PROCEEDINGS
OF THE MERCHANT MARINE COUNCIL

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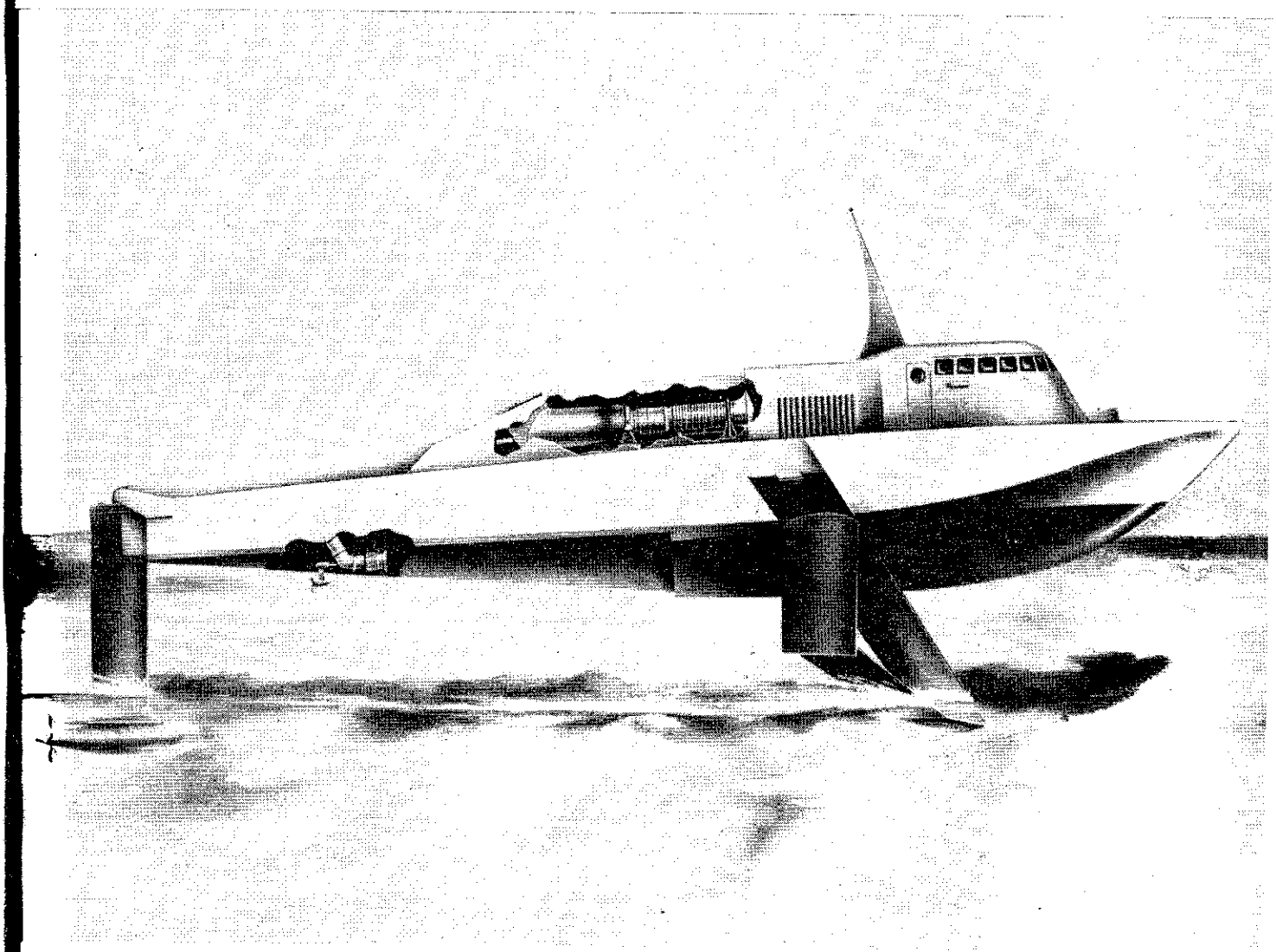

Features

RADAR REFLECTORS FOR LIFEBOATS
FIREHOSE—ITS PROPER CARE AND USE

PROCEEDINGS

OF THE

MERCHANT MARINE COUNCIL

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HYDROFOIL SHIP TO BE NAMED HS DENISON

The first oceangoing hydrofoil ship will be named the HS (*Hydrofoil Ship*) *Denison,* in honor of the man who initiated the project, it was announced recently by Thos. E. Stakem, Chairman of the Federal Maritime Board and Maritime Administrator, U.S. Department of Commerce.

Charles R. Denison was appointed in August 1957 as the first Coordinator of Research for the Federal Maritime Board and Maritime Administration. He served as adviser and consultant in the planning, execution, and guidance of the maritime research and development program which has been undertaken by the Board and Administration for the improvement of the U.S. Merchant Marine.

One of the projects sponsored by Mr. Denison was an experimental oceangoing hydrofoil craft. He felt that the previously successful use of hydrofoils in sheltered water services might point the way to development of a ship which by lessening the drag of friction of water on the hull would permit far greater speeds than had been economically feasible for conventional ships.

After feasibility and design studies in hydrofoils by Dynamic Developments, Inc., an affiliate of Grumman Aircraft Engineering Corp., the Maritime Administration awarded this company a contract to design and construct an 80-ton, 60-knot oceangoing hydrofoil craft. The government is paying about $1.5 million of the estimated $5 million value of the ship, with part of the production costs being borne by associated firms. The ship is designed to determine the practicality of large hydrofoils in the 500–1,000 ton range for high-speed ocean transportation. The ship, now under construction, is expected to be launched in midsummer of 1961, and will be delivered almost immediately after launching.

In announcing the ship's name, Mr. Stakem said: "Mr. Denison was a scientist with humor and imagination. His dedicated efforts to improve the operating efficiency of U.S. merchant ships may have far-reaching effects that will help to keep our fleet a leader among the world's merchant marines. We are happy to honor Mr. Denison's memory by naming this ship for him and expect that its performance will justify his faith in this new mode of ocean travel."

AMVER

SUCCESSFUL RESCUE

The fishing vessel *Powhatan*, proeding in dense fog off the New Jerey coast, collided with the SS *South rican Pioneer* and sank, with the bsequent loss of four lives. Imediately after the collision two men om the fishing vessel's crew manged to reach a liferaft and were cked up by the freighter. One man s suffering from shock and expore, the other was unconscious and owed no signs of life. AMVER was mediately notified, and a search of records disclosed that the *Nieuw sterdam* carried a doctor, and was the vicinity of the casualty. Radio tact was established between all ties, and Dr. F. A. van Gessel, the sterdam's physician, sent instrucs for emergency treatment.

Capt. Dirk van Dalen directed his sel to a rendezvous with the ghter, and directed the successful ching of a boat in heavy seas to sport Dr. Gessel to the aid of the red men.

Efforts to revive the unconscious were unsuccessful, however the er man, now the sole survivor, reded satisfactorily to treatment.

The fine job done by Captain Dalen, Gessel, and the crew of Holland erican's liner *Nieuw Amsterdam* s up once again the fact that VER's coordinated rescue pron does pay off. On a recent visit the AMVER center Captain van en was personally commended by r Admiral Roland, who stated: "As ter of the SS *Nieuw Amsterdam*, performed a commendable act of ry in the incident of the fishing el *Powhatan*, which sank as a reof a collision off Cape May, N.J., April 10, with the loss of four lives. emergency medical treatment to the sole survivor by your staff cian, Dr. F. A. Gessel, was indeed y.

Your skill and resourcefulness in essfully launching a boat in heavy to take Dr. Gessel to the injured ror aboard a nearby merchants noted with a fine appreciation e hazards involved.

Your continued interest in safety fe at sea is well demonstrated your long participation in the ER system. Well Done!"

ENGINEROOM CASUALTY

T ABOUT 0820 hours local time, 50 miles west of the Windward ds in the Caribbean Sea, the SS ros suffered severe flooding and sion in her engineroom spaces ransmitted a distress signal to ffect that they were abandoning

st Guard Radio, San Juan (NMR), transmitted the information to New York, and received in return a list of the nearby vessels as shown on the AMVER plot.

Zim Israel's cargo vessel *Dagan*, listed on the AMVER plot as close by, was the first to reach the stricken tanker, and the 52 crewmembers of the *Kissavos* were successfully transferred. Five of the survivors were injured, however, including the chief engineer who was in serious condition, and the *Dagan* had no doctor onboard. The AMVER plot showed the 13,000-ton ore carrier *Sentinel*, also in the vicinity, to be carrying a doctor onboard as a passenger, and she was directed to the scene to assist.

When Capt. V. Storvik, master of the *Sentinel*, took the injured men aboard, Dr. Frank B. Lusk of Chicago went to work. The chief engineer was subsequently taken ashore in Port of Spain, and is recovering from his injuries. Much credit is due Captain Storvik and Dr. Lusk for their fine cooperation and effective action in this emergency.

This case is one more example of the importance of knowing the positions of all ships carrying doctors. The AMVER system will be of greater assistance to all mariners helped if all vessels not regularly carrying a doctor made a special note in their initial AMVER report when on a passage with a doctor aboard.

Mr. Elliot I. Liman, passenger traffic manager for Holland American Lines, second from left, and Capt. Dirk van Dalen, master of the SS *Nieuw Amsterdam*, far right, are hosted by Comdr. Paul E. Burhost, USCG, far left, and Rear Adm. Edwin J. Roland, USCG, Commander, Eastern Area, on the occasion of their visit to the Eastern Coast Guard Area AMVER Center in the Customhouse, New York City.

A MESSAGE FROM THE ATLANTIC SAR COORDINATOR

The Atlantic Merchant Vessel Report (AMVER) system has given many benefits to Search and Rescue activity in the Atlantic area. In my capacity as Search and Rescue Coordinator, U.S. Atlantic Maritime Region, I am extremely interested in the success of the AMVER system. Since the voluntary reports made by many merchant vessels are the whole basis of AMVER, I particularly wish to express my appreciation to the thousands of individuals whose cooperation has made AMVER effective.

