PROCEEDINGS
OF THE MARINE SAFETY COUNCIL

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PROCEEDINGS

OF THE MARINE SAFETY COUNCIL

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FRONT COVER

The *Venator* is a liquefied natural gas and ethylene carrier with four Kvaerner-Moss spherical aluminum tanks having a total cargo capacity of 29,000 cubic meters of liquefied gas. The ship was built by Moss Rosenberg Verft for Norwegian flag, and has been reviewed under the Coast Guard's Letter of Compliance program.

BACK COVER

The mascot trademark of the Inland Waterways Safety and Health Association's Smart Duck Club is pictured on the back cover. See the "maritime sidelights" article on this positive safety program.

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maritime sidelights

DUCK!

In January 1974, the *Proceedings* featured a story entitled, "Be A Smart Duck!" The article concerned a safety program instituted by the Inland Waterways Safety and Health Association called the Smart Duck Club. Since that time the Smart Duck Club has continued to promote the positive aspect of safety and in particular the use of Coast Guard approved work vests.

The Smart Duck Club is now 2½ years old and going strong. The club now has 110 sponsoring member companies including four foreign sponsors.

There are 52 Smart Ducks on the rolls; that is, individuals who have officially received award certificates. In addition to these 52, six new applications are currently being processed. The awarded certificates break down by industry as follows:

Inland towing	20
Dredging	5
Corps of Engineers	10
Chemical (docks)	6
Offshore construction	1
Surveying	4
Offshore towing	1
Stevedoring	1
Ship repair	4

Of particular interest is the special award which the club presented to Mr. Robert Yhrl of the National River Academy. Although not one of the more dramatic incidents recorded by the club, it does show the vast importance of the work vest as an indispensible piece of a vessel's safety equipment. Mr. Yhrl's story reads as follows:

"For the first time since I've been working on boats I began to practice safety. Having never worn a work vest on deck I found them to be confining at first, but because I continued to wear the vests while on deck I saved my life. One night, about 160 miles offshore, we were pulling anchors for a derrick barge in 10 to 12 foot seas. While the A.B. and I were working on deck the M/V *Gulf Stream* became broached in the seas. When this happened a large sea hit us both in the back and washed us overboard. I was washed about 100 feet from the boat and because of the large seas I had great difficulty swimming and was swallowing a lot of salt water. Because I had on a work vest I was able to stay affoat and probably was spared my life. Thank God for lifevests."

Sponsorship of the Club is open to any maritime industry employer who requires the wearing of Coast Guard approved work vests by his employees when they are exposed to a danger of falling overboard. Membership in the Club is open to any employee who, recognizing the potential danger on his job, wore a Coast Guard approved work vest which prevented his death hy drnwning due to an accidental entry into the water.

Further information about the Smart Duck Club may be obtained by writing the Inland Waterway Safety and Health Association, c/o W. Fassler, 225 Baroone St., New Orleans, LA 70112.

The Inland Waterway Safety and Health Association and its members are congratulated for the continued success of this positive safety program in a serious safety problem area. Of course falls overboard are to be avoided if humanly possible, and it is therefore to be hoped that the Smart Duck Club's membership remains small. But it is also hoped that every man who works in danger of falling into the water is a prospective member because he wears a Coast Guard approved work vest. Smart Ducks are better than dead ducks.

PLOTTING THE HAZARDS

Two unique ships are engaged in a 10-week search in the traffic-congested approaches to New York Harbor for at least nine sunken wrecks regarded as dangerous tn shipping.

The search began early in September and will continue until mid-November. The search will be conducted by wire-drag ships of the Commerce Department's National Oceanic and Atmospheric Administration. The ships, the only ones of their kind in the country, were constructed especially to locate underwater navigational hazards.

The ships are the *Rude* and the *Heck*. Their task is to verify or disprove reports of the existence of sunken vessels or other possible navigational hazards such as shoals, reefs, and pinnacle rocks. When proven, the ships determine the obstruction's precise location and the water's height above them. The positions of the wrecks are plotted on the nautical charts issued by NOAA's National Ocean Survey, and if deemed hazardous are reported to the Coast Guard fnr publication as a Notice to Mariners.

Generally, the National Ocean Survey regards wrecks and other submerged objects as dangerous to shipping if they are covered by less than 65 feet of water. Most merchant shipping requires a clearance of at least 45 to 50 feet, but some of the larger oil tankers reqoire more.

The wrecks being sought by the NOAA ships lie strung out in an area

(*Continued on page 157.*)

LNG

by LCDR A. E. Henn
and
LCDR T. R. Dickey

The U.S. Coast Guard is responsible for the development and enforcement of standards for the design, construction, alteration, repair, maintenance, and operation of merchant vessels documented under the laws of the United States. Foreign-flag vessels carrying bulk liquified gases in the navigable waters of the United States are also the responsibility of the Coast Guard. The Coast Guard reviews the properties of particular cargoes and identifies the hazards associated with the carriage of that cargo. The Coast Guard specifies the necessary standards for a particular cargo, or type of vessel, to insure that the associated hazards are properly addressed. Compliance with these standards is ensured by promulgating regulations which govern the design, construction, inspection, and operation of vessels engaged in the carriage of hazardous materials. Compliance is also ensured by reviewing and approving the construction plans, inspecting the vessel to verify that it is built in accordance with the approved plans, and exercising operational controls relating to the vessel and the ports it intends to enter. Compliance with these standards is intended to protect life, property, and the marine environment within U.S. ports regardless of the flag the vessel flies. The new proposed regulations for liquefied gas carriers are being developed in this manner.

History

In the early 1960's many hazardous cargoes were carried in and out of U.S. ports on foreign-flag vessels. Historically the Coast Guard had exercised little or no control over these vessels. Recognizing that these vessels presented a potential risk to U.S. ports, the Coast Guard instituted the Letter of Compliance (LOC) program to regulate the shipment of hazardous cargoes, including liquefied gases, on foreign vessels. The Letter of Compliance program requires that any foreign vessel that loads, discharges, or carries one of the designated cargoes in U.S. ports must have a Letter of Compliance.

Before issuing a Letter of Compliance, the Coast Guard reviews the vessel plans and specifications pertaining to the safe containment and handling of the cargo. This review includes vessel design, materials of construction, and test specifications; and arrangement of tanks, valves, piping, firefighting capabilities, venting, and other related systems and equipment. After the plan review an examination is held upon the vessel's first arrival in a U.S. port. This examination ensures that the vessel is designed, constructed, and operated in accordance with applicable U.S. standards.

The basic regulatory requirements for the design, construction, and testing of liquefied-gas ships are contained in Subchapter D, Tank Vessels (46 CFR Part 38), and the various other subchapters of 46 CFR that address commercial vessel safety. These regulations cover the certification of U.S. vessels carrying liquefied gases and are the basis for the review of foreign-flag vessels prior to issuance of a Letter of Compliance. The Coast Guard uses the same set of requirements for U.S.- and foreign-flag vessels. This ensures that a consistent level of safety is maintained for the cargo containment and transfer systems and other related safety features.

