PROCEEDINGS OF THE
MERCHANT MARINE COUNCIL

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The Merchant Marine Council of the United States Coast Guard

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COUNCIL ACTIVITIES

The Merchant Marine Council will hold a public hearing on April 24, 1956, commencing at 9:30 a. m., in Room 4120, Coast Guard Headquarters, Thirteenth and E Streets NW., Washington, D. C., for the purpose of receiving comments, views, and data on the proposed changes in vessel inspection rules and regulations.

The proposed agenda will include the following:

Item No.	*Subject*
I.	Rules and Regulations for Licensing, Registering and Certificating Merchant Marine Personnel
II.	Transportation of Molten Sulphur, Asphalt, etc.
III.	Transportation of Liquefied Petroleum Gases
IV.	Watchman for Tank Vessels
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XVI.	Private Aids to Navigation, Outer Continental Shelf and Waters Under Jurisdiction of United States
Appendix	Proposals Regarding the International Convention for the Safety of Life at Sea, 1948.

(*Continued on page 54*)

GROUND TACKLE

NEARLY a half century ago, the authority on seamanship, Captain Felix Riesenberg, commented on the importance of ground tackle as follows:

Ground tackle is in many respects the most vital part of a vessel's equipment. Her safety depends on the good design and sound construction of this important gear. Proper ground tackle has saved many ships and lives, and on the other hand, poor ground tackle or ground tackle poorly managed, has often been the prime cause of disaster. The seaman must know his ground tackle, understand its use, its limitations, and the many elements that enter into its effective operation.

We find today that this analysis of anchor and anchor cable still holds true, and that while seafaring becomes more and more a science, with the advent of electronic instruments, fin stabilizers, gyro-pilots—to name a few—the oldest and simplest shipboard instrument still remains the most efficient—the anchor.

EARLIEST ANCHORS

The earliest use of an anchor has been traced back to 2200 B. C. Archaeologists exploring Egyptian tombs found detailed ship models equipped with papyrus rope cable and conical mooring stakes to be driven into the river bank to serve as an anchor.

The first metal anchor, a simple contrivance with one arm and no stock, is credited to the early Phoenician navigators who plied the Mediterranean 400 B. C.

Today's anchor is the product of the experience of mariners over the past 4,000 years in compromising between dead weight and maximum holding power on a variety of seabottoms.

To better appreciate the change in size since the early Egyptian days, one should compare the conical stake used on the bank of the Nile with those in use today. The bower anchors on modern merchant ships vary in size from 8,885 pounds for a Liberty ship to 29,000 pounds for the SS *United States*. The new USS *Forrestal* carries two bowers, each weighing 60,000 pounds.

ANCHOR TYPES

There are three major types of anchors in use today: First, the stockless, or patent anchor, is the one most generally used in the merchant service. Its main advantage is the ease by which it can be stowed, and its ruggedness and ability to disengage from the sea bottom without damage. It will hold well in soft bottoms, yet has sufficient weight for its size to hold on a hard bottom. Mr. Frederick Baldt, a pioneer in the manufacture of anchors, patented such an anchor in 1901 and his patent has served as a model for many of the stockless anchors in use today.

A second is the stock-in-head (Danforth) type. An anchor on the lighter side of the compromise between dead weight and mechanics, it is used extensively on small naval vessels and pleasure craft where weight saving is essential. It is most familiar to seafarers as the anchor hanging on the stern of the LST.

The third type is the "old-fashioned" or ordinary anchor. The outstanding feature is the fixed fluke. It is used for permanent moorings by yachtsmen and fishermen. The holding power is good on bottoms where penetration is possible, but a disadvantage lies in its awkwardness and in the possibility that the upstanding fluke may foul a chain or pierce a ship's hull.

SIZE CLASSIFICATION

Anchors are classed as follows:

Bower anchors—the main working anchors of a vessel are carried on or near the bow and are generally referred to as the port or starboard anchors.

Spare bower anchor—lighter in weight than the regular bower. A. B. S. rules require it on all classed vessels. Usually carried on the foredeck where it can be put over the side by use of cargo booms.

Sheet anchors—only carried by naval vessels. Carried abaft bowers and provided with extra hawse pipes on either bow.

Stern anchor—heavy anchor as large as the bowers. Carried on the stern and provided with hawse pipe, chain locker and windlass. In the past, stern anchors have been carried by naval vessels but only on a few merchant vessels.[1]

Stream anchor—usually lighter than the spare bower; according to A. B. S. rules it is approximately one-fourth the weight of a bower. This anchor is usually stowed on the after deck.

Kedge anchors—the lightest of all, are used for kedging work when a vessel may have to be moved without power other than deck capstans and winches. The heaviest kedge anchor required by A. B. S. rules weighs 490 pounds. This anchor is only required on the smaller merchant vessels.

The type, size and number of anchors to be carried varies with each ship and is determined by the various classification sources, i. e., *Lloyds, Veritas,* and *American Bureau of Shipping* (A. B. S.). Most American oceangoing ships are required to carry four anchors—two bowers, one spare bower and one stream. This requirement is an A. B. S. classification standard.[2]

The factor used by the A. B. S. to determine the size and number of anchors is called the *equipment tonnage.* It is derived from two formulas based on the function of the surface area of the hull and superstructure, and the displacement of the vessel. The formulas are as follows:

Tonnage under freeboard deck=

$$\frac{L \times B \times D \times C}{100}$$

Where: L=Length of vessel
B=Breadth of vessel
D=Depth of vessel to freeboard
C=Coefficient of displacement taken at 0.8 of the molded depth

Addition for superstructures on freeboard deck=

$$\frac{l \times b \times d \times 0.75}{150}$$

Where: l=Length of superstructure
b=Breadth at upper deck amidships
d=Mean height of 'tween decks, beam to beam

The *equipment tonnage* for a Liberty ship is calculated to be 6,480. Accordingly, the following anchors are required: Two bowers—8,855 pounds each; one spare bower—7,525 pounds; one stream—3,185 pounds. (These weights are for stockless anchors, the weight for ordinary anchors is approximately 25 percent less.)

ANCHOR CABLE

While the anchor is an important and indispensable component of the ground tackle, its importance is derived from the fact that it is the terminus to the anchor cable and, conversely, a chain is only as strong as its weakest link. Just as anchors have become more massive and with maximum holding power, their cables have also changed.

[1] The new super tankers soon to be constructed by *Esso Shipping Co.* are designed to have a stern anchor, hawse, windlass and chain locker aft.

[2] As with all A. B. S. classification standards which pertain to ground tackle, the United States Coast Guard, in accordance with 46 U. S. C. 391, requires conformance by inspected vessels which, in effect, gives such standards quasi-legal authority.

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The first cables were made from hemp. This type was used extensively down through the ages into the 19th century. They were relatively inexpensive and easier to handle compared to iron chain cables.

The earliest recorded use of iron chain aboard ship has been traced back to the Chinese—"Under the great Emperor Yu (2200 B. C.) came also the iron chains, two fore and two aft, which were thrown overboard to steady and stop the vessel."

The first patent for chain manufacture was obtained in 1634 A. D. by an Englishman, Philip White. He described his process as follows:

A way for the mearing of shippes with iron chaynes by finding out the true heating ppareing and temping of iyron for that ppose and that he hath now attayned to the true use of the said chaynes and that the aim wilbe for the great saving of cordage and safety of shippes and will dedound to the good of our comon wealth.

STUD-LINKS

By the middle 19th century the advantage of wrought iron anchor chain was generally accepted and rapidly began to replace the hemp cable. Following this major change, the next was the introduction of stud-links.

Prior to this change each link was the open type with an oval shape. Obviously a chain made up of such links could easily kink and foul. The insertion of the stud was a boon to the seafarer. Not only was fouling reduced to a minimum but it was found that the stud added 15 percent to the ultimate strength of the chain.

Figure 1.—Giant flukes for the 30-ton anchor used on the USS Forrestal. This casting was made at the Norfolk Naval Shipyard, Portsmouth, Va. Official United States Navy photograph.

During the shipbuilding boom of World War I, cast steel chain was developed and accepted as superior to wrought iron chain. However, the problem of pouring a sound casting free of blow holes remained a perplexing problem. This problem was solved in 1928, when Mr. James Reid, working at the Boston Navy Yard, perfected a forged steel chain formed under drop-hammer dies. Subsequent to this die-locked process, an improved welding method was perfected and also a method of casting steel chain with the stud as an integral part of the link. At the present time, in the United States Navy and Merchant Marine, cast-steel, die-locked, and high-strength welded steel stud-link chain are standard.

Comparative tests of chain made by these methods have demonstrated that they have a minimum ultimate strength 100 percent greater than wrought iron chain!