Although the AMVER system has made impressive progress in the first 2½ years, it has not yet reached its maximum potential. This objective will be realized only when every vessel sailing through the AMVER area is plotted. Toward this end, I continue to invite vessels of every flag to send reports according to AMVER instructions on each port-to-port passage within the AMVER plot area.

Sincerely,

E. J. ROLAND,
Rear Admiral, U.S. Coast Guard,
Commander, Eastern Area.

RADAR REFLECTORS FOR LIFEBOATS

By LCDR Elmer M. Lipsey, USCG

SINCE THE ADVENT of the electronic age, mariners have placed great faith in their ability to detect hitherto unseen surface and air targets by means of radar. On occasion, this implicit faith has resulted in disaster. Even with radar equipment in perfect working order and operators thoroughly trained, radar targets may be missed by the detecting equipment. The records contain numerous cases of grounding, running down of small craft, failure to sight lifeboats and liferafts, and even collision between large vessels, both radar equipped. U.S. Coast Guard patrol vessels assigned to the International Ice Patrol have found under certain conditions that radar fails to detect even large icebergs at relatively short ranges.

What causes these apparent failures of the radar system and what has been done to correct it? The answers to these questions lie in a discussion of the characteristics of the energy which is propagated by the radar and of the target capable of being detected.

To better understand what happens physically to the electromagnetic energy which is sent out by the radar transmitters, we must recall that the energy of radar propagation is of a very high frequency. So high, in fact, that the laws and phenomena which pertain to the propagation of light rays or optics apply to the propagation of this energy. Thus, since light rays are propagated in straight lines, so is radar energy. As light rays are reflected from mirrors and passed through window glass, so is radar energy reflected from metallic surfaces and passed through dielectric substances.

With these principles in mind, let us consider what happens to the pencil beam of radar energy as it leaves the parabolic reflector of the transmitter on a ship. This energy is transmitted in a straight line to the target. If the target is flat and metallic, the radar ray will be reflected. If the face of the target is perpendicular to the radar ray, then the energy will be returned to the parabolic reflector of the transmitter. If we assume the ship to be a stable platform, then the radar receiver will "see" a target, provided the amount of energy returned is of a sufficient strength. If the face of the target is not perpendicular to the radar ray, the energy will be reflected at an angle and not returned in the direction of the parabolic reflector and, consequently, it will be "scattered" into space. Thus, no target will be received. On occasion, it is possible for the target to be at an angle to the radar ray so that the energy is reflected downward at a slight angle toward the surface of the water and is "bounced" from the water back toward the source. In this case, the target will be seen. If now we extend our consideration of the problem to a target with multiple or curved surfaces, we can expect that some energy will be reflected directly back to the source, some will have "multiple reflections" (bounce from the target more than once) and be transmitted back to the source, and some will be scattered into space. If we further complicate the problem by considering our target to be composed of both metallic and dielectric substances, we can expect, in addition to the multiple reflections, that a certain amount of the energy will pass into the target and be "absorbed."

One other point is of importance. In order to "see" a radar target, the radar receiver must receive a signal of a certain strength known as the "minimum detectable" signal. If all of the energy in a radar pulse were transmitted in a pencil beam, then, except for a small loss in transmission through the air, all of the transmitted energy would strike the target and be reflected, scattered, or absorbed as previously discussed. Unfortunately, the energy is not directed in this fashion, but is spread out as it passes through space much as are the light rays from a flashlight. Consequently, only a small amount of the transmitted energy ever strikes a target. However, if a sufficient portion of this energy is returned to the source, the target will be visible. The foregoing leads to the conclusion that even large targets return only a small amount of the original transmitted radar energy.

We are now in a position to discuss the apparent failures of the radar system referred to in the opening paragraphs. Small craft such as life-

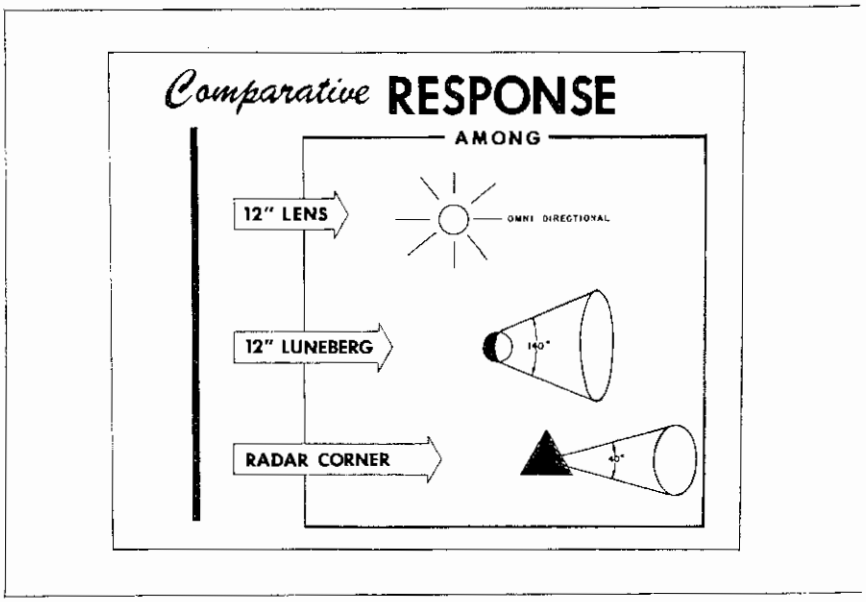


FIGURE 1

Use of radar reflectors on lifeboats can provide a manyfold enhancement of the radar return, and thus considerably improve the probability of detection by the searching rescue vessels. For example, a lifeboat equipped with a 2-foot-diameter radar reflector will provide a radar response equivalent to the return from an average-sized tanker. This paper provides in lay terms background discussion of the various principles and factors involved in radar detection. It includes a summary of the various types of radar reflectors, and discusses in detail the relative merits of each type, with particular emphasis on new developments.

boats, fishing vessels, and motorboats have small amounts of freeboard and superstructure, if any. Usually these surfaces are curved and, often as not, are composed of dielectric substances such as wood or Fiberglas. As a result, these surfaces present extremely small radar targets which have a tendency to scatter and absorb the radar signal rather than reflect it. Couple this information to the fact that the aspect of the target is changing continuously as the craft works in a seaway, and we conclude that it must take a marvel of engineering ingenuity to provide a device which will "see" these targets at any great distance.

Even large targets such as icebergs can be missed by radars, since ice is essentially a dielectric. While some of the signal is reflected from a berg, a great portion of it is absorbed. Consequently, we would not expect to see ice as far as we could see a metallic object of the same shape. In addition to its absorbing properties, bergs drift so that their shape which presents the least wind resistance is into the wind. Consequently, we theorize that the side of the berg which presents the least wind resistance also presents the smallest radar target. This gives the berg its directional radar response characteristics.

A solution to these radar system "failures" lies in our knowledge that it is possible to create small targets which return to the source all of the radar energy that touches them. A target such as this will give the same radar response as a large irregular target.

Devices which have been created to produce this effect passively are known as radar echo enhancement devices or radar reflectors. The best known of these is the "corner reflector" (*fig. 1*). The corner reflector is a device consisting of three metallic plates joined together to form a solid angle of 90°. This device reflects back to the source all of the energy which strikes it through a solid angle of about 40°. The device can be made in clusters of eight to form a "spherical corner" so that it can respond through a solid angle of 360°. These reflectors have been used for some time in lifeboats and liferafts. However, because of their limited ability to reflect back to sources only within a solid angle of 40° for every 90° of space they occupy, the corner reflector leaves many "holes" through which searching radar beams can pass. This results in many cases of failure to detect the raft or boat.

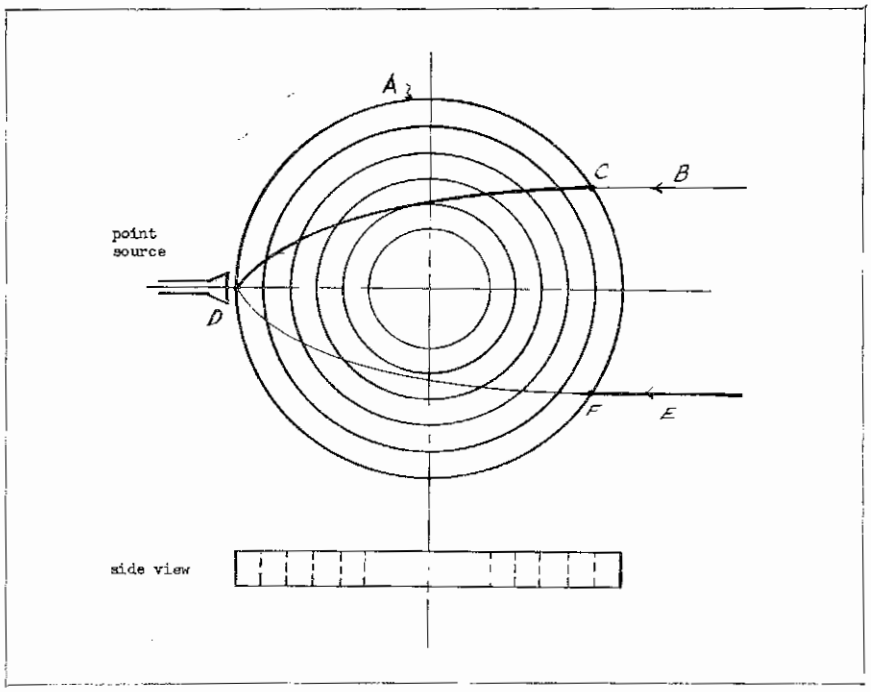


FIGURE 2.—A theoretical lens formed from concentric rings of transparent material, each ring being of greater density than the one immediately outside of it.

