merchant Marine Council of the United States Coast Guard

CONTENTS

DISTRIBUTION (SDL 57)

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

EDITOR'S NOTE

On June 1, 1954, Vice Admiral Alfred C. Richmond, USCG, relieved Vice Admiral Merlin O'Neill, USCG, as Commandant of the U. S. Coast Guard, upon Vice Admiral O'Neill's retirement after more than 33 years of service. Prior to taking office as Commandant of the U. S. Coast Guard, Vice Admiral Richmond was assistant Commandant of the U. S. Coast Guard.

FRONT COVER PICTURE

The Liberty ship shown on the front cover spent an uncomfortable and disconcerting day on the beach when she anchored with both bow anchors and full scope of chain off a lee shore.

It could happen to you, too!

EVERY JOB IS IMPORTANT

Have you ever discovered whether the grass actually is greener on the other side of the fence? And did you ever get into a hot discussion with a fellow worker as to whose job was important around the plant? . . . Well, it seems that the captain and the chief engineer of a ship got into such an argument, and they decided that the only way to settle it would be to exchange jobs for a spell.

So, the skipper went down into the hole to supervise the steam boilers, and the engineroom chief went up to the bridge to navigate the vessel. The captain fiddled around with the steam valves and gages, getting hotter and sweatier and sootier with each hour—but to no good. Finally he gave up in disgust, and started up the iron stairs for the open decks.

Half way up he met the chief engineer, coming down.

"Take over your engineroom, matey," said the skipper. "I just don't seem to be able to get up enough steam for those boilers, and keep it up."

The chief engineer grinned.

"Well, it doesn't matter anyway, skipper," he said. "We've been aground for 2 hours!"

So each went back to the job he did well, knowing at last that it takes a lot of men doing well the jobs they can do best—and convinced that every job in the whole outfit is important to the whole operation if it is done well—to keep the operation running smoothly and for the benefit of all hands.

—Courtesy Types Fleet Flashes.

HISTORY OF THE DEVELOPMENT OF THE LIFE PRESERVER

The standard life preserver approved by the U. S. Coast Guard today is the final product of over 100 years' development. Since the act of August 30, 1852, made it mandatory that steamboats carrying passengers be provided with a life preserver (or float) for each passenger aboard, new designs have been continually evolved by experts and amateurs alike, tested in actual practice over a period of years, and then altered to conform to the new standards established on the basis of past experience.

The standard life preserver of today need only be set beside its forebears, the wooden plank of the early Norwegians and the crude appliances typical of 1852, as well as representative samples from the intervening years, for its process of evolution to become evident. Through joint effort, we have come far along the way to perfecting life jackets as the basic factor in the saving of lives in marine casualties, though it is probable that the ultimate goal has not yet been achieved.

The history of the development of the life preserver, from the days of the former Supervising Inspectors to the ultimate incorporation of their responsibilities in the U. S. Coast Guard, sheds many an interesting light on why the present day approved preserver is what it is.

The first mention of life preservers in statutory law is found in the Steamboat act of August 30, 1852, section V, which reads as follows:

> Every such vessel, carrying passengers, shall also be provided with a good life preserver, made of suitable material, or float, well adapted to the purpose, for each and every passenger, which life preservers and floats shall always be kept in convenient and accessible places in such vessel and in readiness for the use of the passengers . . . . .

This same act established the former Board of Supervising Inspectors, authorizing them to make rules and regulations for their own conduct and that of the several local boards of inspectors in their divisions.

At the first session of the Board of Supervising Inspectors in October, 1852, rules were set forth for the guidance of local boards, one of which stated:

> That each life preserver or float required under the fifth section of the act, must be furnished with ready and suitable means for secure attachment to the body of a person or to enable persons to hold themselves securely thereto.

Shortly, thereafter, at the second annual meeting of the Board, in 1853, this rule was amended to read:

> That shoulder straps to all life preservers be recommended or other means attached, so as to prevent the same from getting in an improper position to the hazard of life.

It took the inspectors only 3 years to learn what is still a cardinal principle today, that is, that inflated life preservers (those which depend on air compartments for their buoyancy) are not as dependable as the uninflated types. Their resolution on this matter in 1855 reads:

> Whereas, the experience of inspectors have shown conclusively that inflated life preservers are not reliable, that from various causes they become in a short time life preservers in name only; therefore, *Resolved*, That the local inspectors be directed hereafter when new life preservers are needed for the use of any steamer, not to pass inflated life preservers of any description.

Two years later, in 1857, they also condemned tin or any metal likely to be damaged by oxidation or careless handling as materials for life preservers. This was the forerunner of the present regulation stating that life preservers dependent on air compartments for their buoyancy shall not be approved.

The cork block type, which still has full approval, was at the outset stated to be best from every standpoint. The Board attested to the usefulness of preservers made of this material in 1855, stating:

> In the case of the steamer *E. K. Collins* burnt on the Detroit River (Oct. 8, 1954) all were saved by means of the (cork) life preservers with which she was supplied.

Then, in 1857, they again commended the superiority of the cork block type, as follows:

> While engaged in the consideration of cork block life preservers, your committee would state that recent disasters have established their efficiency and reliability. Life preservers of this material if properly made and having sufficient buoyancy, fully comply with the requirements of the law, and are as desirable as any kind of life preservers now before the public. This opinion is, however, based upon the supposition that life preservers of this material are made in the form of a jacket, and the cork filling either in blocks or pieces.

Another regulation in force today, which forbids the use of loose granulated cork in life preservers had its inception in the same report in 1857, i. e.:

> We desire further to state that in our opinion, life preservers made in any form and filled with cork dust or shavings or the refuse of cork cuttings, are unworthy of confidence . . . . . therefore Local Boards . . . . . shall not pass any form of life preserver, the filling of which is of cork dust or shavings or the refuse of cork cuttings.

As each new life preserver was designed, its inventor presented it to the Board of Supervising Inspectors at their annual meeting for approval before it could be placed on inspected vessels in the merchant service. In this manner improvements in standard equipment were brought about year after year, and the latest and best designs replaced outmoded and worn jackets on ships, after the annual inspection found them faulty, worn, or otherwise unsuitable. As experience in actual use was gained, standards for buoyancy, shape, form, materials, etc. were laid down, subject to alteration as time proved the necessity of change.

New materials, in addition to the regulation cork blocks, began to attain prominence after the turn of the century. Kapok, at the time a relatively unknown quantity, and one which has occasioned more discussion and argument pro and con than any other, was first introduced and approved in 1902. This approval was withdrawn temporarily, however, in 1904, because of its flammability and rapid loss of buoyancy under the usual compressed storage conditions.

In 1904, the excursion steamer *General Slocum* was destroyed by fire in New York with a loss of 955 lives. As a result of this disaster, particular attention was focused on life preservers. Numerous deficiencies were found and large numbers of life preservers were condemned, particularly on excursion vessels. Some had rotten covers; others needed repairs, were not accessible, or were so fastened that they could not be removed easily. Many kapok jackets had less buoyancy than required by regulation. But, most flagrant of all was the fact that life preservers were found composed of blocks of compressed granulated cork with 8-ounce bars of iron concealed within the blocks to bring the jacket up to the required weight.

298737—54

At the special meeting of the Board of Supervising Inspectors called as a result of this casualty, the following regulations were made:

1) All life preservers made in whole or in part of compressed or granulated cork heretofore approved by the Board, shall be excluded from use on all steam vessels.

2) All kapok life preservers heretofore approved by the Board shall be excluded from use on all vessels.

Congress, in turn, enacted the following statutory prohibitions:

Any person who willfully or knowingly manufactures or sells . . . or has in his possession with intent to sell, life preservers containing metal or other non-buoyant material for the purpose of increasing the weight thereof, or more metal or other such material than is really necessary for the construction thereof . . . shall, upon conviction, be fined not more than $2,000, and may in addition thereto be imprisoned not exceeding 5 years. (Sec. 4488 R. S., March 3, 1905)

At the same time, provision was made to standardize the testing procedure. It was decided that 1 life preserver out of every 500 manufactured was to be tested and the lot stamped "approved" at the factory by an inspector especially detailed to that duty, if after being submerged in fresh water for 48 hours, the jacket was capable of supporting in fresh water a submerged weight of 20 pounds. (This same test is in use today, with the exception that the jacket must be capable of supporting 16.5 pounds submerged.)

The next step in the development of life preservers was the Seamen's Act of March 4, 1915, enacted pursuant to the International Convention for the Safety of Life at Sea which was held in 1912. The part of this act relative to life preservers reads as follows:

A life jacket of an approved type or other appliance of equal buoyancy and capable of being fitted on the body shall be carried for every person on board, and, in addition, a sufficient number of life jackets or other equivalent appliances suitable for children.