CABLE WEIGHT

At first thought, it would appear that strength would be the only criterion for an anchor cable, but this is not so. It must also be of a certain weight. This can be demonstrated by the fact that an anchor cable of infinite strength but of no appreciable weight would lack the ability to cushion shock and would, therefore, break the anchor loose from the bottom or damage the ship when the cable jerked taut. Dead weight causes the chain to hang in a catenary curve and it is the "spring" of this curve that dissipates the shock of a sudden surge and brings the vessel under control without damage.

In the earlier days when hemp cables were used, it was the practice to attach stones to the cable to effect a catenary curve and thus "ride out" a storm. Nowadays there are weight standards established by the classification societies. These standards have been mathematically derived from the catenary curve formula, taking into consideration the breaking strength of the chain and the displacement of the ship. For example, each 15-fathom shot of chain on a Victory ship must weigh 4,960 pounds. Since there are 10 shots to each bower anchor, one cable would weigh 49,600 pounds.

SIZE OF LINK

With the increased minimum breaking strength of cast-steel, die-locked and high-strength welded steel chain, it has been possible to do away with excess weight that could better be utilized for cargo or armament. In 1932 the classification societies recognized this fact and permitted a size reduction where high tensile steel

chains of approved design were used. For example, the SS *America* would formerly have been required to have a 3 7/16-inch wrought iron chain with a rated breaking strength of 541,732 pounds but instead it is now equipped with 3-inch die-locked chain which has a minimum breaking strength of 1,045,000 pounds—a weight saving of 28 tons.

Another refinement of modern anchor chain is the exactness of the pitch length and link width. It is understandable how the dimensions of old-fashioned handmade iron chains varied; but, with the present day "wild cat" clearances at a minimum for smooth and efficient operation, the dimensions of modern chain links must be exact to assure perfect operation. Chain is designated as to size by its "wire diameter" which is the cross section diameter of a common or A link. Link dimensions are now standard the world over and each length must be 6 wire diameters long and 3.5625 wire diameters wide within strict limitation.

In addition to the weight and link size, there is a third important criterion—the length of the chain. The required minimum standard lengths vary for each type vessel and are established by the classification societies.

The *equipment tonnage* is also the factor that is used to determine the standard lengths of chain. For example, C–3's with an equipment tonnage of 8,600 are required to be equipped with 300 fathoms of 2¼-inch stud-link chain—10 shots to a bower.

TESTS

In addition to establishing the dimensions and weight of ground tackle components, the classification societies also test and certify them.

Anchors are subjected to a *drop test*. The head, usually made as a steel casting due to its size and complex boring, is dropped from a height of 12 feet onto a steel slab. The *drop test* is designed to rupture a defective casting.

Once the head casting is proved sound, the forged shank, with its machined ball end, is inserted through the hole in the head, forming a ball and socket. This allows the shank to turn up to 45° beyond the center. A pin is inserted to secure the ball within the socket.

Chain is tested by subjecting it to proof and breaking stresses in a hydraulic testing machine. The proof test (about 70 percent of the required breaking test) is applied to each 15-fathom shot. The full breaking test is given to one selected length of three links taken from each 15-fathom shot. This length is called a "break test triplet."

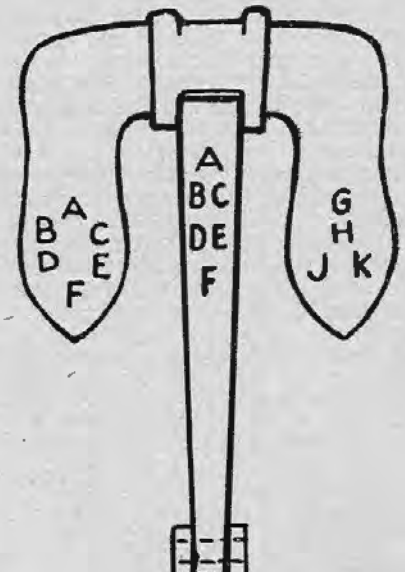
For example, the size of chain required on a Victory ship is 2⅛-inch and must be tested to a proof stress (safe working load) of 239,456 pounds and to a breaking stress of 335,130 pounds.

MARKINGS

When the tests have been completed satisfactorily, the particulars are stamped on each component as follows:

Stockless anchor

A. The number of the Certificate (furnished by the surveyor)	7147
B. The initials of the surveyor who witnesses the proof test	X. Y. Z.
C. Month and year of test	6–35
D. Proof test applied	76,440
E. Signifying that the testing machine is recognized by the committee of the American Bureau of Shipping	AB
F. The weight of anchor	4,200
G. Signifying that the anchor head has been tested by a surveyor to the American Bureau of Shipping	AB
H. The weight of anchor head	2,520
J. The initials of the surveyor who witnesses the drop test	X. Y. Z.
K. Month and year of drop test	6–35

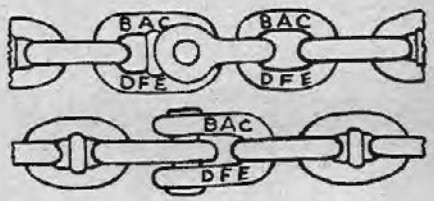


One side of the anchor should be reserved solely for the above marks and the other side used for the maker's name or other trademarks that may be desired. If the design of the anchor does not admit the foregoing marks being placed as indicated, a suitable boss should be cast on each arm, on which the marks can be stamped.

Cable

The shackles and end links of each length and shot; and one link in every 15 fathoms of stud-link chain when connecting links are used to connect the shots, are stamped as follows:

A. The number of the certificate (furnished by the surveyor)	8442
B. The initials of the surveyor who witnesses the test	X. Y. Z.
C. Month and year of test	6–35
D. The breaking test	211,680
E. The proof test applied	151,200
F. Signifying that the testing machine is recognized by the committee of the American Bureau of Shipping	AB



INSTALLATION

After the anchor and chain have been approved, they are ready to become part of the vessel. First, the chain's bitter end should be rove over the wildcat and kept free from turns as it goes down to the chain locker. Most modern vessels are fitted with a recessed holdfast on the forward bulkhead of the chain locker into which the bitter end link is fitted. A heavy pin is inserted through this link to secure it. With this arrangement, should it become necessary, the chain can be easily slipped without entering the chain locker as the pin is accessible from the forepeak.

Older vessels have padeyes on ringbolts located on the overhead of the locker where the bitter end is secured by a pelican hook, after passing through a ringbolt on the deck. The bitter end, in all cases, must be secured so that it cannot foul a bight of the chain.

MANNER OF USE

Once the chain is stowed and the bitter end secured, it is ready for use. The manner of use will determine how

long the chain can be safely used. If possible, it should not be subjected to excessive stress or short bends (torsional stress).

The anchor windlass brake is generally designed so that it will slip, with ordinary tightening, at a chain pull somewhat below the proof strength. Such a design provides a safety factor against the excessive forces that would be imposed on the chain if the brake is set up too tightly. In spite of this design, brakes are often set up so they don't slip and anchor cables are thus subjected to excessive stresses. Such a stress is usually experienced when the ship's headway is stopped by means of her ground tackle.

A tremendous force is needed to stop a moving body in a given distance. This force is equal to the mass of the body multiplied by the deceleration necessary. Thus, the force F necessary to stop a Liberty ship, displacing 10,000 tons and traveling at 6 knots, in 100 feet will exceed the breaking strength of the chain. This force is computed as follows:

$$F = Ma = \frac{W}{g} \times \frac{V^2}{2S}$$

Where: F equals stress in pounds on chain
M equals mass
a equals acceleration
W equals displacement of the vessel in pounds
g equals acceleration due to gravity
V equals speed in feet per second
S equals distance in which the vessel is stopped

F=357,607 pounds
Breaking stress=340,000 pounds

From the foregoing, it is obvious that whenever possible the way should be taken off by means of the engines and not by using the ground tackle.

Many experienced shipmasters when anchoring use the following "rule of thumb" method to make sure that the momentum is off their vessel—as the vessel approaches the anchorage, the engines are kicked astern until the propeller backwash comes up to the amidships. Most vessels will be dead in the water when the wash reaches this point.

The following method for anchoring a vessel of light draft when there is no current but a strong wind illustrates how a Master can maneuver his vessel to prevent excessive stress on the ground tackle: Head into the wind on approaching the anchorage position. The ship should have little or no way through the water when the anchor is dropped. Before the chain fetches taut and is veered to the desired amount, put the engines ahead enough to overcome excess momentum as the ship sags down before the wind.

Other procedures than the foregoing can be used depending on the circumstances, but, in every instance, the essential point is that the momentum of the moving ship, with respect to the bottom, must be kept to a minimum to keep from breaking the chain or tripping the anchor.