In the spring of 1971, a tentative guide was developed which outlined the requirements that were being applied to liquefied-gas ships. At the same time, the Coast Guard requested the Chemical Transportation Industry Advisory Committee (CTIAC)

to undertake a thorough revision of the existing regulations and to prepare for participation in the development of international standards for gas ships. A CTIAC task group was formed of experienced designers, builders, and operators of vessels and barges carrying liquefied gases. This group includes representatives of the American Bureau of Shipping, the American Petroleum Institute, the Shipbuilders Council of America, the Manufacturing Chemist's Association, the Society of Naval Architects and Marine Engineers, the Compressed Gas Association, and the American Gas Association. The Coast Guard and CTIAC have participated in the development of IMCO's "Draft Code for the Construction and Equipment of Vessels Carrying Liquefied Gases in Bulk."

At the present time, the Coast Guard and its industry advisory committee are working to transform IMCO's recommendations into national regulations.

Considerations

The proposed regulations for liquefied gas carriers will parallel the recomendations of the IMCO Code for Liquefied-Gas Ships. This includes such items as definitions, ship stability requirements, cargo tank location, ship arrangements, cargo containment systems, piping system requirements, materials of construction, cargo pressure and temperature control, cargo venting systems, filling limits for cargo tanks, environmental control in and around cargo tanks, fire protection, ventilation in the cargo area, instrumentation, crew protection, operating requirements, and special requirements for particular gases. Amplifying requirements need to be added in many instances where the draft IMCO Code leaves matters to the discretion of the administration or is not specific enough for regulatory purposes. The major areas where this is the case are addressed here.

The definition of a liquefied gas may be changed in U.S. regulations from a product having a vapor pressure of 2.8 kp/cm² at 37.8° C to one having a vapor pressure of 1.76 kp/cm² at 37.8° C (*i.e.*, change from a Reid vapor pressure of 40 p.s.i.a. to 25 p.s.i.a.). This action will include the "certain other substances" referred to in section 1.1 of the draft IMCO Code, but does not include any product in IMCO's Chemical Code except ethylamine, which is presently listed in both Codes. This was proposed by the U.S. delegation to IMCO but was not adopted, although there was apparently no real objection to the change. It does not affect the list of regulated cargoes.

The new proposed regulations should also correct the requirement in 3.6.1 of the draft IMCO Code that airlock doors be *no more than* 2 meters apart. The intent was, obviously, that they be *at least* 2 meters apart. The rate of air change between the doors is not specified by IMCO and probably will be prescribed as 30 changes per hour, as required for pump rooms.

The draft IMCO Code requirements of 3.7.1 (a) and (b) for drainage arrangements in hold spaces need to be made uniform for ships with or without secondary barriers. As written, the draft IMCO Code appears to be more restrictive on a hold space containing a pressure vessel tank than one containing a membrane tank, a situation that is hardly justifiable.

A provision for pumping leaked cargo from interbarrier spaces to an emergency dumping arrangement needs to be considered further and may be allowed as an alternative to

returning it to cargo tanks as the Code now requires.

In Chapter 4 of the draft IMCO Code, there is a provision for the designer to evaluate the insulation and hull steel assuming that the cargo tank and secondary barrier, if installed, are at the design temperature and the ambient outside air and sea design temperatures are:

General Worldwide
Still Air: +5° C (+41° F)
Sea Water: 0° C (+32° F)

There are also provisions for an administration to set higher or lower ambient design temperatures. For service to the United States these temperatures are:

Lower 48 States
Air (at 5 knots): −18° C (0° F)
Sea Water: 0° C (+32° F)

Alaska
Air (at 5 knots): −29° C (−20° F)
Sea Water: −2° C (+28° F)

The Coast Guard's new proposed regulations will specify enhanced grades of steel for crack arresting purposes in the deck stringer, sheer strake, and bilge strake. The minimum acceptable grades are Grade E steel for the deck stringer and the sheer strake, and Grades D or E for the bilge strake.

In Chapter 4 of the draft IMCO Code, the allowable stresses for membrane, semimembrane and independent tank types A, B, and C are specified. For independent tank types B and C, the allowable stress factors represent the minimums accepted by various classification societies and

administrations. The Code also recognized that some administrations require greater allowable stress factors. Such is the case for the United States.

While the IMCO Code allows for other, unspecified methods, the only acceptable methods of pressure/temperature control permitted in the United States are those that do not include venting of cargo vapor.

Acceptable methods of pressure/temperature control in the United States do not include venting of cargo vapor.

Also, waste heat condensers used in connection with LNG boil-off propulsion plants must be designed to provide a holding time of 21 days. However, the new proposed regulations may allow the use of 100 percent gas firing of boilers and gas turbines at sea, provided that in restricted waters a pilot fuel must be maintained in the event the gas fuel supply is cut off.

There will also be some requirements in addition to the special requirements of Chapter 17 of the draft IMCO Code. Most will be the addition of some new regulations, effective 16 July 1975, concerning the transfer of vinyl chloride. The only other provision of substance is a specification for the composition of methyl acetylene-propadiene mixture. The draft IMCO Code is purposely not specific in this regard in order not to encounter difficulties with patented mixtures. The Coast Guard intends to require that experimental data demonstrating the stability of any mixture not meeting the specifications in the proposed regulations be submitted to our Cargo and Hazardous Materials Division for review in advance of approving the shipment.

Recognizing that operating requirements are as important to the receiving administration as to the flag administration, the new proposed regulations may expand on those contained in the IMCO draft. Any operating guidelines in the new U.S. regulations would apply to foreign ships as well as U.S.-flag ships.

The new proposed regulations will contain requirements for inspection for certification and reinspection of U.S.-flag vessels at intervals which are the same as for existing vessels inspected under Subchapter D; that is, inspection for certification every 2 years with a reinspection between the 10th and 14th month following issuance of the Certificate of Inspection. For foreign vessels operating in U.S. ports, and examination of the vessel to ensure that it has been adequately maintained is required every 2 years in order to renew the Letter of Compliance.

Letter of Compliance Program

How will the proposed regulations affect the Letter of Compliance program? The primary objective that the United States hoped to attain in the development of the IMCO Code for Liquefied-Gas Ships was to terminate the Letter of Compliance program for new gas ships.

The primary objective that the U.S. hoped to attain was to terminate the LOC program for new gas ships.

It is our opinion that the development of the Code has achieved this end. The Code contains sufficient detail and depth to allow a national administration to assure itself that a gas ship entering its ports has been designed to the necessary standards. The intent of the Coast Guard, therefore, is to accept an IMCO Certificate of Fitness on a new ship in full compliance with the Code in lieu of all plan review.

The Certificates must be issued by or on behalf of the flag administration and will be required to be submitted in advance of the vessel's arrival to ensure that the allowable stress levels and the design ambients are in accordance with Coast Guard requirements. If the design ambients are not as specified, the ports and the seasons that the vessel may be allowed entry may be restricted. The Coast Guard

The Coast Guard will not relax any existing standards of the Letter of Compliance program.

may also require a few plans such as general arrangement, fire and safety plan, etc., to be used during vessel examinations or in the event of an accident in one of our ports.

Once the Certificate has been received, an examination will be arranged for the vessel's first port of call. The purpose of the examination is to assure ourselves that the ship has been built and is operated in accordance with the Code and its Certificate. Once the examination is complete, a Letter of Acceptance will be issued; this is nothing other than a short letter notifying our local inspectors and Captains of the Port that the vessel's IMCO Certificate has been accepted in lieu of a Letter of Compliance. The Letter of Acceptance, like a Letter of Compliance, is valid for 2 years and is reissued upon completion of a satisfactory reexamination.