First: A life jacket must satisfy the following conditions:

(*a*) It shall be of approved material and construction.

(*b*) It shall be capable of supporting in fresh water for 24 hours 15 pounds avoirdupois of iron.

Life jackets the buoyancy of which depends on air compartments are prohibited.

All life buoys and life jackets shall be so placed as to be readily accessible to the persons on board; their position shall be plainly indicated so as to be known to the persons concerned.

In 1918, kapok regained the approval of the Board of Supervising Inspectors, having proved its advantages under wartime conditions. Its softness and pliability, which did not endanger the man who jumped overboard from a height and enabled him to swim with comparative ease, were assets which outweighed its inflammability and gradual loss of buoyancy after compression or storage, and persuaded the Board to again grant approval to this type of life preserver. Most important of all, it was actually reversible, and did hold the wearer in an upright and slightly backward position in the water, if unconscious.

Allied shipping losses and cases of abandon ship in the First World War made the need for a life preserver which would hold an unconscious person's head and face out of the water apparent, and thus started a controversy which has not even yet been completely settled. The British Board of Trade first made this a requirement for ships in the British merchant marine. Shortly thereafter the matter came up before the Board of Supervising Inspectors at their annual meeting, and the idea, after considerable argument for and against, was also adopted by the Board and incorporated into the Rules and Regulations. The new regulation read:

Every life preserver adjustable to the body of an adult person manufactured after June 1, 1919, shall be of the reversi-

FIGURE 1: Shows three views of a typical kapok or fibrous glass type life preserver. This type jacket essentially consists of a vest-cut envelope containing pockets in which are enclosed pads of buoyant material. This life preserver is fitted with tapes and webbing to provide complete reversibility, proper adjustment for close fit to the bodies of various size wearers, and proper flotation characteristics. Note that all tie tapes and webbing are tight and securely fastened in the illustration in order to keep the preserver in the proper position.

Like all types of life preservers this type jacket must be Indian orange in color, and in addition all fabrics and thread are required to be treated in order to resist mildew.

ble type, made of suitable material approved by the Board of Supervising Inspectors, with belts properly attached on each side of the body of the life preserver (thus making it reversible), with recesses for armholes under the arms, thereby allowing the front and back sections to fit around the upper part of the wearer, and held in place by the belts, and the upper part of the life preserver shall be made vestlike, the whole so constructed as to place the main buoyant body of the device underneath the shoulders and around the body in a manner to hold the person wearing it in a slightly backward reclining position when in an inert or unconscious condition.

In 1920, another regulation was promulgated to insure that kapok life preservers would retain their original buoyancy. This regulation required that at each annual shipboard inspection, 5 percent of all kapok life preservers were to be subject to the regular 2-hour buoyancy test (i. e., support a downward gravitational pull of 20 pounds for 2 hours), and those which did not pass must be condemned.

That same year, balsa wood as a material for life preservers was first approved because of its excellent buoyant qualities and long life.

Nevertheless, cork was still the preferred material from all points of view, in the opinion of the Board. It retained its high buoyancy longer, was not highly inflammable, and deteriorated much less rapidly than any other material, being still effective in many cases after 20 years' service on shipboard.

Almost ten years later, the loss of the *Vestris* instigated a controversy between the merits of the kapok life jacket and the standard cork block life preserver, when it was reported that many bodies were found floating face downward in cork block life preservers. At the time, cork block life preservers were the type most generally accepted and used in the American merchant marine, because kapok was still considered to be an uncertain quantity—some grades being lastingly buoyant, others not. But, individuals strongly urged that the kapok jacket be made mandatory for the merchant marine, since it kept unconscious persons face upward and clear of the water, stating: "Some of the loss of life was due to the failure of these life preservers to comply with the essential and most important purpose of both the American and British requirements that the head of an unconscious wearer should be kept above the water." This controversy, though not entirely resolved, led to the increased use of high grade kapok jackets by merchant mariners.

In 1942, the Supervising Inspectors' functions were transferred to the Coast Guard, at which time many wartime measures were promulgated. One of these was the 25 percent additional rule which read:

All vessels, in addition to having a life preserver for each person allowed to be carried, shall be provided with life preservers stowed on the boat deck for at least 25 percent of the total number of persons. These life preservers shall be stowed in chests so as to be readily accessible, and in a manner as to float free of the vessel. The covers of the chests shall be of the "lift off" type to insure release of the preservers.

Another was a recommendation to the effect that the approved kapok life preserver be worn at all times while the vessels were outside inland waters, which became a regular wartime practice. The value of these measures became evident soon after the entry of the United States into the war, for many vessels sank in so short a time as to preclude the use of the various lifesaving devices.

Recent years have brought, among other things, mildew resistant life preserver covers; a nonflammable fibrous glass life preserver; and a requirement to test and stamp all life preservers on board merchant vessels periodically.

Even today new materials are being tested, and survivor reports of disasters studied, to further the development of approved life preservers.

FIGURE 2: Shows three views of a typical cork block or balsa wood type life preserver. This type of jacket essentially consists of a vest-cut envelope containing pockets in which are enclosed blocks of buoyant material. This life preserver is fitted with tapes to provide reversibility and adjustment for fitting it to the body. Note that this type jacket overlaps in front in this instance in order to provide a tight fit and that the tie tapes are tightly secured to keep the life preserver in proper position.

Like all types of life preservers this jacket must be Indian orange in color, and in addition all fabrics and thread are required to be treated in order to resist mildew.

CAUGHT IN THE ACT

Contrary to the provisions of 14 USC 84 and 33 USC 408 vessels frequently make fast to floating buoys as a matter of convenience. This practice, aside from being illegal, is a constant source of harrassment and concern to the Coast Guard inasmuch as aids to navigation used in this manner are frequently damaged or moved from their station, in addition to being obstructed from the view of those attempting to use them for their intended purpose.

It is obviously a practice which cannot be condoned. The Coast Guard has therefore increased its efforts to apprehend and prosecute those who make a practice of tying their vessels to buoys and other aids to navigation.

Recently, for example, a Coast Guard helicopter pilot on a Port Security flight observed two tugs with a number of barges in tow in the vicinity of James River Lighted Buoy 68. Since it appeared these vessels were moored to the buoy, the course of the plane was altered and passes were made over the tugs. At the same time, the photographer on board took a series of pictures.

One of these tugs was, without question, secured to the buoy with a line. The other had apparently been made fast to the tug secured to the buoy, but upon the approach of the helicopter had cast off.

See the pictures accompanying this article. These pictures clearly indicate a violation on the part of the vessel secured to the buoy.

The Master of this vessel was brought to trial and was fined for violation of 14 USC 84, which reads as follows:

14 USC 84

It shall be unlawful for any person, or public body, or instrumentality, excluding the Armed Forces, to remove, change the location of, obstruct, willfully damage, make fast to, or interfere with any aid to navigation established, installed, or operated, or maintained by the Coast Guard pursuant to section 81 of this title, or with any aid to navigation lawfully maintained under authority granted by the Coast Guard pursuant to section 83 of this title, or to anchor any vessel to any of the navigable waters of the United States so as to obstruct or interfere with range lights maintained therein. Whoever violates the provisions of this section shall be guilty of a misdemeanor and shall be fined not more than $500 for each offense. Each day during which such violation shall continue shall be considered as a new offense.

Evidence of violations of this type is not always as readily obtainable nor as clear cut as in the instant case. The after effects are very evident however—damaged and/or misplaced aids to navigation and considerable time and money spent repairing and resetting them. These aids have only one purpose—that which their names imply—making water traffic safe. They are not designed to be sea-going hitching posts.

In order that there be no misconception as to the statutory penalities which may result from misuse of buoys and other aids to navigation, Part 70 of Title 33 of the Code of Federal Regulations is quoted below, as it sums up the statutory penalties:

PART 70—INTERFERENCE WITH OR DAMAGE TO AIDS TO NAVIGATION

SUBPART 70.01—INTERFERENCE WITH AIDS TO NAVIGATION

Sec.

SUBPART 70.05—COLLISION WITH OR DAMAGE TO AIDS TO NAVIGATION

AUTHORITY: §§ 70.01–1 to 70.05–50 issued under sec. 1, 63 Stat. 503, as amended; 14 U. S. C. 92. Interpret or apply secs. 14, 16, 30, 30 Stat. 1152, 1153; 33 U. S. C. 408, 411, 412. Other statutory provisions interpreted or applied are cited to text in parentheses.