Sometimes chain is strained when dropped at short stay to turn the vessel. Under ordinary conditions, the scope should be sufficient to apply "braking" action to the bow, but still permit the flukes to trip before the safe-working load of the chain is approached. Three times the depth can be used as a "rule of thumb" for determining scope to use.

When the anchor is used at short stay to come alongside the dock with an onshore wind, it is desirable to use the offshore anchor. Although the inshore anchor is theoretically more effective, due to the fact that the angle of pull on the anchor would have less tendency to lift the flukes and thereby decrease the holding power, since, in all probability, the anchor will tend aft under the forefoot, the chain is subjected to a severe bending action.

Another situation where the chain is subjected to stress is when the anchor is hove home with twists in the chain. These twists put torsional bending stresses on the chain and can cause it to jump the "wildcat" or break. While it is a time consuming task, all twists should be cleared from the cable before it is hove taut.

Another manner by which a chain can be damaged is when it becomes kinked in the chain locker and jams the chain pipe. Fortunately, this does not happen on modern day vessels since they are built with self-stowing chain lockers. In the old days, deckhands had to perform the dangerous job of man-handling the chain into tiers as it was hove in. However, those seafarers who have attempted to rapidly heave home seven or eight shots of chain on a Liberty ship, especially in close quarters, may well question the foregoing statement that *all* modern vessels have "self-stowing" lockers * * *.

MAINTENANCE, INSPECTION, RE-TEST

The remaining consideration in the care of ground tackle is the maintenance, inspection and the retesting of chain.

Maintenance is relatively simple but requires three operations. The first is to keep the chain locker clean and *dry*. The next is the preservation of the chain by the application of a preservative—usually fish oil. The third operation is the most important and insures uniform wear throughout the cable by periodically shifting the shots, or "end-for-ending" the whole length.

The inspection of chain should become second nature for all deck officers. Whenever a connecting link is in sight it should be examined to detect any play in the parts, and determine whether the tapered forelock pin is tightly in place. The anchor shackle or jew's harp should be examined routinely to make sure the peened pin has not worked loose.

While it is desirable that chain be ranged and tested (hammer tested and visual examination) at regular intervals, the only actual requirement that this be done is found in the A. B. S. instructions for their Special Periodical Survey No. 2. This survey is required 8 years after the vessel is built as a condition for reclassification. The Coast Guard does not require that the chain be ranged and tested at the annual inspection unless there is reason to believe it is defective. However, if the annual inspection takes place while the vessel is in drydock, and the chain has been ranged for painting, which is usually the case, the Inspector will hammer-test the links.

Since it is possible that an anchor chain could be used and not inspected for as long as 8 years, it behooves the prudent shipmaster to look after his ground tackle. An example of what can happen to a ship when a shot becomes defective, or a connecting link works slack, occurred recently in Pusan, Korea—fortunately, the ship was not lost.

LOST—ONE ANCHOR

The SS *Fairisle*, under the command of Capt. Oscar C. Jones, anchored in Pusan outer harbor, on the evening of February 26, 1955, in 12 fathoms of water. The vessel, with light draft, rode to her port anchor with 4 shots of chain in the water. During the night, the weather was logged as follows: Wind, SE, force 3; moderate ENE swell.

The Captain left instructions in the night order book to take anchor bearings every 15 minutes. The third mate on watch, Earl A. Sayre, stated later that he had complied with these orders, but that when he took a bearing at 0545, he found the vessel's position had changed. He checked with a drift lead to ascertain definitely that the vessel was moving, then notified the Master and let out another shot.

As soon as he was called, Captain Jones rushed to the bridge and ordered the starboard anchor let go!

(Continued on page 54)

HIGHLIGHTS ON THE RULES

OF all the 32 Rules of the Road probably none is more important to safe navigation than *Rule 16:**

RULE 16 (a) Every vessel, or seaplane when taxiing, 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.

Collision reports demonstrate the importance by showing that in the majority of cases a violation of *Rule 16* contributed to the accident. It is not surprising then that the Master of a seagoing tug submitted the following question to Coast Guard Headquarters:

How can a tug, in a practical sense, comply with Rule 16 of the International Rules when it has a heavy barge on the end of the tow line and whereby the hawser may foul the propeller of the tug, if it slows down in compliance with the Rule, or the barge may overrun the tug causing it to sink or be severely damaged with possible loss of life?

Reading between the lines the question can be put more simply: "Is a tug excused from strict compliance with *Rule 16* if she has a tow astern?" Undoubtedly this thought has occurred to many tugboat captains and while it is admitted that maneuvering with a tow requires expert ship handling and is a potentially dangerous operation, nevertheless, down through the years the courts have held the answer to be "No."

For a better understanding of how this *Rule* applies to tugboats, we will discuss each part by itself.

Paragraph (a) is commonly referred to as the "moderate speed" part. In the light of various Admiralty decisions "moderate speed" can be broadly defined as follows: (1) In medium fog—a speed which will allow you to stop in half the distance of visibility; (2) in dense fog—a speed at which you will just have steerageway, i. e., rudder control; and, (3) in extremely dense fog—anchor or do not get underway.

Of the foregoing definition, the word that sometimes causes misunderstanding is *steerageway*. Seafarers should realize that a vessel has no *right* to maintain steerageway. In *The Sagamore*, 1 Cir., 247 Fed. 743, 752, the Circuit Court of Appeals pointed out that a vessel has no right to maintain a speed sufficient for steerageway, if conditions are such as to make such speed too great for safety, particularly after the presence of another vessel has been ascertained by hearing her fog signals. In such cases, speed should be reduced by stopping and starting alternately. The Court said: "In a fog so dense as existed in this case the right to maintain steerageway and the obligation to go so slow as to be able to avoid a vessel which can be sighted approach inconsistency; but both rules are to be applied so far as is possible."

The second paragraph of *Rule 16* contains three equally important phrases, i. e., "so far as the circumstances of the case admit," "stop her engines," and "then navigate with caution until danger of collision is over." Admiralty decisions down through the years have generally defined these phrases as follows:

So far as the circumstances of the case admit, which means to fully comply with the *Rule* unless there is an unusual condition or peril, other than the approaching vessel, which would endanger your vessel, i. e., tiderips, currents, or reefs.

Stop her engines—(1) In the case of a vessel proceeding at moderate speed, stop the engines immediately to reduce headway; and (2) in the case of a vessel proceeding at more than moderate speed, not only stop but, if necessary, reverse the engines.

Then navigate with caution until danger of collision is over—(1) Keep the engines stopped until the other vessel is seen or repeated signals enable you to determine her position and course; and (2) if not possible, kick the engines ahead periodically to maintain steerageway.

It follows, then, that in order to comply with *Rule 16*, the navigator of a tug should proceed as follows:

Decide how restricted the visibility is and whether it is possible to proceed at such a speed that it will be possible to stop within half the distance of visibility.

If alongside the dock or at anchor, and it is not possible to proceed at such a speed that it will be possible to stop in half the distance of visibility, delay departure until visibility improves.

If underway, and it is not possible to proceed at such speed that the vessel can be stopped within half the distance of visibility, anchor if practicable, otherwise proceed at bare-steerageway.

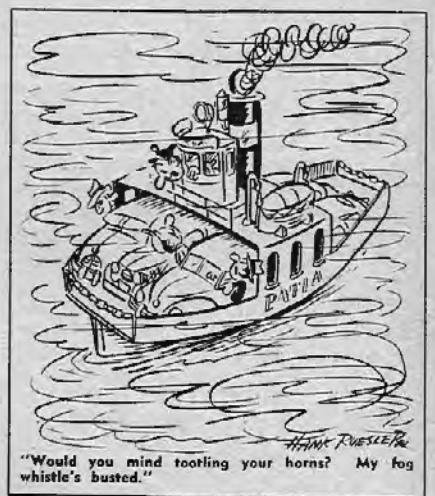
Whether proceeding at a speed possible to stop within half the distance of visibility, or at bare-steerageway, if a fog signal is heard apparently forward of the beam, stop the engines temporarily, unless there is such a strong tide or sea astern that there is immediate and certain danger of colliding with the tow or being disabled by the towing hawser.

Generally speaking, the ruling most often quoted as requiring strict compliance with *Rule 16* by tugboats is found in *The Selja*, 243 U. S. 291. The Judge observed that, "while the first part (moderate speed) of *Rule 16* gives the navigator some discretion as to speed, the command of the second part is imperative."

However, in many cases, courts have held that a tug was not in violation of the *Rule* when it did not stop engines upon hearing the fog signal of a vessel the position of which was not ascertained. In such cases the courts felt that existing circumstances excused exact compliance. It should be pointed out that the mere fact that there is a vessel in tow does not in itself establish such "circumstances." In each case unusual conditions of currents, tides, and wind were a determining factor.