How the Coast Guard will treat existing gas ships is dependent to some degree on what action IMCO takes on this subject. At the time of this article, this question has not been finally resolved by IMCO. However, several conclusions can be made at this time: First, the Coast Guard will not relax any existing standards of the Letter of Compliance program; second, Letters of Compliance now in effect will continue to be honored so long as the ships are maintained to approved standards unless IMCO recommends that existing ships should upgrade to meet standards higher

than those in effect in the Letter of Compliance program. If that is the case, similar provisions will be incorporated in our national regulations and the Letter of Compliance program.

One result of an IMCO resolution regarding existing ships, if specific enough to ensure a definitive standard, may be a reduction in the amount of plan review necessary to receive a Letter of Compliance. If an existing ship is certified by its flag administration to meet certain definitive standards (as opposed to standards that refer to a nonspecific level of compliance; such as, "to the extent considered reasonable and practicable and to the satisfaction of the administration"), then plan review for those items may be waived.

Obviously, there are many ships that do not have Letters of Compliance and cannot receive IMCO Certificates as new ships. Included in this group are 120 ships now under review by the Coast Guard for Letters of Compliance. Any ship that has applied for a Letter of Compliance since 11 March 1975, has been required to meet the IMCO Code in full. The ships being built for U.S. flag, with possibly a few minor exceptions on the first one or two ships of each class, will also comply fully. Ships that are still under construction, but applied before 11 March 1975, are being required to meet the Code insofar as is possible, taking into consideration their stage of construction.

The new regulations may be applicable to ocean-going barges as well as ships.

Existing ships that are now in service and have never undergone plan review for a Letter of Compliance will have to comply with the standards of the LOC program in effect at the time of their construction, as well as any additional requirements that may be specified by the portion of the new regulations dealing with existing ships. That portion has not yet been developed but will probably require that any ship entering U.S. trade for the first time comply with the ambient design temperatures, crack arresting steel, and allowable stress levels.

Areas for Future Work

The new proposed regulations may be applicable to oceangoing barges as well as ships. This matter is under consideration. However, in the United States there are many inland barges that carry liquefied gases. In fact, much of the Coast Guard's early experience with the transportation of liquefied gases goes back to the regulatory control of these inland barges. A study of the need for revising or updating the regulations for inland barges carrying liquefied gases is a natural followon to the present work.

The international standards are being used as a guide for revising U.S. national regulations.

As noted earlier, the ambient design temperature requirements in the draft IMCO Code are left to the discretion of the Administration. These temperature requirements for service to the United States are more stringent than the general requirements in the draft IMCO Code. Further investigation of the recorded ambient temperatures may provide the basis for raising the ambient design temperatures in the southern part of the United States or in northern regions during summer seasons.

Conclusion

The Coast Guard has been actively involved in developing standards for the safe transportation of liquefied gases for several decades. As a result, the benefits of having an international standard for the design, construction, and operation of liquefied-gas ships were recognized. The international standard is being used as guidance for revising the United States' national regulations. In doing so, the Coast Guard provides for the safe containment and transportation of liquefied gases in U.S. ports.

About the Authors

LCDR A. E. (Gene) Henn was graduated from the U.S. Coast Guard Academy in 1962. Following a 4-year tour aboard the USCGC *Chincoteague* as deck and engineering officer, he attended graduate school at the University of Michigan.

He is assigned to the Merchant Marine Technical Division at Coast Guard Headquarters. As the Liquefied Gas Safety Special Project Officer, he has coordinated the review of liquefied-gas ship projects, participated in the development of the international standards for liquefied-gas ships, and is presently working on the new Coast Guard regulation for liquefied-gas carriers.

LCDR Thomas R. Dickey was graduated from the U.S. Coast Guard Academy in 1966. He received his Masters degree in chemical engineering from the University of Maryland in 1973.

His current assignment is Assistant Branch Chief, Chemical Engineering Branch, Cargo and Hazardous Materials Division. He is also Technical advisor to the U.S. delegation to IMCO on development of the Gas Code. He is also the Coast Guard Liaison member of the Compressed Gas Association's Barge and Tanker Subcommittee, the Chlorine Institute, and the Chemical Transportation Industry Advisory Committee Task Group on LPG/LNG.

A LIFEBOAT RADIO PRIMER

By Alex Wowczuk, Radio Electronics Officer, Delta Lines

It is a good idea for additional shipboard personnel to be familiar with automatic operation of the lifeboat radio in case Sparks doesn't make the scene. The purpose of automatic operation is to enable survivors not familiar with the Morse code to put out a distress signal which hopefully will be heard by at least two stations in contact with each other so they can take radio bearings to locate the lifeboat. This method is certainly no substitute for two-way communication, but it is better than nothing. The purpose of this article is to present a simplified discussion to familiarize personnel with the procedure.

Learning something new can often be made easier by comparing it to something old which is similar. For example, putting the lifeboat radio into operation is easier when you think of it as being similar to setting up a radio in your own quarters. The three basic considerations in both cases are: (1) securing the radio in a convenient place; (2) hooking up the antenna, ground, and power; and (3) operating the controls. Let's take them one at a time.

1. *Securing the Radio in a Convenient Place.*

Getting the lifeboat radio into the boat and securing it in place can be a hassle if you're not familiar with a few points:

a. Know where the lifeboat radio is stowed and how to remove it from its mount. It's a little clumsy and heavy for one man to handle easily, so get someone to help you carry it to the boat.

b. A line is attached to its handles in the event it has to be lowered into a boat. The radio is supposed to be watertight and is supposed to float to prevent loss in case it accidentally falls into the sea.

c. After it's in the boat, remove the front cover by unsnapping the 10 fasteners and then secure it at a convenient place on a seat (thwart), using the hooks and straps stowed on its top. Crisscross the straps across each side of the set and place the hooks to grab the fore and aft edges of the seat. Then tighten the straps to secure the radio firmly in place.

2. *Hooking up the Antenna, Ground and Power.*

Putting up the antenna is the most involved part of the procedure, but it is not difficult, although at first it may appear to be. Hooking up the ground and power is easy:

a. The antenna consists of a 15-foot rod that installs into a socket at the top of the set and four wires connected to two clamps that are placed on the rod near its top. The wires are separated outward to the sides of the boat via four insulators secured by four ropes. The components are all stowed on the back of the front cover that was previously removed. Proceed as follows: (1) assemble the rod by snapping together the 11 sections of tubing, which are held together by internal flexible cables fastened with springs (take care not to pull these cables too far apart to avoid breaking the springs); (2) slip both clamps over top section of rod and slide down several inches and tighten the thumbscrews; (3) untie and straighten out the four bundles of rope, insulators and wires that are attached to the two clamps so they will hange free when you raise the rod; (4) remove the artificial antenna (can with lamp on top) by pulling it out of the antenna socket and install the rod antenna in its place; (5) separate the four ropes and lash two to each side of the boat to equally brace the antenna. The wing-nut terminal on the antenna socket is used to connect a wire antenna, instead of the rod, in case the rod gets lost or broken. Additional wire for this purpose is also stowed inside the cover. But remember, and this is important, the wing-

nut terminal on the antenna socket is not a ground connection.

b. To hook up the ground, all you have to do is unwind the 20-foot length of wire stowed at the bottom of the set and which has a lead sinker at one end, make sure it is connected to the front panel on the other end, and drop the sinker over the side into the water.

c. To hook up the power, all you have to do is remove the two crank handles that are secured on the top of the set, shove them into the holes on each side of the set, and get old "Hoss" to start cranking. Make sure he's cranking in the direction of the arrows painted on the side. Crank at about 65 rpm which is about 1 turn every second. There are no batteries in this set.