SUBPART 70.01—INTERFERENCE WITH AIDS TO NAVIGATION

§ 70.01–1 *General provisions.* No person, excluding the armed forces, shall obstruct or interfere with any aid to navigation established and maintained by the Coast Guard, or any private aid to navigation established and maintained in accordance with Parts 64, 66, or 68 of this subchapter.

(Sec. 1, 63 Stat. 500; 14 U. S. C. 84)

§ 70.01–5 *Penalty.* Any person violating the provisions of this section shall be deemed guilty of a misdemeanor and be subject to a fine not exceeding the sum of $500 for each offense, and each day during which such violation shall continue shall be considered a new offense.

(Sec. 1, 63 Stat. 500; 14 U. S. C. 84)

SUBPART 70.05—COLLISION WITH OR DAMAGE TO AIDS TO NAVIGATION

§ 70.05–1 *General provisions.* No person shall take possession of or make use of for any purpose, or build upon, alter, deface, destroy, move, injure, obstruct by fastening vessels thereto or otherwise, or in any manner whatever impair the usefulness of any aid to navigation established and maintained by the United States.

§ 70.05–5 *Penalty.* Every person and every corporation that shall violate, or that shall knowingly aid, abet, authorize, or instigate a violation of the provisions of § 70.05–1 shall be guilty of a misdemeanor, and on conviction there-

of shall be punished by a fine not exceeding $2,500 or less than $500, or by imprisonment (in case of a natural person) for not less than thirty days nor more than one year, or both, one half of such fine to be paid to the person or persons giving information which shall lead to conviction.

§ 70.05–10 *Revocation of license.* Every master, pilot, and engineer, or person or persons acting in such capacity, respectively, on board any boat or vessel who shall willfully injure or destroy an aid to navigation established and maintained by the United States shall be deemed guilty of violating the provisions of § 70.05–1 and shall upon conviction be punished as provided in § 70.05–5 and shall also have his license revoked or suspended for a term to be fixed by the judge before whom tried and convicted.

§ 70.05–15 *Liability for damages.* Any boat, vessel, scow, raft or other craft used or employed in violating any of the provisions of § 70.05–1 shall be liable for the pecuniary penalties specified in § 70.05–5, and in addition thereto for the amount of damage done by said boat, vessel, scow, raft or other craft, which may be proceeded against summarily by way of liable in any district court of the United States having jurisdiction thereof.

§ 70.05–20 *Report required.* Whenever any vessel collides with an aid to navigation established and maintained by the United States or any private aid to navigation established or maintained in accordance with Parts 64, 66, or 68 of this subchapter, or is connected with any such collision, it shall he the duty of the person in charge of such vessel to report the accident to the nearest Officer in Charge, Marine Inspection, in accordance with 46 CFR 136.05.

§ 70.05–25 *Deposit of payment in special account.* Whenever an aid to navigation or other property belonging to the Coast Guard is damaged or destroyed by a private person, and such person shall pay to the satisfaction of the Coast Guard the cost of repair or replacement of such property, the Coast Guard will accept and deposit such payments in a special account in the Treasury for payment therefrom of the cost of repairing or replacing the damaged property. Funds collected in excess of the cost to make repairs or replacements shall be refunded.

(Sec. 1, 63 Stat. 547; 14 U. S. C. 642)

§ 70.05–30 *Claim for damage or destruction.* When an aid to navigation, fixed or floating, is damaged and can be repaired or is destroyed, claim shall be made upon the party responsible for the damage or destruction for the full cost to the government to make repairs to the aid or for the cost to make replacement with an identical aid, whichever is applicable, and for all other costs to the government incident to and directly caused by reason of the damage or destruction. Claim for cost of replacement with an identical aid shall be made regardless of whether the destroyed aid is actually replaced and whether or not the replacement, if made, is with an identical or different kind of aid located at the same or different location as that of the aid being replaced.

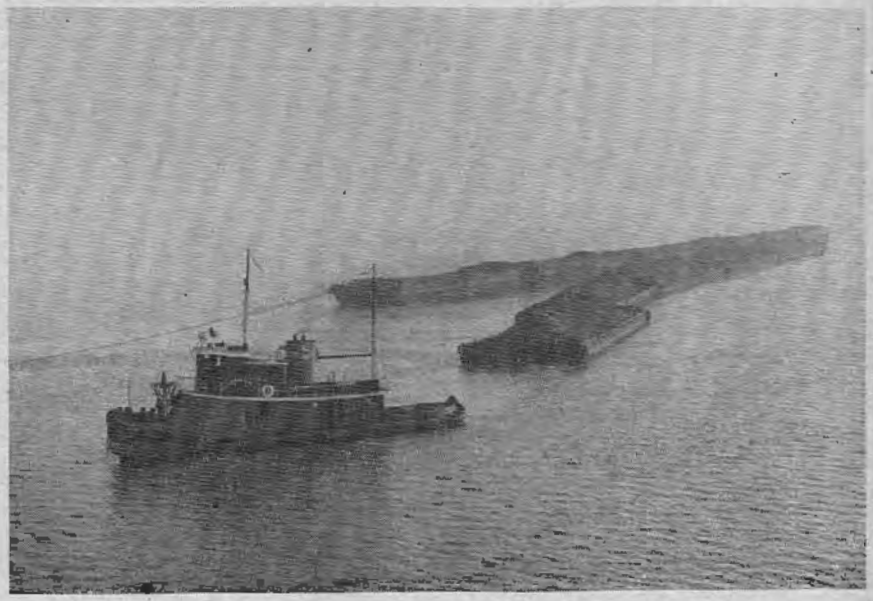
§ 70.05–35 *Computation of repair costs.* The cost to make repairs shall be the cost to restore the damaged aid to operating condition. This shall include the cost of all repair work, material and equipment involved whether furnished by private contract or by the government. Incidental expenses, covered in § 70.05–45, when not included in this heading shall be added to and made part of the total claim.

§ 70.05–40 *Computation of replacement costs.* The cost to make replacement shall be the present day cost to reproduce an aid identical with that which was destroyed. Incidental expenses covered in § 70.05–45 when not included in this heading shall be added to and made part of the total claim.

§ 70.05–45 *Incidental expenses.* Expenses incident to and directly caused by reason of the damage or destruction shall include costs of the following whichever are applicable. These expenses are in addition to those of § 70.05–35 or § 70.05–40 and shall be included as part of the total claim on the responsible party.

(a) Cost of placing a replacement aid in operation on station, whether as a

(Continued on page 99)



Side Lights on the Rules

In the last issue of the Proceedings, we compared rule 9, International Rules, with the equivalent provisions in the rules applicable to Inland Waters, the Western Rivers, and the Great Lakes. In this article, the ninth in the Side Lights on the Rules series, we shall continue the comparison of the International Rules with the local rules for vessels in United States waters.

It will be recalled that rule 10, International Rules, which prescribes a fixed 12 point white stern light for all vessels under way, was previously discussed along with rules 2 and 7, International Rules, prescribing running lights for power-driven vessels and boats on the high seas. We may therefore proceed with the comparison of rule 11, International Rules, which prescribes lights and shapes for vessels and seaplanes either at anchor or aground in waters subject to these rules.

The first part of this rule states that:

Rule 11 (a) A vessel under 150 feet in length, when at anchor, shall carry in the forepart of the vessel, where it can best be seen, a white light in a lantern so constructed as to show a clear, uniform, and unbroken light visible all round the horizon at a distance of at least 2 miles.

Essentially the same requirements are found in Article 11, Inland Rules, but the following differences should be noted:

(1) The anchor light must not be over 20 feet above the hull.

(2) The minimum visibility of the anchor light is set at one mile.

(3) Vessels 65 feet or less in length need not carry the anchor light while in a special anchorage area.

Essentially the same requirements are also found in rule 13 (a), Western Rivers Rules. Here, however, there are but two differences to be noted:

(1) The rule does not apply to vessels that are also moored to the bank or wharf.

(2) Vessels 65 feet or less in length need not carry the anchor light while in a special anchorage area.

In a like manner, rule 9, Great Lakes Rules, contains essentially the same requirements. Differences to be noted here are as follows:

(1) The anchor light must not be over 20 feet above the hull.

(2) The minimum visibility of the anchor light is set at one mile.

(3) Vessels 65 feet or less in length need not carry the anchor light when in a special anchorage area.

Rule 11, International Rules, then provides:

(b) A vessel of 150 feet or upwards in length, when at anchor, shall carry in the forepart of the vessel, at a height of not less than 20 feet above the hull, one such light, and at or near the stern of the vessel and at such a height that it shall be not less than 15 feet lower than the forward light, another such light. Both these lights shall be visible all round the horizon at a distance of at least 3 miles.