The following collision cases involving tugs with tows illustrate how the courts have ruled in the past:

On December 30, 1936, the tug *A. L. Walker* with three barges in tow alongside was in collision with the tanker *Michael Tracy*. The collision occurred in dense fog on the Elizabeth River Channel near Sewell's Point Anchorage, Va.



"Would you mind tooting your horns? My fog whistle's busted."

(Courtesy Maritime Reporter)

*Since *Rule 16* of the International Rules and Article 16 of the Inland Rules are identical, any reference to one will apply equally to the other.

The *Walker* was downbound on the port side of the channel. There was an ebb current of one knot and the tug was underway at full speed making about 4 knots. During the passage, fog set in and speed was reduced to not more than 2 miles per hour over the ground. In addition, the prescribed fog signals of 1 long and 2 short blasts were regularly sounded.

The *Tracy* was upbound and, when fog was encountered, slowed to half speed—about 4 miles an hour against the tide. While so proceeding, the *Tracy* heard the *Walker's* fog signals forward of the beam but did not reduce speed. A few minutes later the collision occurred.

Both vessels were held to be at fault—the *Walker* because she was on the port side of the channel and the *Tracy* for violation of Article 16—failing to stop her engines and navigate with caution and not proceeding at moderate speed.

The aspect of the case we are particularly concerned with is found in the Judge's summation. Judge D. J. Bondy commented: "The *Walker* was towing three loaded barges in an ebb tide of about 1 mile an hour and would have lost control of her tow if she had stopped her engines. Her failure to stop her engines, therefore, was not a violation of Article 16 which provides for stopping of engines only 'so far as the circumstances of the case admit.' See *Hancox* vs. *The Syracuse*, 75 U. S. 672, 675; *The Luzerne*, 204 Fed. 981. Since she had to move faster than the tide in order to maintain control of her tow, the *Walker's* speed of 2 miles an hour cannot be considered to have been excessive."

Another Admiralty case involving a tug and tow was *The Ohioan*, 1934 AMC 1282. In this case the freighter SS *Ohioan* was involved in a collision with the tug *Baldrock* off New York Harbor in a dense fog in the vicinity of Scotland Light Vessel.

The *Baldrock* had three loaded barges in tow—the length of the tow was 4,400 feet.

A meeting situation developed and although fog signals were exchanged by both vessels, the *Ohioan* struck and sunk one of the barges.

The Judge found both vessels at fault for violation of Article 16—immoderate speed and failure to stop and navigate with caution after hearing signals forward of the beam.

In his defense the tug captain claimed that he could not fully comply with Article 16 because if he had stopped his tug, the towing hawser would have become fouled in the propeller.

The Judge commented that, "The *Baldrock* could not justify her failing to stop because the towing hawser would get in her wheel, or that when she pulled ahead again, the strain on the slack hawser would have parted them, as the sea was calm and the tug was stemming the tide."

He also quoted the general ruling found in *The Selja*, 243 U. S. 291 to the effect that the command of the second paragraph of Article 16 is imperative.

The third case involved a tug with tow, *Herndon*, and the freighter SS *Hawaiian*, 1930 AMC 1246. The collision occurred at the entrance to Delaware Bay. The Judge ruled:

"A tug with a long hawser tow is required to proceed at such a rate of speed as will enable her to stop her own headway and that of the tow within the distance at which she sights another vessel through a fog."

It can be seen from these three cases that the broad ruling is for absolute compliance with *Rule 16* and any deviation must be justified by showing "that the circumstances did not admit." It is not sufficient justification merely to show that there was a tow astern.

A common sense appraisal of the rule and past Admiralty decisions would indicate that a tug operating on Inland waters, primarily rivers with established currents, would be better able to justify deviation from the *Rule* than the tug on International waters. In any event, full compliance with the *Rule* should be the first thought of the navigator; not how to justify failure to comply.

nautical queries

Q. Heaving up the anchor in a heavy sea or swell with the vessel rolling or pitching, how might you avoid damage to the bow plating from the swinging anchor?

A. If practical, the anchor may be left hanging under the forefoot until the ship can be put on such a heading that swinging and buffeting by the sea is minimized.

Q. When moored to two anchors, how is a foul hawse prevented?

A. Foul hawse is prevented when moored to two anchors by seeing that the ship swings over the same arc each time, using rudder, engines, or stream anchor, if necessary, to ensure this.

Q. With a cross in the cables, weather cable on top, how would you unmoor?

A. Heave in on the underneath cable and pick the lee anchor up first.

Q. Standing anchor watch in a fog, what signal can be given when a vessel approaches so close that collision seems possible?

A. A vessel when at anchor shall at intervals of not more than one minute, ring the bell rapidly for about five 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 one minute for about five 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 the possibility of collision to an approaching vessel.*

Q. If an anchor drags in a clay bottom, how may its holding power be affected?

A. If an anchor drags in a clay bottom it may become "shod"; that is, its flukes are caked, and it will lose much of its holding power until it is picked up and washed clean.

Q. How would you anchor a vessel, when proceeding with a fair tide?

A. In anchoring a vessel with a fair tide it is best to turn and stem the tide. If the space is too restricted for turning by backing and filling, it may be possible to turn using the anchor and a short scope of chain. When the vessel has swung to the tide and is falling back, the chain can be veered to the desired riding scope. If necessary, a touch ahead on the engines will take off excess momentum.

Q. Name the anchors carried by seagoing vessels.

A. Seagoing vessels carry bower, stream, and kedge anchors.

Q. How can the weight and strength of an anchor be determined?

A. The weight and strength of an anchor may be determined by examining the stampings required to be made on the flukes and shank. This information may also be derived from the anchor certificates which should be among the ship's papers. The anchor has the certificate number stamped on it, so that the certificate corresponding to the particular anchor can be determined.

LESSONS FROM CASUALTIES

FINAL FATAL FLASH

THE dangerous consequences which can result from applying heat or flames to an airtight enclosure were vividly demonstrated last summer on a foreign freighter undergoing repairs in an east coast shipyard. One man was fatally injured when the object upon which he was burning suddenly exploded. A note of grim irony was the apparent lack of understanding or concern by the workmen and supervisors that the object was airtight.

It was a hot and humid day with no breeze. The freighter's pontoon hatch covers had been lying in the sun exposed to temperatures up to 100° F. for several days. A shipyard burner was assigned to "flush off" two padeyes from one of the pontoons in preparation for the installation of two toggle bolts. Without any inspection of the hatch cover, he lit his torch and commenced burning.

Suddenly a violent detonation occurred! There was a flash of fire, and the burner, with his clothes smoldering, was seen lying in the hold, alive but in great pain. He died 6 hours later of third-degree burns which covered 90 percent of his body.

After the excitement of the explosion, the injury, and the small fire which followed, had died down, an investigation was begun. It was determined that the pontoon hatch covers were, in effect, tightly closed tanks. The only openings were four plugs in the forward and after ends. These plugs had been installed during construction to allow a bitumastic preservative to be run through the interior. It was discovered that some of this preservative coating had not been drained out and remained in a liquid state.

Chemical analysis of this liquid proved that it contained small quantities of a light, volatile, distillate fraction having a flash point of 70° F. It could be strongly assumed that some of this liquid had volatilized within the hatch cover while exposed to the high temperatures during the preceding days. Undoubtedly an explosive mixture of this distillate vapor and air existed inside the hatch cover when the burner's flame supplied a means of ignition.

Ample protective measures have since been instituted at this shipyard to insure that no more "hot work" is done on such enclosures until they have been vented and gas freed. It is a safe assumption that this type of casualty will not soon recur in this shipyard. However, the hazard of applying heat to a metal airtight vessel which has no vent and which can explode with deadly power may not be well appreciated in other shipyards or on board ships. Even though there is no volatile or inflammable material inside a tight vessel, the application of heat can obviously set up increased pressures within. Continued heating will result in higher and higher pressures and, if not vented or cooled in time, an explosion can occur even though the vessel contains nothing more hazardous than air.

Ordinary prudence should always suggest a question to the person who intends to do some "hot work"—where is the heat from my flame going, and what is that heat going to do? If there is the slightest doubt about the venting, the possible ignition of material on the far surface of the metal, or the presence of any inflammable or explosive material which will be heated or ignited by the flame, the answer can only be: Stop! Take another look.

MANILA

OF the many articles of a so-called perishable nature normally carried aboard ship, one of the most important from the standpoint of safety is manila rope. Manila is not perishable to any degree comparable to fresh provisions, but it is certainly subject to deterioration and the rate of deterioration is directly related to the conditions under which it is used. Used with care and stored under ideal conditions, manila rope can maintain a high percentage of its original strength for years. With careless use and improper stowage, it can deteriorate to the point of uselessness in days. In addition to the expense of renewing good manila the use of line whose strength is suspect is a potential hazard to personnel, especially if the weakening of the line cannot be readily detected by the user.