3. *Operating the Controls.*

In automatic operation the set continuously sends distress signals on the short-range distress frequency (500 kc) to alert ships and stations nearby, followed by transmissions on the long-range distress frequency (8364 kc) to alert distant shore (Coast Guard) stations. Before you place the set in automatic operation, you have manually to tune the antenna to operate on 500 kc and also on 8364 kc. Here is how you do it:

a. Have one or two men steadily crank the generator in direction of arrows at no less than one turn per second and place the master switch in manual 500 kc position. Hold the key down and turn the 500 kc antenna tuning knob until the 500 kc antenna indicator lamp lights. Keep turning it to get maximum brightness. Release the key. Then press the key again to see if the 500 kc antenna indicator lights. If it does, the antenna is tuned for 500 kc operation. If it doesn't, try readjusting the 500 kc antenna tuning knob and also check to make sure that the ground connection on the front panel is tight.

b. With the generator still being cranked, place the master switch in manual 8364 kc position, hold the key down again, and this time turn the 8364 kc antenna tuning knob to get maximum brightness on the 8364 kc antenna indicator. Release the key. The set is now tuned for 8364 kc operation as well as 500 kc operation. Keep cranking. The set is ready to transmit automatic distress signals.

c. Place the master switch in the automatic position. The set will start sending distress signals on 500 kc for 75 seconds and then automatically switch over and send distress signals on 8364 kc for 45 seconds. This sequence is repeated as long as the set is being cranked. You can monitor the sequence by watching the two indicator lamps. The 500 kc lamp will show a series of 12 dashes, three dots, three dashes, three dots (SOS). The dashes are each 4 seconds long and are separated by 1 second intervals. The dashes are followed by the SOS signal repeated three times. The set then automatically switches over to operation on 8364 kc. SOS will be repeated three times and will be indicated on the 8364 kc lamp followed by a long dash lasting 30 seconds. The purpose of the long dash on 8364 kc is to enable distant shortwave stations to get a bearing on you. On 500 kc the 12, 4-second dashes serve to trigger the auto alarm system aboard nearby ships and afterwards can be used by them to take bearings. Hopefully, two or more ships in the vicinity will hear the distress signals and establish contact with each other to get a fix on you.

So, if anybody asks you if you know anything about using the lifeboat radio, tell them, SHO (*S*ecuring, *H*ooking up, *O*perating). ⚓

maritime sidelights

(*Continued from page 151.*)

some 2 to 11 miles off the New York-New Jersey coast, stretching in a southerly direction from a point in the Ambrose Channel about 5 miles off Rockaway Beach, Long Island, to a point off Sea Girt, N.J. Ambrose Channel is a major traffic waterway leading into New York Harbor.

The wrecks have been reported lying in the Barnegat to Ambrose Traffic Lane and in the New York Harbor Precautionary Area where traffic lanes leading into the harbor converge. The nine wrecks are:

Fishing vessel (FV) *Tamp III* reported sunk in 1970. Subsequently, the wreck was reported to have broken up, but efforts to locate it proved unsuccessful.

FV *Zephyr,* 51 feet, reported sunk in 1974.

Tug *H. W. Long,* 53 feet, reported sunk in 1973. Wreck rises 8 feet from the bottom.

A barge reported sunk in 1958 and covered by 50 feet of water.

Fishing vessel, 35 feet, reported sunk in 1971.

Dutch motor vessel *Pinta.* Reported sunk in 1963 in 78 feet of water, with 45 feet above it. This wreck is located within the southbound New York Harbor Traffic Lane Ambrose to Barnegat.

Tug *Nautilus,* 47 feet, reported sunk in 1971 in about 60 feet of water.

Ferry boat *Vega,* 75 feet, reported sunk in 1961 in about 60 feet of water.

Barge No. 10, reported sunk in 1965, with 15 feet of water above it. An effort that year to locate it proved unsuccessful.

In searching for wrecks and other underwater obstructions, the *Rude* and *Heck* use a system perfected early in this century by the Coast and Geodetic Survey, predecessor of the

National Ocean Survey. Operating parallel to each other, sometimes as much as 2 miles apart, they drag a quarter-inch steel wire, suspended under water from surface buoys to predetermined depths as great as 100 feet. As the wire catches on an obstruction, the wire becomes taut and the surface buoys generally form the letter V. A determination is then made of the exact location of the obstruction and the water's depth above its highest point. If necessary, divers examine it.

The *Rude* and *Heck* each carry a complement of 10 officers and crew. The ships are commanded by Commander Robert A. Ganse, a NOAA commissioned officer.

Safe Lifting

What limitation does safety place on weights to be lifted by one person? The individual difference between sailors makes this a hard question to answer categorically. For a rule of thumb, however, the U.S. Department of Labor recommends that men should handle no more than 50 pounds, women no more than 25 pounds. Naturally, this is for men of average size and weight in normally good physical condition.

Back injuries and hernias can result from improper lifting or handling of considerably lighter loads. Let's take a tip from the professional. The weight lifter's secret is proper leverage and the use of major leg muscles instead of the back muscles. The weight lifter never leans over to pick up the load. He squats down as near as possible to the load and keeps his back erect all the time. The lifting action comes from the legs and thighs. The weight lifter knows and uses the "safety angles."

Some of the factors contributing to injuries resulting from lifting, carrying or otherwise man-handling materials are:

(1) Handling loads that are too heavy.
(2) Lifting or lowering with the back muscles instead of the leg muscles.
(3) Handling load with an insecure grip and failing to watch where hands are placed.
(4) Handling without sufficient help or failing to use mechanical equipment.
(5) Handling before getting a firm footing.
(6) Lifting or lowering with a jerking, twisting movement of the body, or when the body is in an awkward position.

If you must use muscles for some of the material handling work, use the right ones. And remember, safety rules are of no value unless you follow them.

—Courtesy National Safety Council

Oops—Our Mistake!

In LCDR Fred H. Halvorsen's article "A Review of Some Recent Accidents in the Marine Transportation Mode" (June 1975), a mistake was made regarding the employment status of Mr. Ted Franklin. LCDR Halvorsen incorrectly assumed that Mr. Franklin was an employee of Sun Oil Company. This assumption was based on Mr. Franklin's article "Inert Gas Systems" published in the January 1975 issue of Marine Engineering Log. If we and LCDR Halvorsen had paid more attention to the footnotes in this article we would have reported that "* * * Ted Franklin in 1964 founded the E. R. Franklin Company of New York City, a marine technical services firm specializing in marine automation and valve control systems."

Look for further articles on inert gas in future issues when the subject will be discussed in depth.

Efficiency and Safety

How often do we hear the plaint "I can't do everything myself or be everywhere all the time! I have work to do! My job is to keep this show running! If I have to horse around with this safety jazz, I'll never get anything done! Then there would be trouble!"

Sound familiar? We have heard it before and, we must agree with the officer that getting the job accomplished is earning his pay. But—and this "but" is most important—he is not accomplishing the maximum if the people in his department are having accidents and injuries. It follows that the supervisor is not doing his job if accidents are occurring in his department.