Aside from the following differences, article 11, Inland Rules, contains similar requirements:

(1) The forward anchor light must be at least 20 feet, but cannot be more than 40 feet, above the hull.

(2) The minimum visibility of the 2 anchor lights is set at 1 mile.

Similarly, aside from the following differences, rule 13 (b), Western Rivers Rules, contains the same requirements:

(1) The rule does not apply to vessels also moored to the bank or a wharf.

(2) The minimum visibility of the 2 anchor lights is set at 2 miles.

(3) The only height requirement is that the after anchor light be not less than 15 feet lower than the forward anchor light.

In waters subject to Great Lakes Rules, however, vessels 150 feet or more in length are required by rule 9, Great Lakes Rules, to carry the following lights when at anchor:

(1) In the forepart of the vessel, 2 all around white lights, visible at least 1 mile, 20 to 40 feet above the hull, placed athwartships, not less than 10 feet apart horizontally.

(2) At or near the stern, 2 similar lights similarly arranged, at least 15 feet lower than the forward lights.

(3) Also, at least 1 white deck light in every interval of 100 feet along the deck, measured from the forward lights, at a height of at least 2 feet above the deck.

In its next provision rule 11, International Rules, temporarily departs from the subject of anchor lights to prescribe a daytime anchor ball:

(c) Between sunrise and sunset every vessel when at anchor shall carry in the forepart of the vessel, where it can best be seen, one black ball not less than 2 feet in diameter.

A similar anchor ball is prescribed for vessels over 65 feet in length moored or anchored in waters subject to Inland, Western Rivers, or Great Lakes Rules, and must be displayed in the same manner. This requirement is found, respectively, in:

(1) Section 80.25, Pilot Rules for Inland Waters.

(2) Section 201.9, Corps of Engineers Regulations, supplementing the Pilot Rules for Western Rivers.

(3) Rule 30 (a), Great Lakes Rules.

Rule 11, International Rules, provides next that:

(d) 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 at anchor, shall carry the lights or shapes prescribed in rule 4 (c) in addition to those prescribed in the appropriate preceding sections of this rule.

In this instance, the similarity between rule 11, International Rules, and the rules applicable to Inland Waters, Western Rivers, and Great Lakes breaks down completely. In these waters cable layers, buoy tenders, survey vessels, and other vessels engaged in underwater operations at anchor face specific lighting requirments far different from those prescribed by rule 11 (d), International Rules.

For the applicable requirements, it is necessary to turn to:

(1) Sections 80.19, 80.20, 80.22, 80.23, 80.24, 80.33, and 80.33a, Pilot Rules for Inland Waters.

(2) Section 95.26, Pilot Rules for the Western Rivers.

(3) Section 90.15a, Pilot Rules for the Great Lakes.

(4) Sections 201.3, 201.4, 201.6, 201.7, and 201.8 of the Corps of

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

Engineers Regulations, supplementing the Pilot Rules for the Western Rivers and the Great Lakes.

These sections provide:

80.19 (201.3) Steam vessels, derrick boats, lighters, or other types of vessels made fast alongside a wreck, or moored over a wreck which is on the bottom or partly submerged, or which may be drifting.—(a) Steam vessels, derrick boats, lighters, or other types of vessels made fast alongside a wreck, or moored over a wreck which is on the bottom or partly submerged, or which may be drifting, shall display by day two shapes of the same character and dimensions and displayed in the same manner as required by § 80.18 (a), except that both shapes shall be painted a solid bright red, but where more than one vessel is working under the above conditions, the shapes need be displayed only from one vessel on each side of the wreck from which they can best be seen from all directions.

(b) By night this situation shall be indicated by the display of a white light from the bow and stern of each outside vessel or lighter not less than 6 feet above the deck, and in addition thereto there shall be displayed in a position where they can best be seen from all directions two red lights carried in a vertical line not less than 3 feet nor more than 6 feet apart, and not less than 15 feet above the deck.

80.20 (201.4) Dredges held in stationary position by moorings or spuds.—(a) Dredges which are held in stationary position by moorings or spuds shall display by day two red balls not less than 2 feet in diameter and carried in a vertical line not less than 3 feet nor more than 6 feet apart, and at least 15 feet above the deckhouse and in such a position where they can best be seen from all directions.

(b) By night they shall display a white light at each corner, uot less than 6 feet above the deck, and in addition thereto there shall be displayed in a position where they can best be seen from all directious two red lights carried in a vertical line not less than 3 feet nor more than 6 feet apart, and not less than 15 feet above the deck. When scows are moored alongside a dredge in the foregoing situation they shall display a white light on each outboard corner, not less than 6 feet above the deck.

80.22 (201.6) Vessels moored or anchored and engaged in laying cables or pipe, submarine construction, excavation, mat sinking, bank grading, dike construction, revetment, or other bank protection operation.—(a) Vessels which are moored or anchored and engaged in laying cables or pipe, submarine construction, excavation, mat sinking, bank grading, dike construction, revetment, or other bank protection operations, shall display by day, not less than 15 feet above the deck, where they can best be seen from all directions, two balls not less than 2 feet in diameter, in a vertical line not less than 3 feet nor more than 6 feet apart, the upper ball to be painted in alternate black and white vertical stripes 6 inches wide, and the lower ball to be painted a solid bright red.

(b) By night they shall display three red lights, carried in a vertical line not less than 3 feet nor more than 6 feet apart, in a position where they can best be seen from all directions, with the lowermost light not less than 15 feet above the deck.

(c) Where a stringout of moored vessels or barges is engaged in the operations, three red lights carried as prescribed in paragraph (b) of this section shall be displayed at the channelward end of the stringout. Where the stringout crosses the navigable channel and is to be opened for the passage of vessels, the three red lights shall be displayed at each side of the opening instead of at the outer end of the stringout. There shall also be displayed upon such stringout one horizontal row of amber lights not less than 6 feet above the deck, or above the deck house where the craft carries a deck house, in a position where they can best be seen from all directions, spaced not more than 50 feet apart so as to mark distinctly the entire length and course of the stringout.

80.23 (201.7) Lights to be displayed on pipelines.—Pipelines attached to dredges, and either floating or supported on trestles, shall display by night one row of amber lights not less than 8 feet nor more than 12 feet above the water, about equally spaced and in such number as to mark distinctly the entire length and course of the line, the intervals between lights where the line crosses navigable channels to be not more than 30 feet. There shall also be displayed on the shore or discharge end of the line two red lights, 3 feet apart, in a vertical line with the lower light at least 8 feet above the water, and if the line is to be opened at night for the passage of vessels, a similar arrangement of lights shall be displayed on each side of the opening.

80.24 (201.8) Lights generally.—(a) All the lights required by §§ 80.18 to 80.23, inclusive, except as provided in §§ 80.18 (b) and 80.21 (b), shall be of such character as to be visible on a dark night with a clear atmosphere for a distance of at least 2 miles.

(b) The lights required by § 80.18 (b) to be of the same character as the regular towing lights and the lights required by § 80.21 (b) to be of the same character as the masthead light shall be of such character as to be visible on a dark night with a clear atmosphere for a distance of at least 5 miles.

(c) All floodlights or headlights which may interfere with the proper navigation of an approaching vessel shall be so shielded that the lights will not blind the pilot of such vessel.

80.33 Special signals for vessels employed in hydrographic surveying.—By day a surveying vessel of the Coast and Geodetic Survey, underway and employed in hydrographic surveying, may carry in a vertical line, one over the other not less than 6 feet apart where they can best be seen, three shapes not less than 2 feet in diameter of which the highest and lowest shall be globular in shape and green in color and the middle one diamond in shape and white.

(a) Vessels of the Coast and Geodetic Survey shall carry the above-prescribed marks while actually engaged in hydrographic surveying and underway, including drag work. Launches and other boats shall carry the prescribed marks when necessary.

(b) It must be distinctly understood that these special signals serve only to indicate the nature of the work upon which the vessel is engaged and in no way give the surveying vessel the right-of-way over other vessels or obviate the necessity for a strict observance of the rules for preventing collisions of vessels.

(c) By night a surveying vessel of the Coast and Geodetic Survey, underway and employed in hydrographic surveying, shall carry the regular lights prescribed by the rules of the road.

(d) A vessel of the Coast and Geodetic Survey, when at anchor in a fairway on surveying operations, shall display from the mast during the daytime two black balls in a vertical line and 6 feet apart. At night two red lights shall be displayed in the same manner. In the case of a small vessel the distance between the balls and between the lights may be reduced to 3 feet if necessary.