Recently, on board a tanker at sea, a serious fall, directly attributable to poor maintenance of manila line, resulted in disabling injuries to an AB. The seaman had been detailed to paint the mainmast. Weather conditions were good and no difficulty from wind or sea was experienced while he worked from the boatswain's chair. The gantline supporting the boatswain's chair was 20 fathoms long of 2½-inch manila. It had been cut from the inside of a coil less than 1 month before and had been used at the most four times. This was in accordance with the chief mate's policy to use a boatswain's chair gantline for only 6 months and then put it to less critical use.

During the painting operation, without warning the gantline suddenly parted about 15 feet above the boatswain's chair. The seaman dropped 30 feet to the catwalk rail and then down to the main deck. Since he was apparently seriously injured, the master radioed for aid. A Coast Guard seaplane landed near the ship two hours later and the injured seaman was transferred by means of the ship's lifeboat and a Coast Guard rubber raft. He was flown ashore and promptly delivered to the hospital where he eventually recovered. He was fortunate that the accident occurred within range of rescue aircraft and that weather conditions permitted an off-shore landing. He should also feel lucky that he was not killed outright in this terrific fall.

PRECAUTION TEST

A wise precaution, which was apparently not taken on this vessel, would be to test the manila line immediately before it is used to suspend a man high in the air. A simple method, requiring only a minute or two would be to tie off one end of the line and have 3 or 4 men swing on the other end, momentarily, while it is rigged in the position in which it will be used. The line is thereby subjected to a stress greater than the weight of the man who is to work aloft, and, if the line parts, the men will drop only an inch or so. Repeat the procedure until all sections of the line have been tested. If the line parts due to a hidden flaw, a life may well have been saved.

Microscopic examination of the gantline revealed that it was of good quality manila, in nearly new condition, and without any flaws except at the point where the failure occurred. There was a length of about 5 inches near the point of failure which showed a pronounced dryness of the fiber in the core of the line and at this point the fibers could be easily teased out in very short lengths. Examination of the parted ends showed no evidence of any fibers having been cut or of any stranding of fibers such as would have been expected of good

manila gradually stressed to the breaking point. There was no discoloration of fibers near the point of failure.

HEAT DAMAGE

Investigation disclosed that this gantline had been stowed in the rope locker where there was no heat, but at one time it had been flaked over a hot steam line, probably the cargo heating steam manifold near the foremast where it had been last used. On this type of vessel, steam to the heating coils, even though reduced greatly from boiler pressure, could still have reached the manifold at a temperature of approximately 350° F. Deck steam lines are customarily well lagged, at least when installed, but lagging is subject to hard wear and tear from boarding seas, careless feet, and other blows. Undoubtedly the line had rested against a portion of this extremely hot pipe at a point where the lagging was missing. Intense heat applied to manila over a period of time is practically guaranteed to ruin the life and strength of fibers. Even though the line is wet when placed against such a source of heat, as soon as the water drys, evaporation from the manila continues and natural fiber moisture will be drawn off, leaving the rope brittle.

PROPER CARE

The leading manufacturers of manila rope have published advice on the care and maintenance of their products and some of their rules are repeated here. Emphasis is placed on proper stowage. Full coils should be stowed at least 6 inches off the deck to allow air to circulate freely. Rope should never be stowed away wet as rot fungus will form quickly. The best way to dry rope is to drape it loosely over pegs placed high enough to keep the rope clear of the deck. Avoid intense heat. Do not hang rope in boiler rooms or against steam pipes. Alkali and acids "burn" the fibers, make them brittle, and quickly destroy the usefulness of the rope. When rope has been exposed to chemicals, it must be checked frequently for signs of discoloration which signifies deterioration of the fiber. In making such examination always open the lay as much as possible without disturbing the composition of the rope so that the condition of the innermost fibers can be seen. Wet rope is especially susceptible to the absorption of many chemical fumes. Rust and oil are common enemies of manila. Rust fragments introduce friction and tiny sharp edges which gradually cut the strands. Oil may contain acid, and an oily rope attracts dirt and other friction-making foreign substances.

Do not drag rope over the deck. The accumulation of chaffing damage by such treatment may result in sudden failure under stress. In using manila, avoid knots as much as possible since they require sharp bends and may hasten failure of the strands. Always use as large a block as practicable for the job. The larger the diameter of the sheave, the less the amount of bending of the line as it works through the block. If the radius of the groove of the sheave is too small for the line being used, or if the clearance between cheeks is too small, binding or friction between the cheeks and pinching and distortion in the groove of the sheave will cause wear and hasten the failure of the line. Never use a frozen rope as ice particles between the fibers will cut or wear them. Thaw out and dry first. When opening a new coil, lay the coil flat on the deck with the inside at the bottom. Reach down through the center of the coil and start the inside end up through the center and out, making sure that the rope unwinds in a counter-clockwise direction. In this manner the line will pay out from the coil without kinks.

Proper maintenance and care of manila line is so vitally connected with safety aboard ship that this subject is of extreme importance to all deck officers and deck crew. Manila is a priceless benefactor to the seaman when properly maintained, but when harboring a hidden flaw due to neglect or carelessness, sudden death may be lurking.

GROUND TACKLE

(*Continued from page 50*)

Almost immediately the ship fetched up to the starboard anchor—the port chain had parted! When a new round of bearings was taken, it was found that the vessel had drifted 1 mile toward a lee shore—fortunately, the 0545 anchor bearings *were* taken. The port chain was hove in and was found to have parted at the connecting link between the first and second shots.

From the foregoing, it can be concluded that while the anchor is still a most efficient shipboard instrument, and while present day anchor chain is manufactured to withstand hundreds of thousands of pounds of stress, like everything else, unless used with some degree of care, it can fail when needed.

COUNCIL ACTIVITIES

(*Continued from page 46*)

Comments on the proposed regulations are invited and may be submitted in writing for receipt prior to April 24, 1956, by the Commandant (CMC), Coast Guard Headquarters, Washington 25, D. C., or presented orally or in writing at the hearing.

In order to insure thorough consideration and to facilitate checking and recording of comments, it is requested that each suggested rewording of a proposed regulation be submitted on Form CG-3287, which may be obtained at any Marine Inspection Office or from the Commandant (CMC).

ITEM I—RULES AND REGULATIONS FOR LICENSING, REGISTERING AND CERTIFICATING MERCHANT MARINE PERSONNEL

Various amendments to the regulations governing the licensing, registering, and certificating of merchant marine personnel are proposed to bring these regulations up to date and to reflect current practices. Proposed amendments to 46 CFR 10.02–7 and 10.02–9 will cancel those provisions requiring officers to take all steps to establish citizenship prior to applying for a raise of grade or a renewal of license. These provisions have served their purpose because all officers who have received original licenses since 1937 have established their citizenship to the satisfaction of the Coast Guard.

The proposed amendment to 46 CFR 10.02–13, regarding sea service as a member of the Armed Forces as qualifying experience for a raise in grade will require such officers to take an examination for each raise in grade. This will preclude officers from having their license raised more than one grade without taking an examination.

It is also proposed to cancel special requirements regarding acceptance of service on United States light vessels because this service is now evaluated as Armed Forces sea service.

It is proposed to add a new regulation designated 46 CFR 10.05–3 (a) (8), which will establish a new type of license for master of inspected passenger motorboats and motor vessels of under 100 gross tons operating on ocean waters. The requirements and limitations will be included in these regulations.

It is proposed to amend 46 CFR 10.05–5 (a) (9) regarding master of coastwise motorboats and small motor vessels of under 100 gross tons to increase the scope of this license to routes not to exceed 100 miles in

length and not more than 20 miles off shore so that masters of such vessels will have a greater area of operation.

It is proposed to establish an examination syllabus by adding new regulations to be designated 46 CFR 10.05–46 and 10.05–47; so that applicants for the proposed limited ocean master's license and limited coastwise master's license will be aware of the scope of the examination.

The present examination syllabus for masters of river vessels was established in 1892. It is proposed to amend 46 CFR 10.05–51 to reflect present conditions and operating practices of vessels operating on the rivers.

It is proposed to amend 46 CFR 10.25–3 by canceling the rating of "Junior Assistant Purser and Pharmacist's Mate" and by canceling provisions pertaining to this rating from 46 CFR 10.25–7 (f) and 10.25–9 (a) (6).

It is proposed to amend 46 CFR 10.10–3, regarding grade and type of engineer licenses issued with respect to the service requirements for unlimited steam and motor licenses of all grades so that these requirements will more fully represent present day operating conditions. This proposal will change the limitation of "ocean-going merchant vessels of 2,500 horsepower and over" to "inspected vessels of 4,000 horsepower or over" for an engineer's license of unlimited horsepower.