We cannot think of any accident or injury that increased the efficiency of a department aboard ship. The steps taken to prevent recurrence have increased efficiency, but certainly not the accident itself. Too frequently accidents result in decreased efficiency arising out of delays, loss of man-hours due to injury, and material damage. Fundamentally it is cheaper, more economical—to prevent accidents than to pay for them.

Remember, the attitude of your company toward accident prevention is passed from management through you to the seamen. If you do not indicate an active interest, you are doing a disservice to the company. If you indicate a strong interest in accident prevention, this attitude will be contagious and good performance will result.

Management provides a safe place to work which, when maintained, limits unsafe conditions.

It is up to the department heads to establish job procedures, training, and supervision which eliminates unsafe acts. Conscientious and active interest along these lines will reduce accidents and injuries on the job to a minimum.

—Courtesy National Safety Council

MARINE SAFETY COUNCIL MEMBERSHIP

This is the second in a series of articles introducing the new members of the Marine Safety Council. Rear Admiral Malcolm E. Clark became a member of the Council in April upon assuming the post of Chief, Office of Engineering. He succeeded Rear Admiral James W. Moreau, who is now Commander of the 14th Coast Guard District, Honolulu.

Malcolm Emery Clark was born at Cambridge, New York, in 1923, and was graduated from Cambridge High School in 1940. In 1946 he received his commission and a Bachelor of Science degree in marine engineering from the U.S. Coast Guard Academy, New London, Conn. In his first assignment he served 2 years as gunnery officer on the cutter *Klamath* on Bering Sea patrol, ocean station patrol, and search and rescue out of Seattle, Washington. During the following year he commanded the Loran Transmitting Station, Umnak, Alaska.

From 1949 to 1951 he served as Assistant Engineer of the cutters *Bibb* and *Castle Rock* operating out of Boston on ocean station patrol and search and rescue. For the next 3 years he was a student at the Massachusetts Institute of Technology where he was awarded a degree in naval architecture and marine engineering in July 1954. From there Lieutenant Clark was assigned as Ship Superintendent at the Coast Guard Yard, Curtis Bay, Md.

Returning to Boston in July 1955, he served first as Engineer Officer of the cutter *McCulloch* and then as Assistant Chief and later Acting Chief, Naval Engineering Branch, 1st Coast Guard District. After next serving for 4 years as Chief of the Naval Engineering Branch of the 9th District, Cleveland, Ohio, he was assigned as Chief, Maintenance Branch of the Naval Engineering Division at Coast Guard Headquarters, Washington, D.C. From July 1968 to June 1972 Captain Clark served as head of the Applied Science and Engineering Department at the Coast Guard Academy. After a year as industrial manager at the Coast Guard Yard, he returned to Headquarters to assume the post of Deputy Chief, Office of Engineering in July 1973. By nomination of the President on January 17, and confirmation of the Senate, he was appointed Rear Admiral effective May 1.

Admiral Clark's wife is the former Anne C. Rook of Maplewood, N.J. They have a daughter and three sons. One son, Evan B. Clark, will graduate from the Coast Guard Academy in June 1976.

Admiral Clark is currently a member of the American Society of Naval Engineers, Society of Naval Architects and Marine Engineers, and the Society of American Military Engineers. ⚓

COAST GUARD RULEMAKING

(Status as of 1 September 1975)

	Notice of proposed rulemaking	Public hearing	Deadline for comments	Awaiting final action	Withdrawn	Published as rule	Effective date
BOATING SAFETY							
Lifesaving devices on white water canoes & kayaks (CGD 74–159) comment period extended 6–12–75	2–4–75		7–15–75	X			
Safe loading and safe powering standards (CGD 73–250)	3–6–75		4–21–75	X			
Inboard safe loading standard (CGD 74–83)	3–6–75		4–21–75			8–13–75	2–9–76
BRIDGE REGULATIONS							
Cheesequake Ck., NJ (CGD 73–162)	8–10–73		9–11–73	X			
Chicago River, IL (CGD 74–137)	6–3–74		7–16–74	X			
AIWW, Hallandale, FL (CGD 74–257)	11–5–74		12 –5–74	X			
Coney Island Creek, NY (CGD 74–300)	1–29–75		3–4–75	X			
Matanzas River, FL (CGD 75–024)	1–29–75		3–4–75	X			
Fox River, WI (CGD 75–035)	2–6–75		3–7–75	X			
Oklawaha River, FL (CGD 75–062)	3–27–75		4–29–75				
Mystic River, MA (CGD 75–053)	3–27–75		4–29–75			8–1–75	9–1–75
West Palm Beach Canal, FL (CGD 75–070)	3–27–75		4–29–75	X			
Illinois River, IL (CGD 75–060)	4–1–75		5–6–75	X			
Kent Narrows, MD (CGD 75–081)	4–1–75		5–6–75				
Passaic River, NJ (CGD 75–052)	4–4–75		5–6–75	X			
Back Bay of Biloxi, MS (CGD 75–088)	4–30–75		6–10–75	X			
Lake Okeechobee, FL (CGD 75–076)	4–30–75		5–29–75			8–1–75	9–1–75
Peace River, FL (CGD 75–086)	4–30–75		6–3–75	X			
Snake R. & Clearwater R., Lewiston ID & Clarkston, WA (CGD 75–099)	4–30–75		6–10–75	X			
Coosaw R., FL (CGD 75–087)	5–5–75		6–9–75	X			
Duwamish Waterway, WA (CGD 75–097)	5–13–75		6–30–75	X			
Escatawpa R., MS (CGD 75–114)	6–9–75		7–8–75			8–1–75	9–1–75
Gulf Intracoastal Waterway, LA (CGD 75–131)	6–18–75		7–22–75	X			
Tombigbee River, AL (CGD 75–153)	8–5–75		9–5–75	X			
Clearwater Pass FL (CGD 75–299)	8–12–75		9–12–75	X			
HAZARDOUS MATERIALS							
Miscellaneous Dangerous Cargoes (CGD 72–182)	11–11–72	12–12–72	12–29–72			8–26–75	11–24–75
Dangerous Cargo Regulations, miscellaneous (CGD 73–249)	1–16–74		3–4–74			6–18–75	9–17–75
Sodium sulfide solution and sulfur dioxide (CGD 73–275)	7–16–74 Corrected 9–5–74		12–5–74	X			
Unslaked lime in bulk (CGD 74–225)	1–29–75	2–25–75	3–17–75			8–15–75	9–15–75
Portable tanks, proposed DOT specification (CGD 74–292)	6–9–75	7–1–75	7–16–75	X			
Dangerous cargo labeling (CGD 75–050)	6–18–75	7–16–75	7–31–75	X			
MARINE ENVIRONMENT AND SYSTEMS (GENERAL)							
Pipelines, lights to be displayed (CGD 73–216)	9–19–74 Corrected 10–18–74	10–21–74	11–4–74	X			