(e) Such vessels, when at anchor in a fairway on surveying operations, shall have at hand and show, if necessary, in order to attract attention, a flareup light in addition to the lights which are, by this section, required to be carried.

80.33a (90.15a) (95.26) Warning signals for Coast Guard vessels while handling or servicing aids to navigation. (a) Coast Guard vessels while engaged in handling or servicing an aid to uavigation during the daytime may display from the yard two orange and white vertically striped balls in a vertical line not less than 3 feet nor more than 6 feet apart, and during the nighttime may display, in a position where they may best be seen, two red lights in a vertical line not less than three feet nor more than 6 feet apart.

(b) Vessels, with or without tows, passing Coast Guard vessels displaying this signal, shall reduce their speed sufficiently to insure the safety of both vessels, and when passing within 200 feet of the Coast Guard vessel displaying this signal, their speed shall not exceed 5 miles per hour.

(Continued on page 98)

NUMBERED AND UNDOCUMENTED VESSELS

The table below gives the cumulative total of undocumented vessels numbered under the provisions of the act of June 7, 1918, as amended (46 U. S. C. 288), in each Coast Guard district by Customs ports for the quarter ending 31 March 1954. Generally speaking, undocumented vessels are those machinery-propelled vessels of less than 5 net tons engaged in trade which by reason of tonnage are exempt from documentation. They also include all other vessels propelled in whole or in part by machinery which have not been issued marine documents by the Customs, owned in the United States and found on the navigable waters thereof.

Coast guard district	Customs port	Total
1 (Boston)	(4) Boston	16,694
	(1) Portland, Maine	11,670
	(2) St. Albans	1,292
	(6) Providence	4,952
	Total	34,608
2 (St. Louis)	(45) St. Louis	8,856
	(12) Pittsburgh	1,868
	(34) Pembina	65
	(35) Minneapolis	2,230
	(40) Indianapolis	3,617
	(42) Louisville	2,806
	(43) Memphis (part)	5,339
	(46) Omaha (part)	278
	(47) Denver	14
	Total	25,073
3 (New York)	(10) New York	44,774
	(6) Bridgeport	8,820
	(11) Philadelphia	17,362
	Total	70,956
5 (Norfolk)	(14) Norfolk	15,520
	(13) Baltimore	22,402
	(15) Wilmington, N. C	7,521
	Total	45,443
7 (Miami)	(18) Tampa (part)	23,407
	(16) Charleston	1,581
	(17) Savannah	2,914
	(49) San Juan	389
	(51) St. Thomas	94
	Total	28,385
8 (New Orleans)	(20) New Orleans	19,538
	(18) Tampa (part)	572
	(19) Mobile	7,215
	(21) Port Arthur	4,181
	(22) Galveston	7,621
	(23) Laredo	1,303
	(24) El Paso	10
	(43) Memphis (part)	65
	Total	40,505
9 (Cleveland)	(41) Cleveland	7,273
	(7) Ogdensburg	2,445
	(8) Rochester	4,878
	(9) Buffalo	4,366
	(36) Duluth	2,676
	(37) Milwaukee	3,742
	(38) Detroit	17,988
	(39) Chicago	6,117
	Total	49,485
11 (Long Beach)	(27) Los Angeles	9,494
	(25) San Diego	1,815
	(26) Nogales	89
	Total	11,398
12 (San Francisco)	(28) San Francisco	12,352
	Total	12,352
13 (Seattle)	(30) Seattle	17,307
	(29) Portland, Oreg	8,417
	(33) Great Falls	463
	Total	26,187
14 (Honolulu)	(32) Honolulu	2,933
	Total	2,933
17 (Juneau)	(31) Juneau	7,353
	Total	7,353
Grand total		354,678

SIDE LIGHTS ON THE RULES

(Continued from page 97)

In its next provision, Rule 11, International Rules, deals with vessels aground:

(e) A vessel aground shall carry by night the light or lights prescribed in sections (a) or (b) and the two red lights prescribed in rule 4 (a). By day she shall carry, where they can best be seen, three black balls, each not less than 2 feet in diameter, placed in a vertical line one over the other, not less than 6 feet apart.

The Rules applicable to Inland Waters and the Western Rivers do not provide for vessels aground. Rule 30 (c), Great Lakes Rules, which does provide for vessels aground, is similar to rule 11 (e), International Rules, but contains the following differences:

(1) The vertical separation of the lights and shapes need not be more than 3 feet.

(2) If the vessel aground is 150 feet or more in length, her anchor lights must be as follows:

(a) Two all-around white lights, visible at least 1 mile, 20 to 40 feet above the hull, placed athwartships, not less than 10 feet apart horizontally, in the forepart of the vessel.

(b) At or near the stern, two similar lights similarly arranged, at least 15 feet lower than the forward lights.

(c) In every interval of 100 feet along the deck, measured from the forward lights, one white deck light at a height of at least 2 feet above the deck.

The remainder of rule 11, International Rules, provides for seaplanes at anchor or aground, as follows:

(f) A seaplane on the water under 150 feet in length, when at anchor, shall carry, where it can best be seen, a white light, visible all round the horizon at a distance of at least 2 miles.

(g) A seaplane on the water 150 feet or upwards in length, when at anchor, shall carry, where they can best be seen, a white light forward and a white light aft, both lights visible all round the horizon at a distance of at least 3 miles; and, in addition, if the seaplane is more than 150 feet in span, a white light on each side to indicate the maximum span, and visible, so far as practicable, all round the horizon at a distance of 1 mile.

(h) A seaplane aground shall carry an anchor light or lights as prescribed in sections (f) and (g), and in addition may carry two red lights in a vertical line, at least 3 feet apart, so placed as to be visible all round the horizon.

As in other respects, where seaplanes are concerned, here too, there are no equivalent provisions in the rules applicable to Inland Waters, Western Rivers, or the Great Lakes.

Thus, it can be seen that here is another instance in which there are great differences in the rules.

CAUGHT IN THE ACT

(*Continued from page 95*)

permanent substitute or to serve as a temporary or auxiliary aid for that which was damaged or destroyed.

(b) Cost of removing a replacement aid which was placed in operation on station to serve as a temporary or auxiliary aid for that which was damaged or destroyed.

(c) Cost of temporary or auxiliary aid for the period of time actually devoted to making repairs to damage or actually devoted to reconstruction.

(d) Cost of searching for, recovering and removing or attempting to recover and remove the damaged or destroyed aid or any of its component parts which may require recovery and removal.

(e) Value of time consumed in work, travel and services of government personnel and vessels which are furnished by reason of and directly attributed to the damage or destruction: *Provided*, That no charge for Coast Guard vessels and crew shall be made for time of travel of Coast Guard vessels and personnel to and from the site and laytime en route when such travel is part of regularly scheduled Coast Guard duties.

(f) Full cost to the government for the value of all aids to navigation equipment and material lost in connection with the placing, maintaining and removing a temporary or auxiliary aid utilized because of the damage or destruction.

§ 70.05–50 *Charges for performance of work by Coast Guard.* Charges for the cost of aids to navigation equipment and for services of Coast Guard tenders shall be determined in accordance with Part 74 of this subchapter.

PROPELLERS

INVESTIGATION OF PROPELLER HUB-SEALING ARRANGEMENTS

The increase in failure of propeller shafts in United States ocean vessels subsequent to World War II has been a matter of concern to the operators, designers and classification societies.

The ships' machinery committee of the Society of Naval Architects and Marine Engineers has therefore established a project to investigate the efficiency of propeller hub-sealing arrangements now used to prevent the ingress of salt water and thus eliminate its corrosive effect at highly stressed points in the propeller shaft assembly. The compilation of statistical data from a standard report form is being arranged through the cooperation of ship repair yards and operating companies who are interested in the project. Ship's officers and shore personnel can be of great assistance in furnishing information for the report and their help in this connection will be appreciated by the project panel.

Your Fact Forum

Q. How would you determine the minimum diameter sheave block which you should use with wire rope?

A. Coast Guard regulations state that the diameter of sheaves at the base of the groove must equal at least 12 times the diameter of the wire rope, when such sheaves are used for boat falls made of wire rope.

Usual practice on wire rope subject to heavy use on ships such as cargo falls is to use about 15 times the wire rope diameter as the minimum sheave diameter.

Manufacturers in general urge larger diameters, and the size of the sheave should consider not only the diameter of the wire but also its flexibility, the less flexible grades demanding larger sheave diameters. Another factor to consider is the angular change in direction which the block affords. Where the angle is less than 180°, smaller size sheaves may be employed.