It is proposed to amend 46 CFR 12.20–3 regarding physical requirements for a certificate as Tankerman, to require applicants to take the same physical as required for an original license, including the color vision test required for a licensed deck officer.

ITEM II—TRANSPORTATION OF MOLTEN SULPHUR, ASPHALT, ETC.

It is proposed that regulations be made applicable to combustible material considered to be grade E liquid when shipped in a molten form at temperatures appreciably above the normal atmospheric temperatures, except those materials having flash points which exceed 300° F., such as sulphur, asphalt, etc., which would be exempt from certain standards and regulations for tank vessels.

ITEM III—TRANSPORTATION OF LIQUEFIED PETROLEUM GASES

The Coast Guard has been requested to permit the transportation of liquefied gases at atmospheric pressures in gravity type cargo tanks. It is not considered feasible at this time to formulate detailed requirements for the transportation of liquefied petroleum gases in this manner. However, in order to permit further development of these initial proposals, it is proposed to amend 46 CFR 38.01–1 to permit the Commandant to exercise discretionary power with respect to the consideration and evaluation of different methods of shipment of such gases in bulk when proposed by industry.

ITEM IV—WATCHMAN FOR TANK VESSELS

The present regulations in 46 CFR 35.05–15 do not require watchmen on small tank vessels although such watchmen are required on tank barges. It is proposed to amend this regulation to establish the same degree of safety on tank ships that is presently required on tank barges and require that a watchman be provided for tank vessels unless the vessel is gas free or is moored at a dock or terminal where watchman service is provided.

ITEM V—TOOL KITS FOR MOTOR PROPELLED LIFEBOATS

At the present time a requirement for tool kits in motor propelled lifeboats is only published in lifeboat specifications, intended primarily for the use of manufacturer. This omission from the vessel inspection rules has caused the tool kit to be overlooked as required equipment when conducting inspections. It is proposed to amend the various regulations describing required equipment for lifeboats so that positive requirements with respect to tool kits for motor propelled lifeboats will be in effect.

ITEM VI—RAILS FOR PASSENGER, CARGO, AND TANK VESSELS

In order that the height and spacing of rails will be uniform on passenger, cargo, and tank vessels, it is proposed to require that rails be in at least three courses, including the top, evenly spaced, with the top course at least 36 inches from the deck.

ITEM VII—MARINE ENGINEERING REGULATIONS AND MATERIAL SPECIFICATIONS

It is proposed to amend 46 CFR 51.61–1 and 51.61–5 to include nodular cast iron and to agree with standards recommended by the American Society for Testing Materials.

It is proposed to amend 46 CFR 52.01–15 to require submission of designed calculations for unfired pressure vessels to the Coast Guard.

It is proposed to amend 46 CFR 52.30–10 (a) (5) to provide proposed coefficients to be used in the formula for stayed surfaces when such stays are employed in fire tube boilers.

It is proposed to amend 46 CFR 52.60–15 regarding computations for super-heaters, headers, water walls, and economizers in order to bring these requirements into agreement with ABS rules and the American Society of Mechanical Engineer Code.

It is proposed to amend 46 CFR 53.01–1, 53.03–1, 53.03–5, 53.05–1 to 53.05–50, to permit the acceptance of cast iron and steel plate heating boilers for maximum pressures not exceeding 15 pounds per square inch for steam boilers and 30 pounds per square inch for hot water boilers.

It is proposed to add a new regulation designated 46 CFR 54.01–1 (f) which will authorize the acceptance of unfired pressure vessels not fabricated in accordance with Coast Guard regulations when on inspected vessels used in offshore drilling operations.

It is proposed to amend Table 54.03–10 (c) in 46 CFR 54.03–10 by revising the stress values for certain types of seamless pipe or tubes to agree with revised ASTM specifications.

It is proposed to amend 46 CFR 55.01–1 with respect to scope of piping systems to give effect to the policy governing the acceptance of API-ASME unfired pressure vessels used in offshore drilling operations. The proposed amendment extends this policy to cover piping systems containing petroleum and associated products used in offshore drilling.

It is proposed to amend 46 CFR 55.04–10 to permit class 2 piping to be used in exhaust piping from internal combustion engines.

It is proposed to amend 46 CFR 55.07–1 (e) to permit the use of nodular cast iron valves and fittings meeting ASTM specification 395–55T, grade 60–45–15, for temperatures not exceeding 650° F. and for pressures as authorized by the Commandant.

It is proposed to amend 46 CFR 55.10–10, regarding boiler feed piping, so that the intent will be clarified and to eliminate the need for screw down check valves when economizer bypasses are fitted because the automatic check valve should provide adequate safety.

It is proposed to amend 46 CFR 56.01–20, regarding arc welding electrodes by providing that the electrode designated "E6024" shall not be used in certain types of welded joints in pressure vessels fabricated by arc or gas welding.

It is proposed to amend 46 CFR 56.01–80 (h) and (k) so that high temperature gas supply piping to gas turbines, which operate at comparatively low pressures, will not be required to be stress relieved or nondestructively tested.

It is proposed to amend 46 CFR 58.10–5 (g) by deleting all references to the peening of intermediate welding beads.

ITEM VIII—STRUCTURAL FIRE PROTECTION FOR PASSENGER VESSELS

It is proposed to amend 46 CFR 72.05–55 with respect to requirements for fire resistant furnishings on passenger vessels.

It is proposed to add new regulations designated 46 CFR 72.03–1 to 72.03–15 to cover fire protection requirements for passenger vessels of less than 100 gross tons which heretofore have not been covered.

ITEM IX—RULES AND REGULATIONS FOR CARGO VESSELS; MISCELLANEOUS AMENDMENTS

It is proposed to amend 46 CFR 91.05–10, regarding conditions for issuing a permit for a vessel to proceed to another port for repair, so that the Officer in Charge, Marine Inspection, will determine whether or not persons in addition to the crew may be carried on a cargo vessel while it is operating under the authority of a permit to proceed.

It is proposed to amend Section 91.25–15 so that the weight tests for lifeboats will be made once in every two calendar years rather than once in each calendar year.

It is proposed to amend 46 CFR 92.15–10, regarding ventilation for closed spaces, so that on an unmanned cargo barge not fitted with a fixed bilge system, the vents and ventilators from void spaces may be omitted. It is felt this venting for void spaces is not essential. The elimination of the vents may keep the barge afloat in the event of damage since air trapped above the damage would prevent the compartment from flooding.

It is proposed to add new regulations designated 46 CFR 97.12–1 which will establish minimum standards for the proper stowage of bulk ore and similar cargoes when carried on general cargo vessels.

ITEM X—EMBARKATION-DEBARKATION LADDERS (FLEXIBLE) FOR MERCHANT VESSELS

It is proposed to amend 46 CFR 75.50–5, 94.50–5, and 160.017–1 to 160.017–8, regarding flexible ladders, to provide for the alternate use of manila rope or chain suspension embarkation-debarkation ladders at the lifeboat stations on ocean and coastwise passenger, cargo, and miscellaneous vessels in lieu of the wire rope and chain suspension ladders now required; to require that pilot ladders be manila rope suspension ladders; and to include requirements for spreaders and man ropes for use in conjunction with the pilot ladders.

ITEM XI—ELECTRICAL ENGINEERING REGULATIONS; NECESSARY CHANGES AND ADDITIONS

It is proposed to revise the Electrical Engineering Regulations to clarify their intent, to include new items presently used by industry, to revise wording of certain regulations to agree with recommendations of the ABS, to make minor editorial changes, and to otherwise bring the regulations up-to-date with current practices.

It is proposed to amend 46 CFR 110.10–1 regarding reference specifications, standards, and codes so that the names will be in agreement with current reference standards and to add a new specification entitled "Standard for Commercial Electric Cooking Appliances."

The definitions of terms used in this subchapter will be revised to reflect current usage of various terms. It is proposed to amend 46 CFR 110.15 regarding cable terms; 110.15–45 regarding corrosion-resistant or noncorrodible materials; and 110.15–65 regarding equipment enclosure terms.

There are many proposed changes in 46 CFR Part 111 which are intended to bring the regulations up-to-date and to add various miscellaneous requirements.

It is proposed to amend the general requirements regarding source of power, emergency lights, emergency lighting systems for small vessels, temporary emergency source loads, final emergency source loads, and emergency diesel-engine-driven generator sets. These changes are to clarify the present requirements and to provide reasonable requirements for small passenger vessels.