Coast Guard Rulemaking—Continued

	Notice of proposed rulemaking	Public hearing	Deadline for comments	Awaiting final action	Withdrawn	Published as rule	Effective date
Oil and hazardous substance liability (CGD 73–185).....	12–4–74	.....	1–16–75	X	.....	.....	.....
Mooring barges on the Mississippi (CGD 74–185).....	2–4–75	2–19–75 New Orleans	3–17–75	X	.....	.....	.....
Deepwater ports (CGD 75–002); corrected 5–19–75....	5–7–75	6–6–75	6–23–75	X	.....	.....	.....
Demarcation line, Guayanilla Bay, PR (CGD 73–287)..	6–18–75	.....	8–4–75	X	.....	.....	.....
MERCHANT MARINE SAFETY (GENERAL)							
Bulk Dangerous Cargoes, Inspection of Barges (CGD 73–271).....	3–11–74	4–15–74	4–30–74	X	.....	.....	.....
First Aid Certificates (CGD 73–272).....	4–2–74	.....	6–15–74	X	.....	.....	.....
Carriage of Solid Hazardous Materials in Bulk (CGD 74–13).....	5–15–74	7–16–74	8–31–74	X	.....	.....	.....
Tank vessels in domestic trade (CGD 74–32).....	6–28–74 Corrected 7–23–74	7–23–74 Seattle 7–30–74 Wash. D.C.	8–19–74	X	.....	.....	.....
Load line regulations, rail height adjustment (CGD 74–164).....	10–4–74	.....	11–15–74	X	.....	.....	.....
Construction and equipment of tank vessels (CGD 74–127); advance notice 9–5–74.....	4–21–75	5–21–75	6–5–75	X	.....	.....	.....
Great Lakes pilotage (CGD 74–233).....	11–5–74	11–20–74	11–26–74	X	.....	.....	.....
Manning of nautical school ships (CGD 74–201).....	1–21–75	.....	3–6–75	X	.....	.....	.....
Licensing and certificating; apprentice mate endorsement (CGD 74–226); Comment period extended 3–7–75...	1–23–75	.....	4–9–75	....	.....	8–13–75	9–12–75
Marine engineering systems and components; miscellaneous amendments (CGD 73–254); corrected 5–6–75...	4–3–75	5–7–75	5–15–75	X	.....	.....	.....
Bulk grain cargoes; intact stability requirements (CGD 74–182).....	4–17–75	.....	5–31–75	....	.....	8–20–75 Corrected 8–28–75	9–19–75
Oceanographic vessels (CGD 75–031).....	6–12–75	.....	7–28–75	X	.....	.....	.....
Specifications for inflatable life rafts (CGD 75–040).....	8–1–75	.....	9–15–75	X	.....	.....	.....
Metal borings, shavings, turnings, and cuttings (CGD 75–133).....	8–1–75	.....	9–15–75	X	.....	.....	.....
Marine occupational safety and health standards (CGD 75–101); Advance notice.....	8–11–75	.....	12–9–75	....	.....	.....	.....
Tank vessels; air compressors, cargo handling room bilges (CGD 75–017).....	6–13–75	.....	9–29–75	X	.....	.....	.....
Load line fee schedule (CGD 75–139).....	8–15–75	.....	9–29–75	X	.....	.....	.....

NOTE: This table which will be continued in future issues of the Proceedings is designed to provide the maritime public with better information on the status of changes to the Code of Federal Regulations made under authority granted the Coast Guard. Only those proposals which have appeared in the Federal Register as Notices of Proposed Rulemaking, and as rules will be recorded. Proposed changes which have not been placed formally before the public will not be included.

Merchant Marine Personnel Statistics

Merchant Marine Officer Licenses Issued Fiscal Year Ending June 30, 1975

Deck

Grade	July through September (1974)		October through December (1974)		January through March (1975)		April through June (1974)	
	Original	Renewal	Original	Renewal	Original	Renewal	Original	Renweal
Master:								
Ocean	69	287	74	268	61	276	94	278
Coastwise	7	17	3	14	9	21	4	23
Great Lakes	4	4	1	16	17	80	1	9
B.S. & L	11	39	14	47	15	52	16	58
Rivers	5	42	11	38	8	51	5	48
Radio officer licenses issued	4	146	6	128	3	92	2	78
Chief Mate:								
Ocean	44	85	38	63	52	57	51	70
Coastwise	1	2	0	1	0	4	2	1
Great Lakes	0	0	0	0	0	0	0	0
B.S. & L	0	0	0	0	0	0	0	1
Rivers	0	1	0	0	0	0	1	0
2d Mate:								
Ocean	24	60	44	65	55	71	75	74
Coastwise	0	0	0	0	0	1	1	1
3d Mate:								
Ocean	45	115	19	75	50	74	290	142
Coastwise	0	0	19	1	8	1	10	0
Pilots:								
Great Lakes	23	14	33	13	24	74	41	13
B.S. & L	99	80	65	86	102	106	77	114
Rivers	88	98	95	83	73	101	76	110
Master: Uninspected vessels	79	32	105	31	129	47	147	46
Mate: Uninspected vessels	25	4	36	5	25	6	37	5
Motorboat operators	819	834	631	561	789	813	1,410	1,021
Total	1,347	1,860	1,194	1,495	1,423	1,927	2,340	2,092

Original licenses issued: 6,304.
Renewals issued: 7,374.
Total deck licenses issued: 13,678.

Merchant Marine Officer Licenses Issued Fiscal Year Ending June 30, 1975

Engineer

Grade	July through September (1973)		October through December (1974)		January through March (1975)		April through June (1975)	
	Original	Renewal	Original	Renewal	Original	Renewal	Original	Renewal
STEAM	185	857	244	794	250	970	444	1102
Chief engineer:								
Unlimited	31	202	41	275	36	374	39	357
Limited	3	24	1	19	4	28	0	33
1st Assistant engineer:								
Unlimited	38	115	47	117	41	127	38	121
Limited	0	2	1	8	3	10	0	7
2d Assistant engineer:								
Unlimited	41	189	66	177	79	192	53	209
Limited	0	3	3	3	1	4	3	2
3d Assistant engineer:								
Unlimited	71	227	84	192	86	227	310	372
Limited	1	5	1	3	0	8	1	1
MOTOR	137	446	142	448	172	524	198	561
Chief engineer:								
Unlimited	16	35	21	65	28	78	21	58
Limited	24	59	11	76	34	79	15	75
1st Assistant engineer:								
Unlimited	7	20	8	18	8	30	5	12
Limited	16	18	10	18	7	19	4	24
2d Assistant engineeer:								
Unlimited	4	21	15	20	11	27	6	16
Limited	4	3	3	2	1	5	0	3
3d Assistant engineer:								
Unlimited	65	285	72	244	83	277	147	369
Limited	1	5	2	5	0	9	0	4
Chief engineer:								
Uninspected vessels	31	23	39	30	43	27	47	34
Assistant engineer:								
Uninspected vessels	12	5	11	5	26	12	32	10
Total	365	1,331	436	1,277	491	1,533	721	1,707

Original licenses issued: 2,013.
Renewals issued: 5,848.
Total engineer licenses issued: 7,861.

Certificates of Registry as Staff Officers Issued During Fiscal Year 1975

Staff officer	July through September 1974					October through December 1974					January through March 1975					April through June 1975				
	Atlantic coast	Gulf coast	Pacific coast	Great Lakes region	Total	Atlantic coast	Gulf coast	Pacific coast	Great Lakes region	Total	Atlantic coast	Gulf coast	Pacific coast	Great Lakes region	Total	Atlantic coast	Gulf coast	Pacific coast	Great Lakes region	Total
Chief purser	4	1	2	0	7	1	0	0	0	1	0	0	1	1	2	1	0	0	1	2
Purser	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	0	2	0	4
Senior assistant purser	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	0	0	1	0	1
Junior assistant purser	6	0	5	1	12	1	0	5	0	7	0	0	5	0	5	0	0	1	0	1
Surgeon	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	2	0	2
Professional nurse	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Total	10	1	7	1	19	4	1	7	0	12	2	0	7	1	10	3	1	10	1	15

Total staff officer certificates issued: 56.