In recent years optical techniques have been applied to the reflector problem, and devices have been constructed which focus electromagnetic energy so that *all* of the energy striking the reflector is returned to the source. These devices are called "dielectric lenses" and are based upon the principle that light rays are bent toward the normal when passing from a less dense to a more dense medium. The formation of an optical lens such as this is readily apparent from an examination of *figure 2*. This figure demonstrates the theoretical case wherein a lens, *A*, is formed from concentric rings of transparent materials, each ring being of greater density than the one immediately outside of it. A light ray, *B*, strikes the lens at *C* and is bent toward the normal as it progresses through the lens, finally arriving at *D*. A second ray, *E*, from the same source, strikes the lens and also focuses at *D*. The ray which strikes the lens at its axis symmetry will be perpendicular to the surfaces of all the rings and pass through the lens unchanged. Thus, a lens such as this is able to focus parallel rays of light to a point *D*. If a mirror were placed at *D*, the light would be re-

ABOUT THE AUTHOR

LCDR E. M. LIPSEY is a graduate of the U.S. Coast Guard Academy Class of 1945. His shipboard service includes tours of duty on board a patrol frigate and a transport in the South Pacific during World War II. After the war he served on several buoy tenders one on a tour of duty in Alaska. He completed naval flight training in 1951 and was designated a Coast Guard aviator. His service in Coast Guard aviation took him to New York and the Philippine Islands. His duties have included supervisory capacity over internal and external communications and equipment of floating, shore, and aviation units in addition to flying. In 1958 he was awarded the Air Force Commendation Medal. He is the U.S. Air Force Institute of Technology at Wright Air Development Center. For his work in the field of radar reflectors, he was awarded an M.S. in electrical engineering

LCDR Lipsey is a member of the Institute of Radio Engineers, Institute of Aeronautical Sciences, and a registered professional engineer in the State of Ohio. He has published numerous papers on radar reflectors and loran-C. He is presently assigned to the Development Branch of the Electronics Engineering Division, at Coast Guard headquarters.

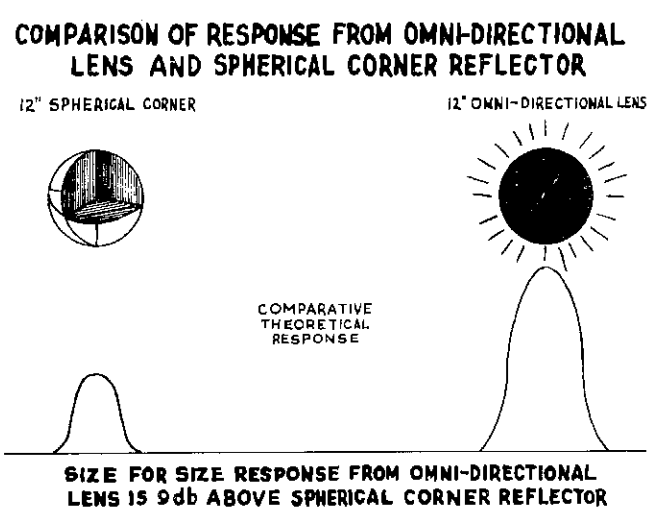


FIGURE 3

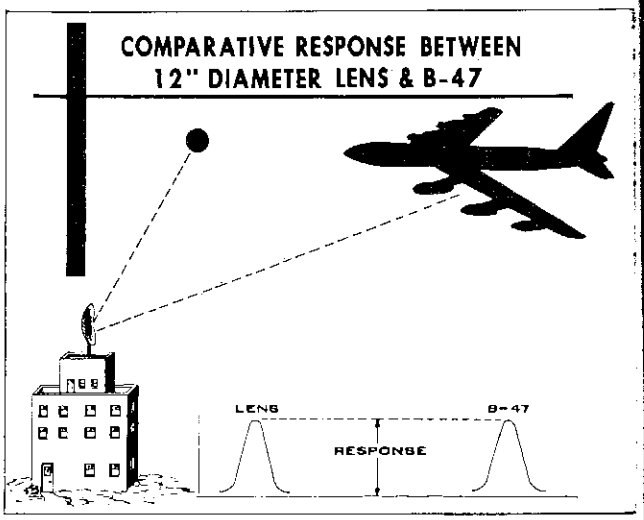


FIGURE 4

flected back in the same direction from which it came, since the lens is symmetrical.

This lens is posed as a purely academic optical problem, since transparent materials with sufficiently small gradations in density or index of refraction do not exist. However, in the field of electricity, there exists a class of substances previously referred to as dielectrics which have the important property of being able to pass electromagnetic energy much as a window is able to pass light rays. Since we have already stated that electromagnetic energy in the very-high-frequency spectrum follows optical principles, we can say that it is possible to create electromagnetic lenses from dielectrics in the same manner as optical lenses are created from glass. In very-high-frequency electromagnetics, the term which is analogous to density or index of refraction in optics is known as "dielectric constant." Recent advances in the plastic field have created artificial dielectrics whose dielectric constants can be finely graded and have made possible the dielectric lens. The best known of these is the Luneberg lens (*fig. 1*).

The Luneberg lens is a sphere composed of a plastic dielectric substance whose density or dielectric constant increases as the center of the lens is approached. This sphere has the property of perfectly focusing all of the electromagnetic energy which enters it to a point on the surface of the sphere diametrically opposite the source. In order that the Luneberg lens be used as a passive reflector, some reflecting surface must be placed at the point of focus of the lens. Experimental data have shown that the lens can be made to reflect back to any point source within a solid angle of 140°, provided a spherical reflecting surface somewhat less than a hemisphere surrounds a portion of the lens. Since this reflecting surface prevents energy from entering the lens, it also prevents the lens from becoming a true-omnidirectional radar reflector. However, size for size the Luneberg lens gives a radar response which is eight times larger than the spherical corner, and throughout its reflecting angle of 140° of solid angle, it has no "holes" (*fig. 3*).

A lens which will act as a true-omnidirectional radar reflector was presented to the 1958 National Avionics Conference of the Institute of

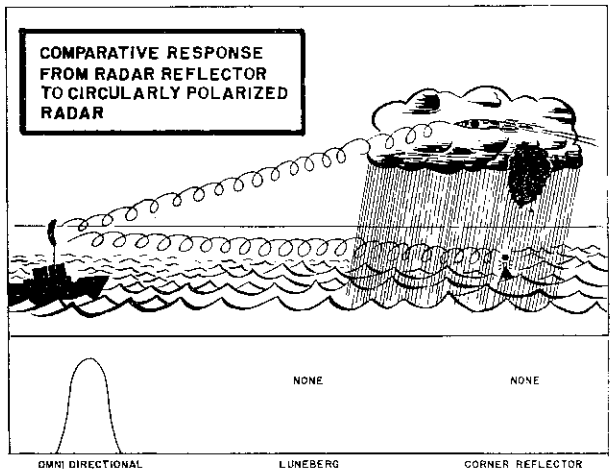


FIGURE 5

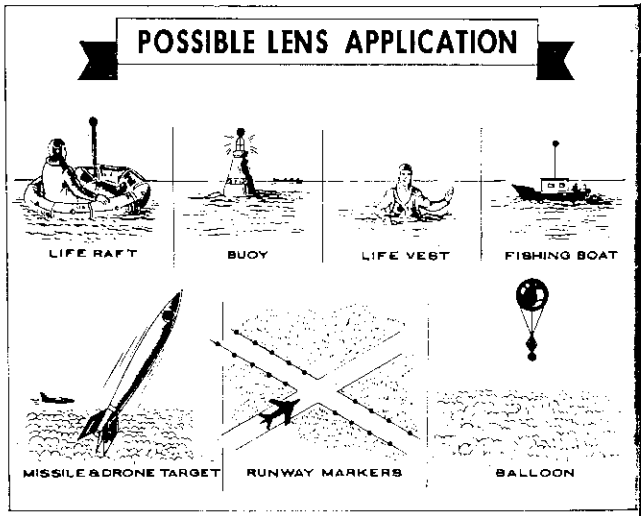


FIGURE 6

Radio Engineers at Dayton, Ohio, by the author of this report (*see figs. 1 and 7*). The omnidirectional lens also is a spherical plastic ball whose dielectric constant increases as the center of the lens is approached, but in a much more rapid fashion than the Luneberg lens. This lens has the characteristic of being able to return to its source all of the radar energy which strikes it regardless of the direction from which it emanates. Since its response is equal to that of the Luneberg lens, it too gives a radar response eight times greater than the spherical corner. But it has the added advantage of having no "holes." Consequently, if a reflector of this type were placed on a lifeboat, the movement of the craft in a seaway would have no effect on the response of the lens, as it does for the corner, and the chances of a radar beam picking up the target are materially enhanced. In addition, since the response is eight times greater than the corner, the chances of sighting it are again materially increased. To obtain a true picture of the echo enhancement quality of these lenses, it should be pointed out that all of the energy striking the lens is returned to the source, and thus a 12-inch lens will give a radar response equal to that of a B–47 aircraft (*fig. 4*).

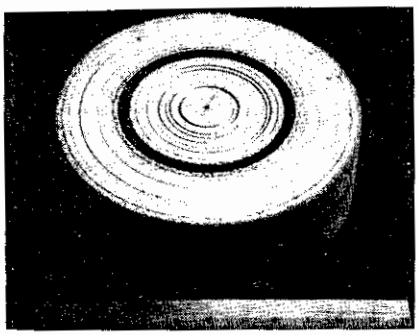


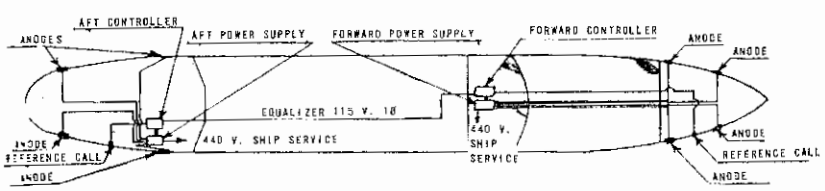
FIGURE 7

Another factor which portends extensive use of the omnidirectional lens as the ultimate radar reflector is the lens' ability to reflect what is known as "circularly polarized radar" (*fig. 5*). It is this form of radar energy which can "read through" weather. No other known reflector is capable of this performance. In addition, the response from circularly polarized radar is undiminished from that of the usual radar signal.