Q. What precautions would you take in handling boats equipped with releasing gear which operates under tension (Rottmer gear)?

A. See that the required marking "Danger—Lever Releases Hooks" is legible and understood by all hands involved in the operation.

When men are performing any maintenance or repair work in the boats, where the releasing gear might be accidentally handled, provide additional lashings to the breasthooks or bow and stern shackles that are independent of the releasing hooks.

Q. List the probable causes which would result in lowering the water temperature in the de-aerating feed water.

(1) A drop in the exhaust steam pressure.

(2) The addition of large quantities of extra feed.

(3) A tube failure in the condenser.

(4) Excessively raising the level of the water in the de-aerating feed heater.

(5) Excessive cooling of the condensate in the main condenser.

Q. What care should be given kapok life preservers?

A. Kapok is highly flammable and life preservers containing this material should not be stowed near an open flame or where cigarettes that are carelessly handled may ignite them.

Kapok preservers should not be used as pillows or foot rests as compression and matting of the material reduces its buoyancy.

Holes and tears in the fabric envelope of a kapok jacket seriously impair its usefulness for sustained immersion and such jackets should be replaced. Oil or paint soaked jackets should also be replaced.

Q. What defects make cork life preservers unfit for service?

A. (1) Missing, torn, or broken straps.

(2) Torn or ripped seams, or holes in the fabric covering.

(3) A broken or granulated condition of the cork block inserts.

Q. What is the minimum length of lifeboat falls?

A. The falls should be of such length that the lifeboat may be lowered to the water with the vessel at its lightest draft and listed 15°.

Q. May repairs or alterations be made to lifeboats aboard ocean passenger vessels? Explain.

A. No repairs or alterations, except in an emergency, are allowed to be made to any lifesaving or fire detecting or extinguishing equipment without advance notice to the Officer in Charge, Marine Inspection. When emergency repairs or alterations have been made, notice must be given to the Officer in Charge, Marine Inspection, as soon as practical.

Q. A lifeboat is lowered by a wire fall with two parts at the moving block. The weight of the boat and equipment is 4 tons and the capacity of the boat is 80 persons. Using the following factors compute the required breaking strength of the fall:

(1) Weight of each person under Coast Guard regulations is considered to be 165 pounds.

(2) A factor of safety of six is required for lifeboat falls.

(3) There are two sheaves, upper and lower, and friction loss is regarded as 10 percent at each sheave.

A. The required breaking strength of the fall is approximately 18 tons.

Q. What care should be given sails and other canvas aboard ship?

A. Sails and other canvas should be aired in fine weather to prevent mildew and rot.

Q. How many tarpaulins are required for hatches of a merchant vessel in ocean service?

A. Two.

Q. How is the wear on a shot of chain cable determined?

A. By measuring the sectional area of the links at the most worn part.

LESSONS FROM CASUALTIES

DANGER—MAN IN DRUM!

A fireman serving on a freighter equipped with sectional header water tube boilers suffered painful burns when a puff of live steam accidentally entered a steam drum in which the fireman was working. The steam followed a path from another boiler which was steaming on the line through at least three valves which should have been closed but were not, due to carelessness and neglect.

In the process of preparing the vessel to be laid up for a period of months the port boiler was being cleaned to prepare for annual inspection. It was taken off the line and allowed to cool for 3 days. The boiler was secured; the division valve between the blow-down lines from both boilers was closed; signs were posted on feed steam valves; blind joints were placed in the main and auxiliary steam lines and the principal valves closed on the boiler. Under the supervision of the first assistant engineer, the boiler was dumped and the manhole cover removed on the steam drum. The first assistant entered the steam drum with an extension light and determined that the drum should be hosed out with fresh water to remove mud and sediment. This job was assigned to the fireman who was the smallest man in the work group.

It was a matter of established routine on this vessel for the fireman on watch to give the bottom blow on the boiler or boilers on the line a puff on the blow-down valves, once each watch. The fireman on watch at the time of this accident was working with a second assistant on the water columns and was not directly concerned with the group working at the steam drum. Consequently he had no knowledge that there was a man in the steam drum. In a routine manner he gave the bottom blow a short puff. The boiler on the line was carrying about 210 pounds of steam. This blow-down went overboard on the starboard side but also backed up, past the division valve which was now open, the Okady quick-opening valve which was somehow cracked open slightly, the globe valve at the drum which was open, and into the steam drum of the port boiler through the scum pan. No one knew how the division valve or Okady valve had become opened. The globe valve at the drum was almost never closed on this vessel. There were no check valves installed in these lines.

At this moment the small fireman was inside the drum beyond the scum pan and thus trapped with no escape except through the incoming steam and hot water. In desperation he sheltered himself as best he could, which was not very well, due to the cramped position, until he was able to crawl out of the drum when the hot geyser subsided. He was severely and painfully scalded on his body, particularly on his face, left side and arm. The engineering personnel rendered such first aid as they were able and took him to the hospital where he was given inpatient treatment for 23 days.

This painful injury was caused by the neglect to carry out precautions required by good engineering principles before allowing a man to work inside a boiler which is connected in any way with a steaming boiler. Three valves which were open or partially opened should have been closed. All licensed engineers are required to demonstrate their knowledge of such safety precautions in examinations given as a prerequisite to the issuance of their licenses. Before a man is allowed to work in such a boiler all steam connections should be securely closed and lashed, safety valves checked to see that they are seated, a sign hung near steam valves on the dead boiler that men are working inside, the boiler cool enough to enter safely, and burners or other sources of combustion completely removed.

The first assistant and second assistant engineers in this case both received official admonitions for negligence in failing to ascertain that all steam valves were securely closed before allowing a man to enter the steam drum.

In the above casualty the division valve in the cross line to the skin valves should have been closed and lashed. The Okady quick-acting valve should have been closed and lashed. The surface blow globe valve right at the steam drum should have been closed and lashed. Article 55.10–15 (a) of the Marine Engineering Regulations requires that, where blowoff valves are connected to a common discharge from two or more boilers, a nonreturn or check valve shall be provided in the line from each boiler to prevent accidental blowback in the event that the boiler blowoff valve is left open. While this requirement applies to vessels the construction of which or the alteration of which was contracted for on or after 19 November 1952 and does not apply to the vessel involved in this casualty, the principle of safety in this requirement is equally applicable to all marine steam installations, and would have prevented this injury if such check valves had been installed.

The installation of such nonreturn or check valves where not now so equipped is highly recommended. The regulations require that, when vessels built prior to 19 November 1952 are reboilered, the blowoff valve and fittings shall be renewed in accordance with requirements in existence at the time of the reboilering. Thus a nonreturn valve must be installed under these circumstances. However, in accomplishing any repairs or alterations to the boiler blowoff system, the installations of nonreturn or check valves is urgently recommended. The correction of a situation which may involve painful or fatal injury to engineering personnel is worthy of very serious consideration by marine engineers and marine superintendents.

COLLARED

There is one thing about accidents on shipboard. There is always something new and different. Just when you get to believe that you've heard of every possible "type," something always happens.

The something in this case was on one of our South African vessels. She was making port and the deck crew were rigging her booms. An A. B. loosened the boom collar, preparatory to topping the boom, and stayed rather close to his work.

The bosun took up the slack in the runner without further ado, and stopped when a howl of protest from the A. B. informed him that something might be wrong. It was. The seaman's neck was neatly collared between runner and boom, and the seaman didn't like it. Too confining, we believe.

A doctor was called after the man was extricated, and he treated the slight "rope burn" caused by the runner. This is where we believe the ship erred. A doctor should have been called, all right, but why have him treat the A. B.'s neck?

We think he should have examined the bosun's head.

—*Farrell Lines Safety News*

FUNEREAL FUMES

Two tragic cases of death due to asphyxiation by toxic fumes and lack of oxygen on two separate tank vessels have recently been reported. Death in each case was facilitated by ignorance, carelessness, misconception, and a complete disregard of basic rules of safety and common sense. The scene of the fatality in each case was the after pumproom of a T–2 tanker, on one of which the cargo being pumped was jet fuel and on the other, grade B gasoline. In each case the man who died was working in intense fumes without any breathing apparatus.