It is proposed to amend 46 CFR 112.05–1 to clarify the meaning of "approved safety lanterns" and equalize the requirements for dry cargo vessels and tank vessels with respect to source of power for emergency lighting and power systems; 112.05–10, regarding emergency lights, to add a cross reference to a new regulation to be designated 46 CFR 112.05–15 (c) dealing with emergency lighting systems for small passenger vessels; 112.15–1 and 112.15–5 to clarify requirements regarding emergency loads and add requirements for emergency lighting systems for small passenger vessels; 112.50–1, regarding general requirements for emergency diesel-engine-driven generator sets, to add a requirement regarding tube oil alarm. In case loss of oil pressure occurs while a generator set is running, an alarm will sound.

It is proposed to amend 46 CFR 112.05–1 and 112.05–15 with respect to emergency lighting and power systems so that seagoing barges may be exempt from carrying an emergency lighting system and to permit daylight operation of small passenger vessels without an emergency lighting system.

It is proposed to revise the general requirements for automatic fire detecting and alarm systems, manual fire alarm systems, general alarm systems, sound powered telephone and voice tube systems and emergency loudspeaker systems.

It is proposed to amend 46 CFR 113.10–5 to provide that automatic fire detecting and alarm systems on vessels contracted for on or after November 19, 1958, shall meet the requirements of the proposed specification subpart designated 46 CFR 161.002 (see Item XIV); 113.15–5, regarding general requirements for manual fire alarm systems, to provide that such systems installed on vessels contracted for on or after November 19, 1958, shall meet the requirements of the proposed specifications subpart designated 46 CFR 161.002; 113.25–10 and 113.25–15, regarding general alarm systems, to eliminate conflicts in the requirements to provide greater discretion in determining acceptable installations; 113.30–5, to clarify the intent of the requirements for sound power, telephone and voice tube systems; 113.50–5 to provide that emergency loudspeaker systems installed on vessels contracted for on or after November 19, 1958, shall meet the requirements of the proposed specification subpart designated 46 CFR 161.004. (See Item XV.)

It is proposed to amend 46 CFR 113.50–15 to revise requirements regarding location of loudspeakers and amplifiers and defines "decibel" as used in Table 113.50–15; 113.55–15 and 113.55–25 to permit the use of a two-gang receptacle outlet with dual lamp type navigation lights rather than require two single receptacle outlets; 113.60–5 and 113.60–10, regarding signalling lights, to revise references to other requirements and clarify applicability to cover all ocean and coastwise vessels over 150 gross tons; 113.65–5, regarding whistle operators, to add a cross reference to other requirements for tank vessels; 113.70–5 and 113.70–10, regarding smoke detector systems, to provide that such systems installed on vessels on or after November 19, 1958, shall meet the requirements of the proposed specification subpart designated 46 CFR 161.002 and to change requirements to agree with this proposed specification.

ITEM XII—ACCESS TO AND RELEASE OF MERCHANT MARINE SAFETY RECORDS AND INFORMATION THEREFROM

Up to the present time the requirements regarding access to and release

of merchant marine safety records and information have been general regulations in Part 1 of Title 33 and regulations pertaining to specific suggestions in Chapter 1 of Title 46, Code of Federal Regulations. In view of the administrative difficulties encountered, it is proposed to have the regulations regarding access to and release of such records and information together in a new Part 5 in Chapter 1 of Title 46, CFR, to be entitled "Access to and Release of Merchant Marine Safety Records and Information Therefrom."

The proposed regulations deal not only with access to and release of records or information for which fees may be charged in accordance with the schedule of fees in 33 CFR 1.25, but clarifies the extent of disclosure of information which may be made orally or in writing by Coast Guard officials. Many existing policies have been formalized by the proposed regulations in order to eliminate confusion and to make access to merchant marine safety records and information uniform in all districts.

It is proposed to amend 46 CFR 4.01–30, 136.13–1, 136.13–5 to 137.17–20, by canceling specific requirements with respect to merchant marine safety records and by adding appropriate cross references to the proposed regulations to be added as 46 CFR Part 5. The proposed regulations in 46 CFR Part 5 describe who the custodians of records may be, to whom applications for records or information may be made, and when compulsory process to obtain certain types of records will be required. Specific instructions are proposed with respect to records and information concerning shipment and discharge of seamen, official logbooks of merchant vessels, marine casualty investigations, suspension and revocation proceedings, licensing and certificating of merchant marine personnel inspections, and numbering of undocumented vessels.

ITEM XIII—DANGEROUS CARGO REGULATIONS; MISCELLANEOUS AMENDMENTS

Most of the amendments proposed to the Dangerous Cargo Regulations in 46 CFR Part 146 have been necessitated by changes made in the regulations of the Interstate Commerce Commission governing land transportation of the same commodities. The proposed amendments include provisions for water shipment of new articles of commerce, additional shipping containers, marking and labeling requirements for certain commodities and editorial changes.

Item XIV—SPECIFICATIONS FOR FIRE-PROTECTIVE SYSTEMS

It is proposed to establish a specification for manufacturers to follow in obtaining approval of automatic and manual fire alarm systems. Smoke detector systems, and supervised patrol equipment for use on inspected vessels. To accomplish this it is proposed to add a new subpart to Subchapter Q (Specifications) in Chapter I of Title 46 CFR which will be designated "Subpart 161.002—Fire-protective Systems for Merchant Vessels" in Part 161—Electrical Equipment.

The proposed subpart will consist of sections designated 46 CFR 161.002–1 to 161.002–17, inclusive. The proposed specification will contain requirements describing applicable standards and regulations; general requirements for fire protective systems; general design requirements, both mechanical and electrical; electrical component parts required; general requirements for automatic fire detecting systems; power supply for automatic fire detecting systems; automatic fire detecting system control unit; fire detecting thermostat; manual fire alarm system; manual fire alarm boxes; watchman's supervisory systems; smoke detecting systems; methods of sampling, inspection, and testing; type approval tests; procedure for approval; and equivalents which will be accepted in lieu of materials required.

ITEM XV—SPECIFICATIONS FOR EMERGENCY LOUDSPEAKER SYSTEMS

It is proposed to establish a specification setting forth the requirements for manufacturers to follow in obtaining approval of emergency loudspeaker systems for use on ocean and coastwise passenger vessels certificated to carry 500 or more persons, including officers and crew, and/or on all passenger vessels whose lifeboats are stowed more than 100 feet from the navigating bridge. To accomplish this it is proposed to add a new subpart to Subchapter Q (Specifications) in Chapter I of Title 46 CFR which will be designated "Subpart 161.004—Emergency Loudspeaker System" in Part 161—Electrical Equipment.

The proposed subpart will consist of sections designated 46 CFR 161.004–1 to 161.004–7, inclusive. Included in this subpart will be a description of the type of loudspeaker system; materials and workmanship required; requirements for loudspeaker systems, including mechanical and electrical design requirements; tests and inspections required; marking; and procedure for approval.

ITEM XVI—PRIVATE AIDS TO NAVIGATION, OUTER CONTINENTAL SHELF AND WATERS UNDER THE JURISDICTION OF THE UNITED STATES

At the present time there are no regulations prescribing the obstruction lights and fog signals required to be operated as privately maintained maritime aids to mark the artificial islands and structures erected on the ocean's bottom of the outer continental shelf or on waters under the jurisdiction of the United States.

It is proposed to amend 33 CFR 66.01–35, 70.01–1, 70.05–20, and 74.01–1, as well as to add to Subchapter C, Aids to Navigation, a new Part 67 entitled "Private Aids to Navigation; Outer Continental Shelf and Waters Under the Jurisdiction of the United States."

These proposed regulations will cover the requirements for private aids to navigation considered necessary for the safety of marine commerce. The proposed regulations contain general requirements describing scope of regulations; definitions, authority, and classification of structures; general requirements for lights; general requirements for fog signals; applications required and procedures to be followed; description of Coast Guard districts and the lines of demarcation indicating jurisdiction and where Class A, B, or C requirements shall apply.

APPENDIX—PROPOSALS REGARDING INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA, 1948

The British Ambassador has submitted to the Coast Guard through the Department of State proposals to amend Regulation 30 in Chapter III of the International Convention for the Safety of Life at Sea, 1948, and requests advice whether or not the United States is in agreement with the proposed changes.

The proposed amendment consists of permitting inflatable life rafts in lieu of buoyant apparatus on vessels subject to the 1948 convention. The British have already permitted this substitution on their vessels which are not subject to this Convention and, in addition, permit the use of such equipment on "Convention Ships" if the inflatable life rafts carried are in addition to the prescribed amount of buoyant apparatus required by the Convention.

Since the Department of State requested the views of the Commandant to take into account the opinions of the shipping industry of the United States, including management and labor, the entire proposal is set forth in the Agenda in order that all opinions of the industry, written or oral, will be available at the time of this hearing.