Finally, since the lens can be made in a variety of sizes, smaller units, perhaps 3 inches in diameter, may be constructed for attachment to lifejackets. With this device it should be possible to get a radar response from a person in the water at short ranges of about 2 miles (*fig. 6*).

Two drawbacks to the lens exist at present, its weight (12-inch lens weighs 37 pounds) and its method of construction. However, advances in the art of producing artificial dielectrics should eliminate both problems, and leave us with the means of adequate passive target enhancement to save lives at sea.

URRENT FROM PLATINUM ANODES PROTECTS UNDERWATER HULL OF "ESSO JAMESTOWN"



SKETCH OF CATHODIC PROTECTION SYSTEM ON ESSO JAMESTOWN.

A new method of preventing underer hull corrision has been installed an experiment on the *Esso Jamesn*. Known as "Capac," an imssed (forced) current cathodic tection system, the device sends an ctric current to platinum anodes ened to the hull. The current es from the anodes through the er to the steel and overcomes elecemical and other forms of corn that normally take place.

electrochemical corrision, mie differences in the composition of causes anodes and cathodes to and normally a voltage differe of about 0.65 volt exists between de and cathode. The anode is the where current leaves the metal corrosion occurs. With the Capac em, current issuing from the nonng platinum anodes creates a tion about 200 millivolts stronger than normal voltage on the hull, so that the entire hull is at a voltage above that of freely corroding steel.

In the *Esso Jamestown* installation there are eight 12" by ⅞" platinum disks secured to the hull, four forward and four aft. Current from the ship's power supply is converted from AC to DC, and the voltage reduced to about 30 volts to each anode. A Capac controller adjusts current output so that the voltage on the hull is kept at about 0.85 volt. A "reference electrode" or cell in the stern of the ship "reads" the voltage on the hull and signals the controller, which automatically increases or decreases output to maintain the desired level.

The Capac system has been approved in certain installations by the U.S. Coast Guard.

Courtesy Esso Fleet News

LYKES LINES 1960 ANNUAL SAFETY AWARDS

The Safety Award Committee unanimously selected the SS *Harry Culbreath* as the winner of the 1960 Annual Safety Award Plaque.

Presentation of the award in onboard ceremonies was made by Capt. James B. Rucker on March 14, 1961, He congratulated Capt. C. H. Frederiksen, Chief Engineer Tommie Howard, and all the officers and crew for their outstanding safety record and achievement in accident prevention.

Fifteen other vessels completed the year with a 0.00 NSC frequency.

The officers and crews of these vessels are to be congratulated.

SHIPS
SS *Aimee Lykes*
SS *Brinton Lykes*
SS *Charlotte Lykes*
SS *Dick Lykes*
SS *Eugene Lykes*
SS *Genevieve Lykes*
SS *John Lykes*
SS *Kendall Fish*
SS *Mason Lykes*
SS *Ruth Lykes*
SS *Shirley Lykes*
SS *Solon Turman*
SS *Thompson Lykes*
SS *Velma Lykes*
SS *Virginia Lykes*

All 16 ships have earned the privilege of displaying the green safety cross throughout 1961 as a symbol of their achievement.

THE ANDREW FURUSETH SCHOOL

AT THE LIFEBOAT SCHOOL the students must learn the proper nomenclature for all parts of a lifeboat. (Illustrations courtesy *Sailor's Union of the Pacific.*)

GETTING SOME PRACTICAL LESSONS in the rigging loft at SUP Headquarters. The apprentice seamen learn the right way to secure themselves in a Bosun's chair.

A COMPETENT SEAMAN is the product of both experience and training. He may acquire this training in different ways, but it can never be a substitute for actual operating sea experience. Experience without training, however, is not enough.

Training can make experience meaningful. When proper training is related to experience, it can also reduce the time necessary to learn the arts of seamanship and lead to higher standards of craftsmanship.

The Coast Guard's appreciation of the value of training is reflected in the regulations for licensing and certificating. For example, a candidate for a certificate of lifeboatman must have 1 year's sea service in deck department, or at least 2 years' service in one of the other departments before he can qualify. If he attends one of the Coast Guard approved schools, however, he is eligible to take an examination after having served aboard ship a minimum of 3 months, ocean or coastwise. Successful completion of this examination will entitle him to a certificate of lifeboatman and such endorsement will be placed on his merchant mariner's document.

There are at present five Coast Guard approved lifeboat schools for unlicensed personnel. Two of these schools are operated by the Seafarers International Union (New York and New Orleans); one by the Military Sea Transportation Service (Brooklyn, N.Y.), the Schoolship *John W. Brown* (New York), and the Andrew Furuseth School in San Francisco.

Here is the story by the Editors of the *West Coast Sailors* of the Andrew Furuseth School, a joint effort of the Sailors' Union of the Pacific, the Pacific Maritime Association, and the California Board of Education.

The Andrew Furuseth School of Seamanship was born in the dark days of World War II when the desperate need to help man United States merchant ships carrying supplies to the military forces of America and their allies, as well as help to support the civilian economies, became evident.

In the wartime years it was necessary to use young and old men, cowboys and clerks—men almost universally without sea experience or knowledge—to help crew up our civilian manned merchant marine.

The school program started in 1941 when the Sailors' Union of the Pacific proposed and set up a training school for seamen in San Francisco. Thousands of men from all over the free world trained there from 1942 to 1946. The school has proved such a valuable institution that it has been since continued.

Named for the man who for half a century headed the SUP, the school is composed of two departments: a Rigging Loft and a Lifeboat School. Both departments offer full facilities and instruction in practical seamanship, not only to apprentice seamen but to men wishing to qualify for a lifeboat ticket.

Because of the Union's program and its requirement that its members who have over 90 days' sea time complete a 2-weeks' course at the school for lifeboat ticket, the membership has been credited with having the largest percentage of qualified lifeboatmen of any similar group in the world. The school is also used to examine applicants for a bosun's stamp and full-book membership.

The sessions at the Rigging Loft require another 2 weeks to acquaint the ordinary seaman with such marlinspike seamanship as he will be required to know aboard ship. He is taught the rudiments, the basic knots and hitches and how to apply them, splicing wire, reeving off multisheave purchases, rigging cargo gear, standing watch, and the like.

Each of the three instructors is a veteran of active sea service who holds a teacher's certificate from the State of California and is a full-book union member.

In its contract with the steamship companies the Union is obliged to furnish qualified men. The membership committee of the SUP has, therefore, consistently held that an apprentice who is not conscientious at the school will not be a credit to his union, his ship, or his shipmates. Subjects thus taught at the school also cover subjects necessary for the member to upgrade himself and the necessary factors of safety in their application.

The school holds there is no better teacher than actual experience so that the subjects taught are not intended to replace knowledge in doing. The seaman must qualify with sea time before he is permitted any upgrading examination or test for membership.

An able-bodied seaman will be required to know 10 practical knots and their application: Rigging of a bosun's chair and a stage; putting various types of splices in manila; putting a thimble or a Liverpool splice in wire rope; reeving off a threefold purchase; testing ability to handle and rig cargo gear; display of working knowledge of palm and needle.

A bosun must be able to put a Liverpool and logger (West Coast splice in wire rope; parcel and serve with both marlin and seizing wire; explain and set up Frisco gear, and demonstrate a working knowledge of standard shipboard problems.

The school is basically intended to help turn out and qualify seamen and to see that each member does know his trade and knows it well.

FIREHOSE—ITS PROPER CARE AND USE

RING THE COURSE of annual inctions held recently on several passger vessels, 15 lengths of 1½-inch 75-foot unlined linen hose were reted by the Coast Guard inspectors 1 ship and 24 lengths of 1½-inch 75-foot unlined linen hose were ected on another vessel as not eting the annual hydrostatic test uirements prescribed in the Rules Regulations for Passenger Ves-. 46 CFR 71.25-20(a)(4). The rets of these periodic hydrostatic ts point out rather vividly that und firehose requires special care in er to maintain the fitness of the e for emergency use and to prolong useful life.

are of firehose is an important facin the continued satisfactory perinance of the hose. This is espely true of unlined linen hose. h hose tends to deteriorate rapidly ot thoroughly dried immediately r use or accidental wetting. This racteristic of unlined hose has ed the question as to whether or the annual pressure test, which its in the wetting of the hose, ld be replaced by a visual inspec-. Does the requirement for reing the hose by the periodic water sure test introduce a condition h may weaken the vessel's fireing capacity?

nce January 1, 1961, all new fire installed on board merchant vescertificated by the U.S. Coast rd has been required to be in conance with Underwriters' Labora-s, Inc., Standard 18 or 19, or Fed-Specification JJ-H-571 or ZZ-H-. This requirement was necesed by the discovery that some were equipped with hose which not of a satisfactory quality for ended emergency use in case of This new regulation insures that of adequate design strength will stalled aboard all ships in the e. Existing firehose may be con-d in service as long as it is able ss the periodic hydrostatic tests. derwriters' Laboratories, Inc., dard 18, Unlined Fire Hose, states nlined hose should never be wet for use at a fire. Here it is felt the unlined hose is expected to owed in a dry building. Condiof dampness and water exposure uite different on board ship. dry conditions are not always ed, the only certain means to the strength and integrity of ose is by periodic hydrostatic g. Such pressure testing with . in itself is not considered harmful to the hose, and will not damage the fibers. It is recognized that precautions must be taken to properly dry out the hose after testing. However, it is considered to be a better practice to test hose annually than to expect that shipboard hoses will remain continuously dry and properly cared for once installed aboard ship.