On the first tanker, discharging jet fuel, all three cargo pumps were in operation. The cargo pump shaft glands had been slightly slackened at the beginning of the operation to allow for normal expansion as they heated up, and a slight trickle of cargo from these glands was noticed, but considered normal. The pumproom ventilation system was in operation and both doors to the main deck were open, but the pumproom skylight was closed. After 2 or 3 hours of operation, the vessel's chief pumpman noticed that gland leakage was increasing, and he attempted to tighten the glands and reduce leakage, but was unsuccessful. Upon leaving the pumproom, meeting the second pumpman on deck and talking over the situation with him, both men decided to return to the pumps and again attempt to stop the leakage. Together they descended into the pumproom without stopping the cargo pumps and without notifying any of the vessel's officers. While the chief pumpman was rigging a chainfall on an upper level, the second pumpman went below and worked on the pump glands. Neither man was wearing a breathing apparatus. In a few minutes the chief pumpman descended to the pumps and found the second pumpman on the verge of collapse. Within seconds the second pumpman fell, his body becoming lodged between piping and a bulkhead. The chief pumpman hurried out on deck and called for help.

Standing on deck amidships, the second mate heard the call for help and was immediately apprised of the situation. He sent for the master and instructed a seaman to don the fresh air breathing apparatus. The chief pumpman, second mate, and seaman went below to attempt to remove the inert man. Since the unconscious victim weighed about 200 pounds, and was lodged in an awkward position, it was extremely difficult to move him. The rescue crew finally secured a lifesaving belt on the man and, with assistance from crew members above, pulled him up on deck. He was found to have been wearing a paint sprayer's mask. The local fire department had arrived in the meantime and immediately attemped to revive the victim with an inhalator. He was carried from the vessel and promptly removed to a hospital where oxygen was administered for one-half hour, but he was pronounced dead at that time. The second mate and chief pumpman were both nearly overcome, but neither suffered ill effects other than nausea. The seaman who had been wearing the fresh air breathing apparatus suffered no effects at all.

About 2 hours later, examination of the pumproom disclosed 3 feet of cargo in the bilges and the pump glands still leaking badly. All pumping was then ordered stopped until the cargo in the bilges was removed, the compartment gas freed, and all cargo pump shaft glands repacked. The venting system was found to be in good condition.

On the second tanker, gasoline was being discharged with all cargo pumps operating. About 1 hour after discharge started, the second assistant engineer descended into the pumproom to check the pumps. He found No. 1 pump to be leaking badly and returned to the deck to notify the first assistant and the chief engineer. The second assistant then returned to the pumproom and descended, followed by the chief engineer and the chief mate. The latter two soon came out as they were becoming affected by the heavy concentration of gasoline fumes. They told the second mate to watch the engineer in the pumproom below. About 20 minutes later the second mate saw the engineer below collapse on the floor plates, and he immediately sent for the fresh air breathing apparatus The chief engineer, chief mate, and second mate descended into the pumproom and attempted to carry out the unconscious man. They were joined by the first assistant. Due to the weight of the overcome man and the growing effects of the fumes on the rescue party, they could not remove the victim and they all climbed out on deck where the chief engineer blacked out.

Upon being notified of the casualty, the master immediately donned a fresh air breathing apparatus and descended into the pumproom where he attached a leather rescue harness to the unconscious man on the floor plates. After two attempts with the leather harness, which slipped badly on the sweaty body of the victim, he was hauled out on deck about 40 minutes after he had passed out. The master, while working in the pumproom, did not notice the figure of the first assistant, who by this time had collapsed. Emergency first aid treatment and oxygen was immediately given to the man who had been removed, by a local rescue squad. It was at about this point that the master was told by the chief mate, whose wits had been somewhat affected by his "gassing," that the first assistant was still in the lower pumproom. As the master was now nearly exhausted and the chief mate feeling better, the chief mate then donned the fresh air breathing apparatus and descended into the pumproom. He found the first assistant's body wedged between a heavy valve and a bulkhead in such a manner that he could not move him. Two seamen, both wearing breathing apparatus furnished by the local rescue squad, now went down into the pumproom, secured a line around the first assistant's body, and guided him as he was lifted out on deck, also about 40 minutes after he had been overcome. The first assistant's body was blue when removed from the pumproom and in spite of all efforts by the local rescue squad, he was soon pronounced dead by a doctor who had been summoned. The man who had been first overcome regained consciousness at the hospital and gradually recovered.

Only 12 days later under almost similar circumstances, a pumpman on the same vessel was overcome by fumes in the same pumproom. He had made several trips down into the after pumproom attempting to tighten the packing on No. 3 pump gland, not wearing a breathing apparatus or safety line, and with gasoline fumes present in strong concentrations. However, on this occasion a seaman posted to watch him detected his dilemma almost immediately. The same master went immediately to the pumproom and, disregarding his own safety instructions which he had promulgated aboard the ship, descended into the pumproom without a breathing apparatus or safety line. Fortunately the chief mate had put on a breathing apparatus and came down to help remove the overcome man. Between them the master and chief mate got a line on the pumpman and guided him as crew members hauled him out on deck, soon enough that the master was not overcome. The pumpman regained consciousness before he reached the hospital and recovered.

Upon investigation of the mechanical ventilation system for this pump-

(Continued on page 103)

APPENDIX

AMENDMENTS TO REGULATIONS

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

TITLE 46—SHIPPING

CHAPTER I—COAST GUARD, DEPARTMENT OF THE TREASURY

Subchapter N—Explosives or Other Dangerous Articles or Substances and Combustible Liquids on Board Vessels

[CGFR 54–3]

PART 146—TRANSPORTATION OR STOWAGE OF EXPLOSIVES OR OTHER DANGEROUS ARTICLES OF SUBSTANCES AND COMBUSTIBLE LIQUIDS ON BOARD VESSELS

SUBPART—DETAILED REGULATIONS GOVERNING THE TRANSPORTATION OF MILITARY EXPLOSIVES ON BOARD VESSELS

The purpose of the regulations in this part is to provide requirements governing the transportation of military explosives as cargo on board all domestic and foreign vessels subject to the provisions of R. S. 4472, as amended (46 U. S. C. 170), which apply in lieu of the requirements governing commercial shipments of explosives.

The changes in the detailed regulations governing the transportation of military explosives in this document are for the most part editorial in nature or relaxations found possible through experience and practice in the loading and handling of military explosives.

[Federal Register of Thursday, April 8, 1954.]

TITLE 33—NAVIGATION AND NAVIGABLE WATERS

CHAPTER I—COAST GUARD, DEPARTMENT OF THE TREASURY

SUBCHAPTER J—PROCUREMENT

[CGFR 54–15]

PART 116—PROCEDURES FOR PURCHASING

MISCELLANEOUS AMENDMENTS

The amendments to §§ 116.01–155, 116.01–156, 116.01–157, 116.01–158, and 116.01–160 are editorial in nature to clarify requirements of procedures and to revise the dates of applicable Federal Specifications to correspond with the latest editions prescribed by Title, 1, Regulations of the General Services Administration.

[Federal Register of Wednesday, April 14, 1954.]

ARTICLES OF SHIPS' STORES AND SUPPLIES

Articles of ships' stores and supplies certificated from 30 March 1954 to 28 April 1954, inclusive, for use on board vessels in accordance with the provisions of part 147 of the regulations governing Explosives or Other Dangerous Articles on Board Vessels are as follows:

CERTIFIED

Barash and Douglas, 236 Commercial Street, San Francisco 1, Calif. Certificate No. 344, dated 7 April 1954. "NC 311."

Virginia Smelting Co., West Norfolk, Va. Certificate No. 118 dated 20 April 1954. "LETHALAIRE R–11."

AFFIDAVIT

The following affidavit was accepted during the period from 15 March to 15 April 1954:

Warren Engineering Co., P. O. Box 8, Broadway, N. J., Valves and Fittings.