Towboat Operators Licenses Issued During Fiscal Year Ending June 30, 1975

Period	Operator		2d Class		Endorsement to existing deck license	
	Candidates	Pass	Candidates	Pass	Candidates	Pass
July through September 1974	879	472	95	43	159	130
October through December 1974	1,717	874	90	49	359	284
January through March 1975	803	491	67	42	181	136
April through June 1975	259	139	47	22	82	77
Total	3,658	1,976	299	156	781	627

Number of Candidates: 4,738.
Number of Licenses Issued: 2,759.

The fiscal year covered in the table above was the last year in which licenses could be issued under reduced physical and professional examination requirements. Applicants able to take advantage of those reduced requirements had until 30 December 1974 to file their applications. The only examination required was on the subject of the Rules of the Road applicable to those broad geographical areas in which the license was sought.

Following is a recapitulation of the licenses issued during the years in which the reduced requirements were in effect:

Applicants licensed prior to 1 July 1973: 6,257.
Total licenses issued as of 1 July 1974: 18,907.
Total licenses issued as of 1 July 1975: 21,666.

Licenses Issued Nationwide for Fiscal Year 1974 and 1975 by Month

Month	1973–74	1974–75
July	3,789	2,104
August	7,122	1,848
September	2,699	1,596
October	2,033	1,760
November	1,777	1,657
December	1,593	2,192
January	1,967	2,032
February	1,964	1,709
March	2,714	2,302
April	2,741	2,370
May	3,491	2,378
June	2,431	2,350
Fiscal year total	34,321	24,298

The difference of 10,023 licenses between fiscal years 1974 and 1975 reflects the fact that the new licensing program for operators of uninspected towing vessels had begun and that applicants for this license during fiscal year 1974 were taking advantage of the reduced-scope examination allowed during that year.

Hearings Before Administrative Law Judges

	Deck	Engine	Radio	Unlicensed	Other [1]
Revoked	5	2	1	29	5
Suspended outright	19	3	2	36	10
Suspended outright & probation	33	7	1	92	9
Suspended on probation	67	18	2	141	28
Admonished	13	7	0	20	6
Dismissed after hearing	32	9	0	60	9

Total: 666.

[1] "Other" includes: ocean operators, operators on other than ocean and coastwise waters, motorboat operators, operators of uninspected towing vessels, and holders of Certificates of Registry as Staff Officers.

Original Merchant Mariners Documents Issued During Fiscal Year 1975

	Atlantic Coast	Gulf Coast	Pacific Coast	Great Lakes Region	Total
July through September	1, 168	1, 297	692	879	4, 036
October through December	1, 031	1, 162	679	624	3, 496
January through March	965	1, 292	615	611	3, 483
April through June	1, 271	1, 075	706	656	3, 708
Total	4, 435	4, 826	2, 692	2, 770	14, 723

Original and Additional Endorsements Issued During Fiscal Year 1975

	July through September 1974					October through December 1974					January through March 1975					April through June 1975				
	Atlantic coast	Gulf coast	Pacific coast	Great Lakes region	Total	Atlantic coast	Gulf coast	Pacific coast	Great Lakes region	Total	Atlantic coast	Gulf coast	Pacific coast	Great Lakes region	Total	Atlantic coast	Gulf coast	Pacific coast	Great Lakes region	Total
AB—Any waters, unlimited	35	38	22	11	106	54	34	38	8	134	46	30	28	9	113	248	30	36	15	329
AB—Any waters, 12 months	43	26	27	83	179	49	31	23	48	151	41	37	16	45	139	49	83	31	11	174
AB-Great Lks, 18 months	2	2	7	12	23	2	9	12	5	28	2	6	12	3	23	1	5	18	7	31
AB—Other	11	73	13	1	98	14	45	27	0	86	14	48	25	3	90	40	47	21	3	111
Lifeboatman	166	74	33	65	338	197	44	54	43	338	157	81	51	43	332	400	77	87	9	573
Electrician	11	1	8	1	21	24	5	16	0	45	23	6	10	1	40	16	6	16	0	38
Oiler	65	18	36	16	135	39	17	30	28	114	41	14	28	29	112	28	21	29	22	100
Fireman-Watertender	65	12	17	30	124	35	6	22	29	92	35	4	20	32	91	25	12	15	21	73
Other QMED ratings	167	53	53	1	274	120	68	57	4	249	120	54	59	3	236	168	71	47	7	293
Tankerman	86	233	16	140	475	94	104	14	160	462	100	189	20	218	527	96	149	25	182	452
Entry and Steward	1, 056	1, 041	715	821	3, 633	918	964	663	508	3, 053	901	1, 095	578	429	3, 003	997	931	703	523	3, 154
Totals	1, 707	1, 571	947	1, 181	5, 406	1, 546	1, 417	956	833	4, 752	1, 480	1, 564	847	815	4, 706	2, 068	1, 432	1, 028	800	5, 328

Total endorsements issued: 20,192.

Nautical Queries

This month's "Nautical Queries" features questions selected from examinations presently in use for deck officers (2d and 3d Mate) and engineers (2d and 3d Assistant).

1. You are steaming up Liston Range in the Delaware River. The range is given on the chart as 318° and the lights are in line ahead. If your heading by the gyrocompass is 320.5°, what is the gyrocompass error?

A. 1.5° east.
B. 2.5° east.
C. 1.5° west.
D. 2.5° west.

2. What is the name of the sextant altitude correction that compensates for the fact that the observer is on the surface of the earth rather than at the center?

A. Augmentation.
B. Parallax.
C. Dip.
D. Deflection of the vertical.

3. In a crossing situation in International waters, the privileged vessel is in doubt as to whether the burdened vessel is going to give way. According to the rules, in this situation the privileged vessel may sound the danger signal and do which of the following?

A. Alter course to the right.
B. Alter course to the left.
C. Slow, stop or reverse his engines.
D. Hold present course and speed.

4. The function of the freeing ports on a vessel with solid bulwarks is to

A. prevent stress concentration in the bulwark.
B. permit easy jettison of deck cargo in an emergency.
C. provide openings through the bulwarks for mooring lines.
D. allow water shipped on deck to flow off rapidly.

5. Which of the following can produce static electricity?

I. The flow of petroleum through pipes
II. The splashing or agitation of petroleum

A. I only
B. II only
C. Both I and II
D. Neither I nor II

6. Frapping lines are fitted to lifeboat davits to

A. secure the lifeboat in the davits when in the stowed position.
B. bring the lifeboat close alongside the rail in the embarkation position.
C. give the occupants a safety line when the boat is being lowered from the embarkation level.
D. reduce the swinging of the lifeboat at the embarkation level.

7. Carbon dioxide as a fire fighting agent has which of the following advantages over other agents?

A. It causes minimal cargo damage.
B. It is safer for personnel.
C. It is cheaper.
D. It is more effective on a per unit basis.