The alternative of requiring rubber-lined hose to replace the regularly installed unlined fabric hose at interior fire stations would not be a satisfactory solution. Most existing interior hose racks are not designed to stow the heavier rubber-lined hose. To require the substituting of lined for unlined firehose aboard inspected vessels would mean major changes to the existing firehose stowage equipment at almost all interior fire stations. This would unduly penalize those operators who are properly maintaining their emergency fire equipment. Although unlined hose is permitted at exterior fire stations, in most cases rubber-lined hose is provided at these locations. Unlined hose is not permitted to be used in the machinery spaces.

A periodic test of unlined firehose remains the primary means of determining the suitability of the hose for continued satisfactory service. The positive indication of the condition of the hose gained by the hydrostatic pressure test is considered a vital factor in maintaining the vessel's firefighting capacity in the best interest of safety and outweighs the possible deterioration caused by the wetting of the hose. Unlined hose has given many years of satisfactory service in the past and can continue to give satisfactory service in the future, provided that proper care is exercised in the maintenance of the hose.

Understanding the nature of firehose material will help to prolong its useful life by proper care and use. Unlined hose is essentially a fabric tube made of closely woven linen (flax fiber) yarn. Due to the natural characteristics of the fibers, the threads swell shortly after being wet, and close the minute spaces between them making the tube practically watertight very shortly after the water enters the dry hose.

Linen yarn has a tendency to deteriorate rapidly if not thoroughly dried out after it has been wetted. Under these conditions, mildew may set in and rapidly destroy the fibers. The wetting of the hose occurs principally during the hydrostatic tests. However, other conditions could cause the hose to become wet. Hose valves may not be tightly closed or may be leaking due to faulty valve seats, or the hose might be in locations exposed to dampness or the weather. The following precautions are recommended to prolong the useful life of unlined firehose:

1. After each hydrostatic test or other wetting, the unlined hose should be arranged so that all water will drain out. The drying-out period should continue for a sufficient length of time under conditions of warmth and air circulation, if possible, in order to insure absolute dryness inside and out. Before being replaced in the hose racks, a very careful examination should be made to insure that the hose is actually dry.

2. Hose valves should be kept tightly closed so that the hose will not be wet by leakage.

3. When cleaning or polishing hose couplings and fittings, care should be taken to see that no cleaning or polishing compound comes in contact with the fabric of the hose.

There is no reason to expect that unlined firehose will become unfit for use after a specified number of years of service, provided that the hose receives adequate care. The proper care of firehose rests with the ship operators, and it is incumbent upon operating personnel to recognize that improperly maintained firehose could cost them their lives in an emergency, whereas properly maintained firehose not only is ready for all emergencies, it results in a substantial saving in operating expenses.

MARITIME SIDELIGHTS

States Steamship Co. of San Francisco and the Federal Maritime Board have signed a $22,220,848 contract for construction of two cargo ships with National Steel & Shipbuilding Co. of San Diego.

The two ships constitute the second group to be contracted for by States. A year ago, States ordered four similar cargo ships to be built at Newport News Shipbuilding & Dry Dock Co. All six ships on order by States are basically of the Mariner type.

The company's replacement program will cover 13 ships at a total domestic construction cost of approximately $150 million.

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A contract for the transportation of spent fuel from the NS *Savannah* has been awarded by the Maritime Administration to Stanray Corp. of Chicago. It was pointed out that the award marked the first contract for the transportation of large quantities of nuclear power reactor spent fuel elements to be performed with privately owned and operated equipment. The work will be performed by Stanray's newly established nuclear transportation section.

Performance under the contract will be an integral part of the fuel management system of the *Savannah*. Service to the ship by Stanray is expected to be initiated at some time during 1962.

The contract stipulates that Stanray will provide technical personnel and know-how for the loading, shipping, unloading, and safe handling of the fuel elements. The transportation unit will consist of a stainless-steel container holding the elements and mounted on a special railroad car. The container will be 11 feet high, weigh 55 tons, and will have 10-inch-thick lead walls. Fuel elements will be carried by this unit from pierside to a reprocessing plant for the recovery of the remaining valuable uranium.

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According to a press report, A/S Strømmens Vaerksted in cooperation with A/S Skarpenord and the Norwegian Ship Research Institute, has recently devised an electrolytic method of protecting nickel-steel ships' propellers against rust and corrosion. Because of their strength and resiliency, nickel-steel propellers are particularly suitable for use in Arctic and Antarctic waters where ships' propellers may often strike ice. Despite their mechanical advantages, nickel-steel propellers have had limited use because of their susceptibility to rust and corrosion.

The electrolytic (anode-cathode) method of combating rust on ships is not new, but the report claims that it has not been used previously with nickel-steel propellers. On July 7, 1960, an electrolytically protected nickel-steel propeller was installed on a vessel which operates in the highly corrosive waters of the Oslo Fjord. After the propeller had been in use for 4 months, the vessel was placed in dry dock and carefully examined. The propeller was found to be completely free of rust and corrosion, and to have a thin, smooth covering of calcium carbonate. It was further found that a substantial portion of the stern had also been protected, although this had not been intended. In this connection it was stated that the entire hull could be protected by increasing the size of the electrolytic installation.

The press report added that this development has aroused wide interest in the shipping industry and that A/S Strømmens Vaerksted has already received a number of orders for the new propellers. The firm has applied to have them patented.

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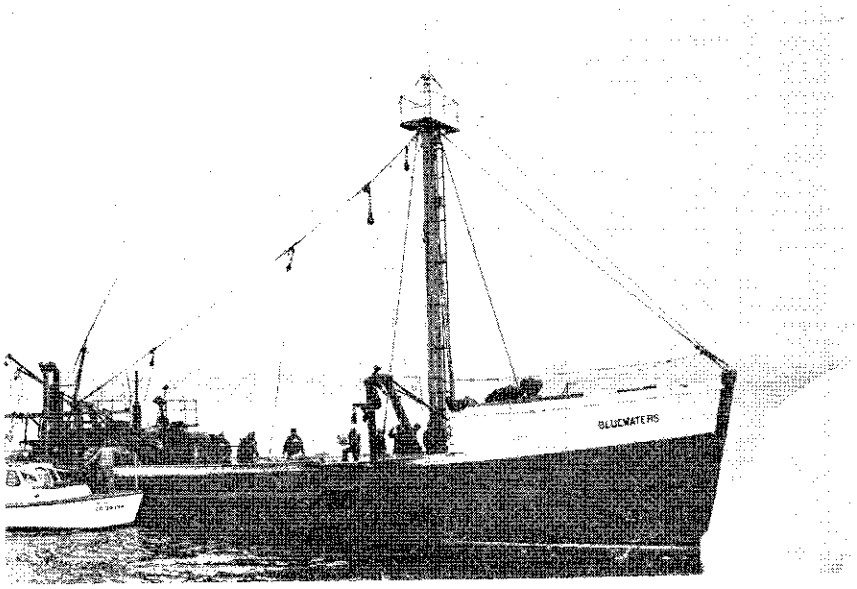
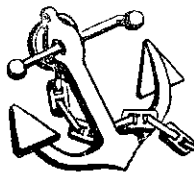
According to a recent statement by the New York Times the U.S. flag steamship lines will again be overshadowed by foreign competition in the flow of overseas general cargo on the Great Lakes this year.

Only five American companies plan to sail the lakes during the seaway season, and in some cases these plans are indefinite. The companies' operating schedules call for 25 to 30 round trips during the season while foreign flag lines (about 30 in number) plan a total of 150 rounds trips.



THE 90-FOOT fishing trawler *Blue Waters*, gutted by fire from an explosion which wrecked her engineroom in waters off Cape Cod, Mass. (Sept. 29, 1960), is towed to her homeport at Gloucester by U.S. Coast Guard rescue craft. The six crewmen aboard the *Blue Waters* miraculously escaped injury.



nautical queries

Q. If a heeling adjuster or vertiforce instrument is not available, would you place the heeling magnet when adjusting the compass?

A. If the heeling adjuster method not available, place the heeling gnet in the bottom of the tube h the red end up in north magnetic itude. After the other steps of the ustment have been completed, head rth or south when the ship has a dy roll. Observe the oscillations he compass and raise the magnet il the compass steadies. This ctice is especially easy on a small sel but is more difficult on large sels.

Since the heeling magnet corrects effects caused by both permanent transient magnetism, its position st be changed when the magnetic itude is changed materially. It is important adjustment and should be neglected if the compass bees unsteady.

Q. Describe the causes of conit deviation and the methods en to determine the causes and, if essary, correct for such deviation.

A. Constant deviation is the re of human error in calculations, in physical alignment of the coms. pelorus, etc., and of unsymrical arrangement of horizontal iron.

The cause of constant deviations be determined by checking the hods and calculations and the nment of the compass and lubs line. Occasionally, constant iation is corrected by an arrangeit of soft iron rods or a displacen of the lubber's line.

Q. Why is it desirable to check ompass adjustment on opposite inal headings to that of initial ement of correctors and to check, quadrantal sphere positions at an acent intercardinal heading from of initial positioning, and "halve" errors found in each instance?

A. If it were not for the occaal constant errors and quadrantal rs due to unsymmetrical horital soft iron, correcting on two acent cardinal headings and the rmediate intercardinal heading ld be sufficient. If an asption is made that no constant r exists and the total error removed on a particular carl heading, should constant error resent it would be doubled on the opposite cardinal heading (or adjacent intercardinal). It is for this reason that (1) splitting is done between the errors noted on opposite heading and (2) good adjustments entail checking on all headings rather than on the fundamental three.

Q. How is the bedplate of an engine secured to the hull structure of a ship?

A. After the bedplate is properly aligned on its foundation, a number of holes are drilled and reamed through the bedplate and foundation girders, and they are fitted with machine body-bound bolts which are installed with a snug fit. The foundation girders are secured by double riveting to the top angles of the heavy intercostal girders within the double bottoms.