ACCEPTABLE COVERED STEEL ARC WELDING ELECTRODES

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

Distributor's and/or Manufacturer's	Brand	AWS class	Operating positions and electrode sizes, inches				
			5/32 and below	3/16	7/32	1/4	5/16
Southern Oxygen Co., 2900 Kenilworth Ave., Bladensburg, Md. (Alloy Rods Co., York, Pa., manufacturer).	Southern Type 6012	E6012	1	2	2	2	
General Electric Co., Schenectady 5, N. Y. (Arcrods Corp., manufacturer).	W-610A	E6010	1	1	2	2	
Air Reduction Sales Co., 42d St. opposite Grand Central, New York 17, N. Y.	Airco Easyare 12 (Contact Type)	E6012	2	2	2	2	
General Electric Co., Schenectady 5, N. Y.	Strikeasy 1 (Contact Type)	E6012	2	2	2	2	
Metal & Thermit Corp., 120 Broadway, New York 5, N. Y. (Arcrods Corp., manufacturer).	Murex Speedex 1 (Contact Type)	E6012	2	2	2	2	
General Electric Co., Schenectady 5, N. Y. (Arcrods Corp., manufacturer).	W-610A	E6010	1	1	2	2	
Babcock & Wilcox Co., The, 161 East 42d St., New York 17, N. Y.	B&W 615	E6015	1	2			
Lincoln Electric Co., 22801 St. Clair Ave., Cleveland 17, Ohio	Jetweld-2 (Contact)	E6020	2	2	2	2	
	Fleetweld 51	E6010	1	1			
	Jetweld-1 (Contact)	E6012	2	2	2	2	
Shober Sales, Inc., 900 West Weber Ave., Stockton, Calif.	Shober No. 32	E6010	1	1	2	2	
	Shober No. 33	E6011	1	1	2	2	
	Shober No. 34	E6012	1	1	2	2	
	Shober No. 35	E6013	1	1	2	2	
Pacific Welding Alloys Mfg. Co., 310 North Ave., Los Angeles 31, Calif. (Shober Sales, Inc., manufacturer).	Pacific E–6010	E6010	1	1	2	2	
	Pacific E–6011	E6011	1	1	2	2	
	Pacific E–6012	E6012	1	1	2	2	
	Pacific E–6013	E6013	1	1	2	2	

FUNEREAL FUMES

(*Continued from page 101*)

room, it was found that the exhaust fan was operating in the wrong direction so that both supply ventilator fans and exhaust ventilator fans were driving air into the pumproom and consequently there was little or no circulation. This difficulty was promptly remedied.

Thus the death of two professional seamen, both of whom were apparently well acquainted with the hazards of their trade, was brought about by a tragic procession of the type of errors and carelessness which don't give a second chance. In the first instance both men went below into a pumproom, where hazardous fumes were present and where there was an obvious deficiency of oxygen, without wearing a fresh air breathing apparatus or a safety line, and without posting a watchman on deck to check their safety. Common prudence should have dictated their notifying one of the ship's officers. The wearing of a paint sprayer's mask by the deceased was a pitiable error based on ignorance and misconception. Since such a mask serves no purpose whatsoever except to filter drops of liquids or particles of solids from the air being breathed, it was useless when worn in an atmosphere deficient in oxygen and was only a hindrance. In the second instance, disregard for ordinary safety practices when entering questionable spaces on a tanker was flagrant and widespread. Apparently a feeling or tendency persists amongst merchant marine officers, in spite of all warnings, lessons from the past, and ordinary prudence, that rescues of persons overcome in tanks or pumprooms can be accomplished by persons not wearing breathing apparatus if the rescuer is strong enough or quick enough. This feeling and the precipitate action to carry it out, is the normal human reaction when a fellow man is in desperate need, but it leads so often to further tragedy. It cannot be stated too often or too strongly that the fresh air breathing apparatus must be worn in attempting a rescue. The strongest, healthiest, quickest man in the world cannot be sure when he enters an atmosphere which has caused another man to be overcome that he will be able to function normally and rationally, especially while undertaking strenuous physical exertion. The odds are against him. Experience dictates clearly that the extra 2 or 3 minutes required to get the breathing apparatus out, put it on, and get it working may mean the difference between a successful rescue and a double death.

MERCHANT MARINE PERSONNEL STATISTICS

MERCHANT MARINE OFFICER LICENSES ISSUED

Quarter Ending 31 March 1954

DECK

Grade	Original	Renewal
Master:		
Ocean	77	613
Coastwise	5	33
Great Lakes	43	116
B. S. & L.	19	186
Rivers	11	80
Radio officer licenses issued	28	344
Chief Mate:		
Ocean	52	120
Coastwise		1
Mate:		
Great Lakes		
B. S. & L.	8	17
Rivers	10	47
Second Mate:		
Ocean	74	122
Coastwise		2
Third Mate:		
Ocean	61	95
Coastwise	1	
Pilots:		
Great Lakes	50	99
B. S. & L.	230	57
Rivers	60	35
Master: Uninspected vessels	8	14
Mate: Uninspected vessels	10	
Total	719	1,667
Grand total	2,386	

ENGINEER

Grade	Original	Renewal
STEAM		
Chief engineer:		
Unlimited	90	745
Limited	20	100
First assistant engineer:		
Unlimited	89	230
Limited	7	30
Second assistant engineer:		
Unlimited	144	331
Limited	2	7
Third assistant engineer:		
Unlimited	134	205
Limited	8	6
MOTOR		
Chief engineer:		
Unlimited	12	70
Limited	52	138
First assistant engineer:		
Unlimited	6	17
Limited	12	13
Second assistant engineer:		
Unlimited	4	7
Limited	3	3
Third assistant engineer:		
Unlimited	45	12
Limited	1	1
Chief Engineer: Uninspected vessels	5	
Assistant engineer: Uninspected vessels	6	1
Total	640	2,006
Grand total	2,646	

INVESTIGATING UNITS

Coast Guard merchant marine investigating units and merchant marine details investigated a total of 2,795 cases during the first quarter of 1954. From this number, hearings before examiners resulted involving 67 officers and 241 unlicensed men. In the case of officers, 3 licenses were revoked, 6 were suspended without probation, 8 were suspended with probation granted, 2 licenses were voluntarily surrendered, 7 cases were dismissed after hearing and 4 hearings were closed with admonitions. Of the unlicensed personnel, 29 documents were revoked, 21 were suspended without probation, 90 were suspended with probation granted, 73 documents were voluntarily surrendered, 16 hearings were closed with admonitions, and 29 cases were dismissed after hearing.

ORIGINAL SEAMEN'S DOCUMENTS ISSUED

Quarter Ending 31 March 1954

Type of document	Atlantic coast	Gulf coast	Pacific coast	Great Lakes and rivers	Total
Staff officer	56	11	32	3	102
Continuous discharge book	78	4	----	1	83
Merchant mariner's documents	1,154	602	722	1,014	3,492
AB any waters unlimited	151	49	97	29	326
AB any waters, 12 months	76	19	52	56	203
AB Great Lakes, 18 months	1	1	4	29	35
AB tugs and towboats, any waters	2	----	1	----	3
AB bays and sounds [1]	1	----	1	----	2
AB seagoing barges	----	----	----	----	0
Lifeboatman	85	18	282	21	406
Q. M. E. D.	158	66	87	177	488
Radio operators	2	4	1	----	7
Certificate of service	1,224	601	718	987	3,530
Tankerman	4	25	3	17	49

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

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

WAIVER OF MANNING REQUIREMENTS

Waivers	Atlantic coast	Gulf coast	Pacific coast	Great Lakes	Total
Deck officers substituted for higher ratings	----	----	1	----	1
Engineer officers substituted for higher ratings	----	----	----	----	----
O. S. for A. B.	----	----	----	----	----
Wiper or coalpassers for Q. M. E. D.	2	----	----	----	2
Total waivers	2	----	1	----	3
Number of vessels	2	----	1	----	3

NOTE: In addition, individual waivers were granted to permit the employment of 6 able seamen holding certificates for "any waters—12 months" in excess of the 25 percent authorized by statute.

THE TEN COMMANDMENTS OF THY DIESEL ENGINE

1. Thy Diesel is thine Engine; thou shalt keep it clean and in adjustment that thy life in its company may be long and that thy Captain mayest increase thy rate.

2. Know thine Engine in all its parts and functions, else thou shalt be beached in some unholy spot.

3. Be not wise in thine own conceit. Remember thine Engine's factory instructions and keep them wholly, lest repairs at sea be thine undoing.

4. Be thou not loose in thy jaw hinges, for no man knoweth all about Diesel. The truly wise absorb much knowledge but giveth little, save on request; he who so doeth shall gain great repute among his fellows and the favor of his superiors.

5. For all things in this life that thee desire thou shalt pay plenty, and for the wisdom of experience no less. Advice from the multitude usually costeth nothing, and is generally worth just that.

6. From books on Diesel practice thou mayest learn what to do and when, but only thine own experience or the lips of man truly wise can tell thee why and how; else thine understanding of what and when shall plague thee with smoke, which damneth thee before all knowing observers.

7. God maketh the earth to rotate endlessly without bearings and lubrication; leave thou not thine Engine so, else thou shalt be blistered in thy Captain's wrath.

8. Curse not thine Engine when it turneth not; curse rather thine own stupidity.

9. Steam and gas engines may long operate though "sloppy"—thy Diesel not so; with gages and mikes be thou ever busy.

10. The eternal eye watcheth universal operations but thou shalt not rely upon it as to thine Engine; thine own eternal vigilance is the price thou payest for thy job.

—*Henry J. Harris.*

U. S. GOVERNMENT PRINTING OFFICE: 1954