8. The canister-type gas mask can be tested for tightness by

A. covering the bottom of the canister and inhaling.
B. covering the top of the canister and exhaling.
C. covering the bottom of the canister and exhaling.
D. covering the top of the canister and inhaling.

9. With the steam control valve wide open during normal operation the rate of steam flow from the auxiliary exhaust steam line into the D. C. heater is actually controlled by the

A. spring pressure of the spray valves.
B. rate of condensation in the D. C. heater.
C. water level in the D. C. heater reservoir.
D. rate of evaporation in the D. C. heater.

10. A fire fighter's outfit on cargo vessels must have a

A. cannister type gas mask.
B. combustible gas indicator.
C. fresh-air breathing apparatus.
D. self-contained breathing apparatus.

11. A sulfite test is done on boiler water to determine the presence of dissolved

A. nitrate.
B. sulfate.
C. oxygen.
D. phosphate.

12. A common gas dissolved in water which causes the most corrosion in a condensate system is

A. carbon monoxide.
B. hydrogen.
C. nitrogen.
D. carbon dioxide.

13. Fuel oil tank vents are fitted with corrosion resistant screens to prevent

A. escape of flammable vapors.
B. flames entering the tank vent.
C. corrosion in the tank vent.
D. damage to the ball check.

Answers

1. D 2. B 3. D 4. D 5. C
6. D 7. A 8. A 9. B 10. D
11. C 12. D 13. B

MERCHANT MARINE SAFETY PUBLICATIONS

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

The Federal Register will be furnished by mail to subscribers, free of postage, for $5.00 per month or $50 per year, payable in advance. The charge for individual copies is 75 cents for each issue, or 75 cents for each group of pages as actually bound. Remit check or money order, made payable to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

CG No.	TITLE OF PUBLICATION
101	Specimen Examinations for Merchant Marine Deck Officers (Chief Mate and Master) (1–1–74).
101–1	Specimen Examinations for Merchant Marine Deck Officers (2d and 3d mate) (10–1–73).
108	Rules and Regulations for Military Explosives and Hazardous Munitions (4–1–72). F.R. 7–21–72, 12–1–72, 11–14–74, 6–18–75.
*115	Marine Engineering Regulations (6–1–73). F.R. 6–29–73, 3–8–74, 5–30–74, 6–25–74, 8–26–74, 6–30–75.
123	Rules and Regulations for Tank Vessels (1–1–73). F.R. 8–24–73, 10–3–73, 10–24–73, 2–28–74, 3–18–74, 5–30–74, 6–25–74, 1–15–75, 2–10–75, 4–16–75, 4–22–75, 5–20–75, 6–11–75, 8–20–75.
169	Rules of the Road—International—Inland (8–1–72). F.R. 9–12–72, 3–29–74, 6–3–74, 11–27–74, 4–28–75.
*172	Rules of the Road—Great Lakes (7–1–72). F.R. 10–6–72, 11–4–72, 1–16–73, 1–29–73, 5–8–73, 3–29–74, 6–3–74, 11–27–74, 4–16–75, 4–28–75.
*174	A Manual for the Safe Handling of Inflammable and Combustible Liquids (3–2–64).
*175	Manual for Lifeboatmen, Able Seamen, and Qualified Members of Engine Department (3–1–73).
*176	Load Line Regulations (2–1–71). F.R. 10–1–71, 5–10–73, 7–10–74.
182	Specimen Examinations for Merchant Marine Engineer Licenses (1–1–74).
182–1	Specimen Examinations for Merchant Marine Engineer Licenses (2d and 3d Assistant) (4–1–75).
184	Rules of the Road—Western Rivers (8–1–72). F.R. 9–12–72, 12–28–72, 3–8–74, 3–29–74, 6–3–74, 11–27–74, 4–16–75, 4–28–75.
190	Equipment Lists (8–1–72). F.R. 8–9–72, 8–11–72, 8–31–72, 9–14–72, 10–19–72, 11–8–72, 12–5–72, 1–15–73, 2–6–73, 2–26–73, 3–27–73, 4–3–73, 4–12–73, 4–26–73, 6–1–73, 8–1–73, 9–18–73, 10–5–73, 11–26–73, 1–17–74, 2–28–74, 3–25–74, 4–17–74, 7–2–74, 7–17–74, 9–5–74, 10–22–74, 11–27–74, 12–3–74, 12–30–74, 1–15–75, 1–21–75, 2–13–75, 2–19–75, 3–18–75, 3–19–75, 4–9–75, 4–16–75, 5–1–75, 5–7–75, 6–2–75, 6–25–75, 7–22–75, 7–24–75, 8–1–75, 8–20–75.
*191	Rules and Regulations for Licensing and Certification of Merchant Marine Personnel (6–1–72). F.R. 12–21–72, 3–2–73, 3–5–73, 5–8–73, 5–11–73, 5–24–73, 8–24–73, 10–24–73, 5–22–74, 9–26–74, 3–27–75, 6–2–75, 7–24–75, 8–13–75.
*200	Marine Investigation Regulations and Suspension and Revocation Proceedings (5–1–67). F.R. 3–30–68, 4–30–70, 10–20–70, 7–18–72, 4–24–73, 11–26–73, 12–17–73, 9–17–74, 3–27–75, 7–28–75, 8–20–75.
*227	Laws Governing Marine Inspection (3–1–65).
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257	Rules and Regulations for Cargo and Miscellaneous Vessels (4–1–73). F.R. 12–22–72, 6–28–73, 6–29–73, 8–1–73, 10–24–73, 12–5–73, 3–18–74, 5–30–74, 6–24–74, 1–15–75, 2–10–75, 8–20–75.
*258	Rules and Regulations for Uninspected Vessels (5–1–70). F.R. 1–8–73, 3–2–73, 3–28–73, 1–25–74, 3–7–74.
*259	Electrical Engineering Regulations (6–1–71). F.R. 3–8–72, 3–9–72, 8–16–72, 8–24–73, 11–29–73, 4–22–75.
*266	Rules and Regulations for Bulk Grain Cargoes (5–1–68). F.R. 12–4–69, 8–20–75.
268	Rules and Regulations for Manning of Vessels (12–1–73).
293	Miscellaneous Electrical Equipment List (7–2–73).
320	Rules and Regulations for Artificial Islands and Fixed Structures on the Outer Continental Shelf (7–1–72). F.R. 7–8–72.
323	Rules and Regulations for Small Passenger Vessels (Under 100 Gross Tons) (9–1–73). F.R. 1–25–74, 3–18–74, 9–20–74, 2–10–75.
329	Fire Fighting Manual for Tank Vessels (1–1–74).
439	Bridge-to-Bridge Radiotelephone Communications (12–1–72). F.R. 12–28–72, 3–8–74, 5–5–75.
*467	Specimen Examinations for Uninspected Towing Vessel Operators (10–1–74).

CHANGES PUBLISHED DURING AUGUST 1975

The following have been modified by Federal Registers:

CG–123, Federal Register of August 20.
CG–190, Federal Registers of August 1 & 20.
CG–191, Federal Register of August 13.
CG–200, Federal Register of August 20.
CG–257, Federal Register of August 20.
CG–266, Federal Register of August 20.

*Due to budget constraints or major revision projects, publications marked with an asterisk are out of print. Most of these pamphlets reprint portions of Titles 33 and 46, Code of Federal Regulations, which are available from the Superintendent of Documents. Consult your local Marine Inspection Office for information on availability and prices.


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