Q. Explain the operation of the controls which permit the steam-driven lubricating oil pump to automatically start in the event of failure of the electrically driven lubricating oil pump, and continue the lubrication of the main propulsion turbine.

A. Electrically driven pump is used as the main lubricating oil pump while the steam-driven pump acts as a standby pump with steam on it and all valves open for emergency automatic use at all times. The steam inlet valve includes a steam trap which constantly drains any moisture due to condensed steam. A constant-pressure pump governor is installed in the lubricating oil discharge line which controls the flow of steam to the pump. The constant-pressure pump governor is set at a pressure slightly less than that of the electrically driven pump and, should the pressure fall, the governor would automatically permit a flow of steam, starting the steam lubricating oil pump. The steam lubricating oil pump would then maintain the oil pressure at a slightly lower pressure than the electric pump.

Q. Describe and explain the use of the axial clearance indicator on a turbine.

A. The indicator is located at the forward end of the turbine and provides an easy means of obtaining a rough check on the axial position of the rotor. It consists of a pointer connected at one end of a shaft that passes through the turbine casing and a lever connected to the other end of the shaft, which bears upon a shoulder of the rotor. When not in use, the lever is held out of contact with the shoulder by a spring. The indicator is used by manually turning the shaft into contact with the shoulder. The pointer registers on the indicator plate which carries markings indicating the central and danger positions of the rotor in the forward and aft positions. The same information is given on some vessels by the thrust bearing indicator which operates in much the same manner.

Q. List the precautions that should be taken to minimize the possibility of soot fires in the economizer.

A. 1. Operate the soot blowers as often as necessary to keep the boilers clean; in addition to the regular periods, operate the soot blowers immediately after any abnormal burner operation that has resulted in heavy smoke.

2. Maintain good combustion. This procedure will prevent smoking or diluting the gases with too much excess air. This is particularly important during lighting off, port, and low-load rates of operation when most economizer fires are apt to occur.

3. While a boiler unit is under fire, the feed flow through the economizer should never be completely stopped.

4. The uptake gas temperatures should be checked at frequent intervals during each watch and any sudden or unexplainable rise or reduction of the gas temperature should be immediately investigated.

Q. Explain the effect of an increase in the excess air on the superheater outlet temperature, the steam pressure, and the stack temperature of an integral superheater boiler while operating at a constant rate of combustion.

A. At a constant rate of combustion an increase in the amount of excess air will result in a decrease in the furnace temperature. This decrease in the furnace temperature will reduce the quantity of steam formed in the generating tubes. The reduction of the steam so formed will cause a pressure drop in the boiler. The reduced flow of steam through the superheater will result in a higher temperature of the outlet steam. The reduction in the rate of heat transfer, due to the decreased furnace temperature, results in a higher stack temperature.

SUMMARY OF MERCHANT MARINE COUNCIL PUBLIC HEARING HELD MARCH 27, 1961 AT WASHINGTON, D.C.

THE COMMANDANT, United States Coast Guard, announced the general acceptance of proposed changes to the vessel inspection and navigation regulations as recommended by the Merchant Marine Council at its annual session held during the last week of March 1961. The recommendations are based on proposals contained in a Merchant Marine Council Public Hearing Agenda, CG–249, dated 27 March 1961, consisting of 12 items, and the oral and written comments submitted by the public in conjunction with the Public Hearing held 27 March 1961.

The proposals considered were: 1) shipboard cargo gear; 2) power-operated industrial trucks used on board merchant ships; 3) dangerous cargoes; 4) marine engineering; 5) electrical engineering; 6) bulk grain cargoes; 7) tank vessels; 8) firefighting equipment or fire prevention; 9) lifesaving appliances; 10) construction and inspection of vessels; 11) manning of vessels; and 12) boundary lines of inland waters—Pacific Coast—for Rules of the Road. The Commandant accepted the proposed changes to the regulations, with certain changes from the Agenda which reflect views expressed in comments received, for Items 3, 4, 5, 7, 8, 9 and 12. These changes in the regulations will be published in the Federal Register as soon as possible.

With respect to the proposals regarding shipboard cargo gear and power-operated industrial trucks in Items 1 and 2, numerous comments were received, which included requests for additional time to submit comments. The Commandant accepted the Merchant Marine Council's recommendations that a period of 90 days from the date of Public Hearing be given to permit the submission of additional comments, as well as to investigate and study certain claims with respect to safety of certain proposals.

The comments submitted with respect to shipboard cargo gear indicate a need for clarification with respect to a definition for cargo gear and recognition that certain vessels are equipped with cargo gear of special design and limited in use to special occupations. The comments also reflect a need for different methods of testing cargo gear and recommended the use of nondestructive testing such as by radiographic, ultrasonic, electronic, or similar methods. Certain comments were rejected which requested specific exemptions because of area of operation. The need for national standards is very evident because of the added emphasis being placed on the safe handling of cargo aboard ships both in United States and foreign ports. To encourage the proper development of new means and methods for handling cargo, it is considered essential that known unsafe practices be recognized and eliminated wherever possible. The present regulations in effect recognize existing standards for shipboard cargo gear but since copies of publications containing them have limited distribution, it is both desirable and necessary for the Coast Guard to publish the standards followed as regulations. In this way it is also possible to show both national recognition and authority for certificates and registers attesting to the strength and quality of shipboard cargo gear.

The proposals regarding the use of power-operated industrial trucks have been under intensive consideration since their first proposal and consideration in the Merchant Marine Council Public Hearing held 27 April 1959. The comments received reflect the serious consideration given by all concerned regarding proper control over use of power-operated industrial trucks in the holds of vessels. The comments indicate a need for additional consideration with respect to:

1. Trucks using liquefied petroleum gas and designated as type LP. The available information indicates the LP trucks can be used safely on board vessels under specified conditions.

2. The publication of the standards for construction and design features of power-operated industrial trucks for use in vessels is necessary.

Many comments dealt with the conversion of existing trucks to meet standards set forth for trucks bearing Underwriters' Laboratories' label or Factory Mutual Laboratories' label. The refueling of industrial trucks on board vessels was the subject of many comments which indicate a need for further study and investigation to determine the extent of requirements which will balance safety practices with practical use of trucks.

An official announcement will be published in the Federal Register as a notice of proposed rulemaking which will set forth proposals on which further comments may be submitted. The procedures for submitting comments and views will be set forth in detail in the notice. It is anticipated that submission of additional comments will be required prior to 1 July 1961. Copies of the proposed changes will be sent without further request to all persons who submitted comments on the original Items 1 and 2.

With respect to bulk grain cargoes in Item 6, the Commandant accepted the recommendation of the Merchant Marine Council to delay definite action pending further investigation being made with respect to the application of stability requirements. The regulations proposed deal with the use of equivalents under the 1948 Safety of Life at Sea Convention. During the interim (pending publication of regulations), Navigation and Vessel Inspection Circular No. 1-61, dated 2 February 1961, sets forth specific loading arrangements and conditions which have been temporarily accepted. The proposals as finally accepted will be published in the Federal Register.

In Item 10 the proposals with respect to gas freeing and inspections and testing required when making alterations, repairs, etc., involving hotwork were the subject of many comments. In addition, many requests were received asking for further time to study the problems. One of the problems presented was the lack of qualified gas chemists in certain localities. Since the presently existing regulations provide for certain safety procedures, the Merchant Marine Council's recommendation that this entire subject be further investigated and placed on the 1962 Public Hearing Agenda was accepted by the Commandant. The other proposals in Item 10, as revised in line with comments received, were accepted by the Commandant.

Many comments were received with respect to the proposals in Item 11 regarding officers for uninspected vessels as required under 46 USC 224a and Officers' Competency Certificates Convention, 1946. After the Merchant Marine Council's deliberation, its recommendation that an interpretive ruling be published describing the requirements of law as enforced by the Coast Guard was accepted by the Commandant.

The minimum manning standard is adequately covered in the law itself, therefore regulation respecting the requirements was considered to be unnecessary. This interpretive ruling will be published the Federal Register as soon as possible.

The Merchant Marine Council also recommended, and the Commandant

accepted, the withdrawal of the proposals regarding the pilothouse watch for tank vessels and cargo vessels in Item 11. In reaching this decision the Council took cognizance of the very broad responsibilities imposed upon the Master by law. The Master is fully responsible and is held accountable for all aspects of safe navigation of his vessel, and this includes proper watch keeping at all times.

An adequate bridge watch is necessary at all times when navigating. No matter how well qualified he may be, one person alone on the bridge of a large vessel is not normally considered an adequate watch. The determination of what is adequate does not lend itself to specific statement without qualification as to existing circumstances in each particular case.

The minimum manning standards for certain special service vessels in Item 11 were accepted as set forth in the Agenda and will be published in the Federal Register.

In connection with several of the proposed regulations, explanatory references in the Merchant Marine Council Public Hearing Agenda were made to the 1960 Safety of Life at Sea Convention.

The changes in the Coast Guard regulations which have been identified with the 1960 Convention are those changes considered to be particularly desirable and which can be put into effect within the framework of the present 1948 Convention for the Safety of Life at Sea and United States Maritime Law. These changes are in the following categories:

1. Changes which are beneficial to the ship operator and which can be made as equivalents under the 1948 Convention at this time, e.g., grain regulations.

2. Changes which are considered essential to the best public interest or which are in accord with shipbuilding practices employed today, e.g., fireproof construction of cargo ships.

3. Changes which are considered minor in nature but desirable to accomplish at this time, e.g., specifications for inflatable liferafts and rescue boats.

The effective date of the changes concerning construction and materials will affect only new construction contracted for on and after the effective date of the revised regulations and, unless specifically specified otherwise, will not be retroactive in effect. The changes will be published in the Federal Register as soon as possible.

At present the 1960 Safety of Life at Sea Convention is being prepared for submission to the United States Senate for ratification. It is anticipated this convention will not come into effect for at least another two years. The Coast Guard has been studying the provisions of this convention to determine what specific additional changes will be required in the Coast Guard regulations to implement the 1960 Convention upon its coming into full force and effect. These proposed changes will be distributed separately at a later time.