MERCHANT MARINE PERSONNEL STATISTICS

MERCHANT MARINE OFFICER LICENSES ISSUED

QUARTER ENDING 31 DECEMBER 1955

DECK

Grade	Original	Renewal
Master:		
Ocean	68	507
Coastwise	6	53
Great Lakes	3	72
B. S. & L.	7	62
Rivers	12	35
Radio officer licenses issued	11	76
Chief mate:		
Ocean	49	144
Coastwise	2	15
Mate:		
Great Lakes		2
B. S. & L.		12
Rivers	32	25
Second mate:		
Ocean	33	101
Coastwise	1	
Third mate:		
Ocean	32	81
Coastwise		1
Pilots:		
Great Lakes	14	32
B. S. & L.	140	44
Rivers	85	34
Master: Uninspected vessels	5	23
Mate: Uninspected vessels	1	12
Total	501	1,331
Grand total	1,832	

ENGINEER

Grade	Original	Renewal
STEAM		
Chief engineer:		
Unlimited	39	651
Limited	16	139
First assistant engineer:		
Unlimited	43	230
Limited	3	11
Second assistant engineer:		
Unlimited	45	260
Limited	1	1
Third assistant engineer:		
Unlimited	45	328
Limited	1	
MOTOR		
Chief engineer:		
Unlimited	18	92
Limited	30	123
MOTOR—continued		
First assistant engineer:		
Unlimited	4	31
Limited	3	7
Second assistant engineer:		
Unlimited	4	9
Limited		
Third assistant engineer:		
Unlimited	8	3
Limited		10
Chief engineer: Uninspected vessels	1	5
Assistant engineer: Uninspected vessels	2	3
Total	263	1,803
Grand total	2,166	

WAIVER OF MANNING REQUIREMENTS

Waivers	Atlantic coast	Gulf coast	Pacific coast	Great Lakes	Total
Deck officers substituted for higher ratings	6			3	9
Engineer officers substituted for higher ratings		1			1
Q. S. for A. B.	2	1			3
Wiper or coal passers for Q. M. E. D.				2	2
Total waivers	8	2		5	15
Number of vessels	4	2		3	9

INVESTIGATING UNITS

Coast Guard Merchant Marine Investigating Units and Merchant Marine Details investigated a total of 3,035 cases during the fourth quarter of 1955. From this number, hearings before Examiners resulted involving 46 officers and 258 unlicensed men. In the case of officers, 1 license was revoked, 6 were suspended without probation, 19 were suspended with probation granted, 5 licenses were voluntarily surrendered, 8 cases were dismissed after hearing and 5 hearings were closed with admonition. Of the unlicensed personnel, 27 documents were revoked, 15 were suspended without probation, 107 were suspended with probation granted, 81 documents were voluntarily surrendered, 16 hearings were closed with admonition, and 19 cases were dismissed after hearing.

ORIGINAL SEAMEN'S DOCUMENTS ISSUED

Type of document	Atlantic coast	Gulf coast	Pacific coast	Great Lakes and rivers	Total
Staff officer	32	6	23	2	63
Continuous discharge book		35			35
Merchant mariner's documents	1,086	442	454	1,223	3,205
AB any waters unlimited	102	23	84	30	239
AB any waters, 12 months	33	15	25	98	171
AB Great Lakes, 18 months	1		15	38	54
AB tugs and towboats, any waters	1	1	1		3
AB bays and sounds					0
AB seagoing barges		1			1
Lifeboatman	72	4	79	5	160
QMED	100	52	31	116	299
Radio operators	4		1		5
Certificate of service	1,007	464	452	1,176	3,189
Tankerman	3	28	11	69	111
Total	2,531	1,071	1,176	2,757	7,535

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 55-47]

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

INTERIM STOWAGE REQUIREMENTS FOR CHEMICAL AMMUNITION, CLASS II–D, WP AND PWP FILLED (SOLID)

The Chief of Ordnance, Department of the Army, stated that the stowage requirements in 46 CFR 146.29–100 for chemical ammunition, Class II–D, WP and PWP filled (solid), created unsatisfactory ballistics characteristics and unsafe munitions. Therefore, interim instructions to correct these defects are contained in this document and shall remain in effect until the regulations in 46 CFR 146.29–100 can be reviewed and amended as provided by law.

(a) The regulations in 46 CFR 146.29–100, regarding stowage of chemical ammunition, Class II–D, WP and PWP filled (solid), shall be modified by the following interim stowage requirements pending formal amendment in accordance with procedures in R. S. 4472, as amended (46 U. S. C. 170):

(1) It is important to stow chemical ammunition, Class II–D, WP and PWP filled (solid), in locations not subject to temperatures above 100° F.

(2) When shipments of Army ammunition of this class cannot be so stowed, the following shall be complied with:

WP and PWP filled items of ammunition shall be stowed in a nose up position unless other requirements are specified by the Army. The position of the nose end of the item of ammunition is marked on the outside of the package or container.

(Federal Register of Saturday, Nov. 5, 1955)

EQUIPMENT APPROVED BY THE COMMANDANT

[EDITOR'S NOTE.—Due to space limitations, it is not possible to publish the documents regarding approvals and terminations of approvals of equipment published in the Federal Register dated December 20, 1955 (CGFR 55–51). Copies of these documents may be obtained from the Superintendent of Documents, Washington 25, D. C.]

ARTICLES OF SHIPS' STORES AND SUPPLIES

Articles of ships' stores and supplies certificated from 31 December 1955 to 30 January 1956, 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

E. F. Drew and Co. Inc., 15 E. 26 St., New York 10, N. Y., Certificate No. 231, dated 26 January 1956, DREW A–32 INJECTOR AND BURNER CLEANER.

AFFIDAVITS

The following affidavits were accepted during the period from 15 December 1955 to 15 January 1956:

The Filer & Stowell Co., 147 East Becher Street, Milwaukee 7, Wisconsin, VALVES AND CASTINGS.

Fluid Controls, Inc., 1284 N. Center Street, Mentor, Ohio, VALVES.

Powhatan Brass & Iron Works, Ranson, W. Va., VALVES AND FITTINGS.

FUSIBLE PLUGS

The regulations prescribed in Subpart 162.014, Subchapter Q, Specifications, require that manufacturers submit samples from each heat of fusible plugs for test prior to plugs manufactured from the heat being used on vessels subject to inspection by the Coast Guard. A list of approved heats which have been tested and found acceptable during the period from 16 December 1955 to 16 January 1956 is as follows:

H. B. Sherman Manufacturing Co., Battle Creek, Mich., Heat Nos. 798, 799, 802, and 803.

The Lunkenheimer Co., Cincinnati 14, Ohio, Heat Nos. 517, 518, 519, 520, 521, 522, 523, and 524.

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 December 1955. 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	14,334
	(1) Portland, Maine	8,958
	(2) St. Albans	926
	(5) Providence	4,334
	Total	28,552
2 (St. Louis)	(45) St. Louis	10,156
	(12) Pittsburgh	2,118
	(34) Pembina	97
	(35) Minneapolis	2,280
	(40) Indianapolis	4,697
	(42) Louisville	2,719
	(43) Memphis (part)	5,192
	(46) Omaha (part)	319
	(47) Denver	24
	Total	27,582
3 (New York)	(10) New York	44,409
	(6) Bridgeport	8,637
	(11) Philadelphia	19,129
	Total	72,175
5 (Norfolk)	(14) Norfolk	16,178
	(13) Baltimore	23,227
	(15) Wilmington, N. C	7,799
	Total	47,204
7 (Miami)	(18) Tampa (part)	23,677
	(16) Charleston	1,483
	(17) Savannah	2,762
	(49) San Juan	431
	(51) St. Thomas	103
	Total	28,456
8 (New Orleans)	(20) New Orleans	20,732
	(18) Tampa (part)	564
	(19) Mobile	7,836
	(21) Port Arthur	4,403
	(22) Galveston	8,695
	(23) Laredo	1,475
	(24) El Paso	18
	(43) Memphis (part)	65
	Total	43,788
9 (Cleveland)	(41) Cleveland	8,696
	(7) Ogdensburg	2,724
	(8) Rochester	5,365
	(9) Buffalo	3,966
	(36) Duluth	2,570
	(37) Milwaukee	3,711
	(38) Detroit	19,718
	(39) Chicago	7,367
	Total	54,117
11 (Long Beach)	(27) Los Angeles	11,379
	(25) San Diego	2,144
	(26) Nogales	125
	Total	13,648
12 (San Francisco)	(28) San Francisco	13,518
	Total	13,518
13 (Seattle)	(30) Seattle	19,341
	(29) Portland, Oregon	8,727
	(33) Great Falls	544
	Total	28,612
14 (Honolulu)	(32) Honolulu	3,297
	Total	3,297
17 (Juneau)	(31) Juneau	7,710
	Total	7,710
	Grand total	368,650

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