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 3–61

APRIL 11, 1961

Subj: Navigation with radar at sea in restricted visibility.

Vessel owners, operators, and mariners are hereby advised of certain proposed changes in the International Rules of the Road which were adopted at the 1960 International Convention for the Safety of Life at Sea.

DISCUSSION

The proposed changes to the Rules which take into account the use of radar at sea in restricted visibility have been copied and appear in enclosure (1) to this circular. An annex of eight principles to the Rules has also been copied and appears in enclousre (2) to this circular. The precepts contained in the two enclosures represent the complete unanimity of opinion among the representatives of the Administrations attending the Convention as to the proper means of using radar as an aid for preventing collision at sea while navigating in restricted visibility.

APPLICABILITY

The above mentioned changes and annex of eight principles to the Rules will not become effective until after they have been approved by the requisite number of nations. This might take several years. In view of such inherent delay, a recommendation was made at the Conference that these important changes and the annex be publicized before they become effective. Thus, it is considered prudent that mariners be guided by them without waiting their formal adoption. In so doing, however, it should be remembered the new Rules and the annex might not be strictly observed by every vessel encountered in restricted visibility.

DECK OFFICER EXAMINATIONS

The examinations required of applicants for deck officers' licenses will in the near future contain questions on the proposed annex of eight principles and the additions to the Rules which take into account the use of radar at sea in restricted visibility.

RULES OF THE ROAD QUESTIONS

Navigation and Vessel Inspection Circular No. 7–60 explains the manner in which deck officers demonstrate their knowledge of the Rules of the Road when renewing their licenses. The next set of questions on the International Rules of the Road, promulgated by a Navigation and Vessel Inspection Circular for use in the license renewal procedure, will include questions on the proposed annex of eight principles and the additions to the Rules which take into account the use of radar at sea in restricted visibility.

THE INTERNATIONAL RULES OF THE ROAD

PROPOSED ADDITIONS TO TAKE INTO ACCOUNT THE USE OF RADAR BY VESSELS NAVIGATING IN RESTRICTED VISIBILITY

RULE 1(c)

This Rule will contain a new definition as follows:
"Vessels shall be deemed to be in sight of one another only when one can be observed visually from the other."

RULES 15 AND 16

These Rules will together form a new "Part C.—Sound Signals and Conduct in Restricted Visibility," which will commence with the following:

"PRELIMINARY"

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

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

Rule 15 will contain no new provisions related specifically to the use of radar.

Rule 16 will contain the existing sections (a) and (b), whose text will be unaltered, and in addition a new section (c) as follows:

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

THE STEERING AND SAILING RULES

A new paragraph will be added to the preliminary matter as follows:

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

PROPOSED ANNEX TO THE INTERNATIONAL RULES OF THE ROAD

RECOMMENDATIONS ON THE USE OF RADAR INFORMATION AS AN AID TO AVOIDING COLLISIONS AT SEA

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

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

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

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

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

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

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

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

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

NEW LIFEBOAT RACE TROPHY

The new Millard G. Gamble International Lifeboat Race Trophy was recently unveiled for the first time. The Sterling Silver cup, richly decorated and handsomely engraved, will be presented to the winner of the race to be held on May 23 in the Narrows off Brooklyn.

The new cup, 37 inches tall, was the second trophy presented for competition by Mr. Gamble, formerly president of the Esso Shipping Co. His first was retired by the liner *Stavangerfjord* of the Norweigan American Line, which won it three times over a period of 4 years. The new Gamble trophy will be a permanent one, to be held for 11 months of each year by the winner of the last race.

The International Lifeboat Race is sponsored each year by the International Council on Seamen's Recreation, 62 Hanson Place, Brooklyn. Mr. Gamble is chairman of the Lifeboat Race Committee.

Last year's race was the 21st in a series dating back to 1927, but interrupted during the war and for several years thereafter.

The Powell trophy, which has previously been the permanent Lifeboat Race Cup, will be put up for competition beginning this year under its original terms, permitting it to be retired when won three times by the same ship. A separate trophy was donated last year by the Robert L. Hague Merchant Marine Industries Post, The American Legion, to be competed for by lifeboat crews from maritime training colleges.

TABULATION OF UNSAFE PRACTICES

July through December 1960

	Atlantic	Great Lakes and rivers	Gulf	Pacific	Total
A. Access to Vessel Gangways, accommodation ladders, etc.					
1. Length, width, strength, etc., inadequate	25	11	8	7	51
2. Rigged or secured improperly	22	10	10	4	46
3. Angle too steep	10	3	9	4	26
4. Not clear at either end	1	2			3
5. Water discharging onto		1			1
6. Hand ropes or rails not provided or inadequate	12	13	7	5	37
7. Insufficient number	1				1
8. Lifeboat or other object suspended over access				2	2
9. Ring life buoy with lanyard not provided or inadequate	26	13	19	5	63
10. Other	4	1	9		14
B. Access to Spaces on Board Vessel Ladders					
11. Rigged improperly	3	2	2	5	12
12. Rungs, steps, or treads missing or loose	24	7	13	14	58
13. Deteriorated or weakened	19	5	23	11	58
14. Handrails missing or inadequate	8	8	7	6	29
15. Doors or passages cluttered	12	2	4	12	30
16. Escape means blocked or locked	11	4	1	9	25
17. Other	10	1	2	1	14
C. Deck and Hull Openings					
18. Hatch covers, dangerously piled or placed	3		10	11	24
19. Hatch covers, missing or defective	6	9	8	1	24
20. Hatch covers, securing means defective	10	18	16		44
21. Hatch beam locking lugs, missing or defective	2	7	2	8	19
22. Lifelines, chains, rails or guards, missing or inadequate	17	11	11	19	58
23. Other	7	3	8	4	22
D. Decks and Platforms					
24. Slippery due to oil, grease, etc	35	44	37	25	141
25. Cluttered	9	5	8	4	26
26. Floor plates or gratings loose or not in place	15	12	6	12	45
27. Rails and guards missing or inadequate	26	16	14	21	77
28. Other	5	5	4		14
E. Cargo Handling					
29. Safe load not marked on booms	4		2	6	12
30. Guys, falls, booms, etc., improperly rigged		2		2	4
31. Overloading gear				1	1
32. Jury rig winch controls	1				1
33. Failure to use guards and gates of cargo elevators and escalators		1			1
34. Using defective cargo gear	1		2	1	4
35. Smoking prohibition disregarded	2		1	4	7
36. Stowage or handling of cargo or gear					
37. Other		6	2	3	11
F. Lifesaving Equipment					
38. Not ready for use	66	5	14	10	95
Lifeboats					
39. Hoisting fully loaded					
40. Personnel riding to fully stowed position	1	1	1		3
41. Preventive lashings not used when working in boat				6	6
42. Winch power not shut off when using hand crank or performing maintenance					
43. Starting engine without ventilating					
44. Bypassed safety devices				2	2
45. Tricing and frapping lines improperly used	1	1		8	10
46. Davit span lifelines not ready for use	4		5	1	10
47. Other	25	7	22	11	65
G. Fire Fighting Equipment					
48. Not ready for use	68	34	29	53	184
49. Fire screen doors blocked	5	1	1	7	14
50. Other	15	9	18	8	50
H. Ventilation					
51. Neglect to observe safety precautions prior to entering	2			1	3
52. Use of toxic solvent in confined spaces			1		1
53. Grease, dust, litter in ventilation system	8	12	6	5	31
H. Ventilation—Continued					
54. Cowls, mushrooms, etc., frozen	8		7	4	19
55. Insufficient ventilation	15	4	1		20
56. Other	11	13	4	3	31
I. Electrical					
57. Extension cords defective	21	22	6	7	56
58. Portable equipment not grounded	18	30	5	38	91
59. Overfused circuits	53	1	8	16	78
60. Jury rigged circuits	78	37	11	42	168
61. Caps for receptacle outlets not in place	77	39	23	88	227
62. Switch and fuse box panels in passenger spaces left unlocked	7	3	2	6	18
63. General alarm bells muffled or dampened	25	3	6	20	54
64. Vapor globes and guards not in place	151	54	34	80	319
65. Use of defective equipment in hazardous spaces	13	22	3	2	40
66. Other	30	43	17	17	107
J. Machinery					
67. Failure to take safety precautions in lighting-off boiler	3	1	4	10	18
68. Spring-loaded valves on sounding pipes secured in open position or not in place	18	1	5	13	37
69. Machinery guards not in place or defective	45	7	6	19	77
70. Failure to block or safeguard steam valves when working on steamlines or inside a boiler, evaporator, etc					
71. Other	19	16	19	4	58
K. Welding, Burning, Heating, or Riveting					
72. No gas-free certificate for "hot work" where required	2			1	3
73. Inadequate fire watch	1	5			6
74. Ventilation insufficient		2		1	3
75. Personnel protective equipment inadequate	1	1			2
76. Other					
L. Tank Vessels					
77. Ullage holes or expansion trunk openings open without flame screens	6	33	29	1	69
78. Vent header drains left open		12			12
79. Deck battens or wooden gratings not provided where needed		24	1	2	27
80. Failure to comply with "Declaration of Inspection Prior to Bulk Cargo Transfer"		2			2
81. Other	15	80	23	5	123
M. Ferry and Excursion Vessels					
82. Vehicles not properly secured during navigation	3	4			7
83. Vehicle motors not turned off during navigation	1				1
84. Insufficient clearance between vehicles for egress of passengers in emergency	1			1	2
85. Barricades and grates opened prior to docking	1				1
86. Passenger supervision inadequate	3				3
87. Other	5	2	1	2	10
N. Miscellaneous					
88. Job supervision inadequate	5	2			7
89. Lack of supervision in maintenance of equipment	16	12	3	4	35
90. Lack of supervision in conducting drills	3				3
91. Lack of sufficient personnel	5		1		6
92. Oil, fuel, and/or debris in bilges	62	7	12	13	94
93. Stoves, ranges, heaters, hot plates, lanterns, etc., not secured against vessel's movement			7		7
94. Inadequate deck, gangway, passageway, lighting	1	3		2	6
95. Unsanitary conditions	12	4	4	1	21
96. Chain falls improperly used				1	1
97. Lack of precautions while effecting repairs (including warning notices, etc.)	2	4		1	7
98. First-aid equipment not ready for use (medicine chest, litter)	8				8
99. Stowage of ship's stores improper	10	1	2	3	16
100. Access over deckloads	1				1
101. Other	16	10	12	15	53
Grand Total	1,298	796	508	741	3,433

MERCHANT MARINE PERSONNEL STATISTICS

MERCHANT MARINE OFFICER LICENSES ISSUED

QUARTER ENDING 31 MARCH 1961

DECK

Grade	Original	Renewal
Master:		
Ocean	28	404
Coastwise	5	18
Great Lakes	46	136
B.S. & L	13	102
Rivers	37	46
Radio Officer Licenses issued	8	64
Chief mate:		
Ocean	33	87
Coastwise	1	2
Mate:		
Great Lakes	14	
B.S. & L	7	8
Rivers	7	42
Second mate:		
Ocean	47	60
Coastwise		
Third mate:		
Ocean	15	48
Coastwise		
Pilots:		
Great Lakes	26	80
B.S. & L	122	54
Rivers	79	26
Master: Uninspected vessels	18	18
Mate: Uninspected vessels	2	2
Motorboat operators	327	1,229
Total	835	2,426
Grand Total	3,261	

ENGINEER

Grade	Original	Renewal
STEAM		
Chief engineer:		
Unlimited	54	580
Limited	1	138
First assistant engineer:		
Unlimited	47	227
Limited	6	31
Second assistant engineer:		
Unlimited	68	267
Limited	9	9
Third assistant engineer:		
Unlimited	50	273
Limited	6	1
MOTOR		
Chief engineer:		
Unlimited	9	134
Limited	23	179
First assistant engineer:		
Unlimited	11	21
Limited	17	17
Second assistant engineer:		
Unlimited	4	23
Limited	1	2
Third assistant engineer:		
Unlimited	12	316
Limited	5	
Chief Engineer: Uninspected vessels	12	22
Assistant Engineer: Uninspected vessels	7	11
Total	342	2,251
Grand total	2,593	

WAIVER OF MANNING REQUIREMENTS

Waivers	Atlantic coast	Gulf coast	Pacific coast	Great Lakes	Total
Deck officers substituted for higher ratings					
Engineer officers substituted for higher ratings	2	1	2		5
Ordinary Seamen for Able Seamen	1		1		2
Wiper or coalpassers for qualified member engine dept	2				2
Total Waivers	5	1	3		9
Number of vessels	5	1	3		9

ORIGINAL SEAMEN'S DOCUMENTS ISSUED

Type of Document	Atlantic Coast	Gulf Coast	Pacific Coast	Great Lakes and Rivers	Total
Staff Officer	32	4	20	1	57
Continuous Discharge Book		11	1		12
Merchant Mariner's Documents	965	560	739	421	2,685
AB any waters unlimited	84	42	51	74	251
AB any waters, 12 months	37	12	20	9	78
AB Great Lakes, 18 months	3		5	16	24
AB Tugs and Towboats, any waters	1	3	5		9
AB Bays and Sounds					0
AB Seagoing Barges	2				2
Lifeboatman	40	13	66	1	120
QMED	117	46	61	53	277
Radio Officer	1	2	4	1	8
Certificate of Service	881	509	698	363	2,451
Tankerman	33	69	6	48	156
Total	2,196	1,271	1,676	987	6,130

INVESTIGATING UNITS

Coast Guard Merchant Marine Investigating Units and Merchant Marine Details investigated a total of 2,984 cases during the first quarter of 1961. From this number, hearings before Examiners resulted involving 36 officers and 202 unlicensed men. In the case of officers, 1 license was revoked, 1 was suspended without probation granted, 11 were suspended with probation granted, 7 cases were dismissed after hearing, and 3 hearings were closed with admonition. Of the unlicensed personnel, 17 documents were revoked, 7 were suspended without probation granted, 75 were suspended with probation granted, 22 cases were dismissed after hearings, and 15 hearings were closed with admonition. 13 licenses and 97 documents were voluntarily surrendered.

AMENDMENTS TO REGULATIONS

[EDITOR'S NOTE.—The following regulations have been promulgated or amended since the last issue of the PROCEEDINGS. A complete text of the regulations may be found in the Federal Register indicated at the end of each article. Copies of the Federal Registers containing the material referred to may be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D.C.]

TITLE 33—NAVIGATION AND NAVIGABLE WATERS

Chapter I—Coast Guard, Department of the Treasury

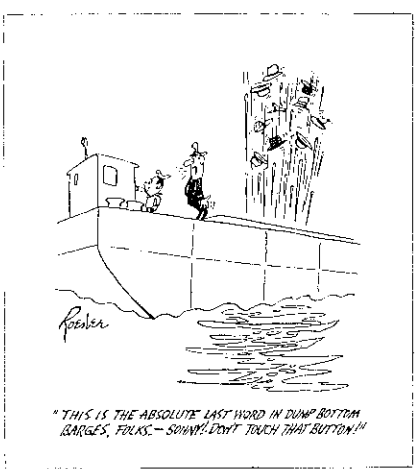
SUBCHAPTER D—NAVIGATION REQUIREMENTS FOR CERTAIN INLAND WATERS

[CGFR 61-8]

PART 82—BOUNDARY LINES OF INLAND WATERS ATLANTIC COAST; DELAWARE BAY

Since Overfalls Lightship has been temporarily discontinued and replaced by Delaware Bay Approach Lighted Whistle Buoy "D" located approximately 1 mile to the southwest of the lightship's former location, this amendment to 33 CFR 82.25 is an editorial change for the sole purpose of redescribing the location of the boundary lines for Delaware Bay and tributaries. Although Buoy "D" is used in lieu of Overfalls Lightship as a reference point, this change does not substantially alter the location of the boundary lines as last established and published in the Federal Register of November 27, 1956.

Because the amendment in this document is editorial in nature, it is hereby found that compliance with



"THIS IS THE ABSOLUTE LAST WORD IN DUMP BOTTOM BARGES, FOLKS.—SOMEBODY DON'T TOUCH THAT BUTTON!!"

Courtesy Maritime Reporter

the Administrative Procedure Act respecting notice of proposed rulemaking, public rulemaking procedures thereon, and effective date requirements thereof, is impracticable and unnecessary.

By virtue of the authority vested in me as Commandant, U.S. Coast Guard by Treasury Department Order No. 120, dated July 31, 1950 (15 F.R. 6521), to promulgate rules and regulations in accordance with the statute cited with the regulation below, the following amendment to § 82.25 is prescribed and shall become effective upon the date of publication of this document in the Federal Register:

§ 82.25 Delaware Bay and tributaries.

A line drawn from Cape May East Jetty Light to Cape May Harbor Inlet Lighted Bell Buoy 2CM; thence to Delaware Bay Approach Lighted Whistle Buoy "D"; thence to the northernmost extremity of Cape Henlopen.

(Sec. 2, 28 Stat. 682, as amended, 33 U.S.C. 151)

Dated: April 7, 1961.

[SEAL] J. A. HIRSHFIELD,
Acting Commandant.

[F.R. Doc. 61-3376; Filed Apr. 18, 1961; 8:49 a.m.]

PROCLAMATION 3397

NATIONAL SAFE BOATING WEEK, 1961

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

WHEREAS increasing numbers of our citizens are participating in boating for health and relaxation; and

WHEREAS this increase in recreational boating has greatly increased the use of our waterways and has intensified the need for close adherence to accepted safe-boating practices to prevent needless loss of life and damage to property; and

WHEREAS continued cooperation among persons and organizations interested in boating is necessary to maintain our steady progress toward the ultimate goal of courteous and safe boating throughout the year; and

WHEREAS, in recognition of the importance of safe-boating practices, the Congress, by a joint resolution approved June 4, 1958 (72 Stat. 179), has requested the President to proclaim annually the week that includes July 4 as National Safe Boating Week:

NOW, THEREFORE, I, JOHN F. KENNEDY, President of the United States of America, do hereby designate the week beginning July 2, 1961, as National Safe Boating Week; and I urge all persons and organizations interested in recreational boating, and the boating industry, Government agencies, and other groups, to observe National Safe Boating Week.

I also invite the Governors of the States, the Commonwealth of Puerto Rico, and other areas subject to the jurisdiction of the United States to join in this observance in an effort to make this year the safest in the history of recreational boating.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the Seal of the United States of America to be affixed.

DONE at the City of Washington this fourth day of March in the year of our Lord nineteen hundred and sixty-one, and of the Independence of the United [SEAL] States of America the one hundred and eighty-fifth.

JOHN F. KENNEDY

By the President:

DEAN RUSK,
Secretary of State.

TITLE 46—SHIPPING

Chapter I—Coast Guard, Department of the Treasury

[CGFR 61-9]

RENEWAL OF LICENSES HELD BY RADIO OFFICERS, MOTORBOAT OPERATORS, AND OPERATORS OF SMALL PASSENGER-CARRYING VESSELS, AND PAINTERS FOR LIFEBOATS

Miscellaneous Amendments to Chapter

The general requirements for the renewal of all deck and engineer officers' licenses were published in the Federal Register of September 24, 1960. In this revision of 46 CFR 12-9 licenses could be renewed within 90 days before the date of expiration rather than 30 days. This renewal procedure has worked out very satisfactorily. In order to afford radio officers, motorboat operators and operators of small passenger-carrying vessels equal opportunity for renewal of their licenses, the amendments in this document to 46 CFR 10.13-21(d)(2), 10.20-9(b) and 15-15(b) extend the renewal period from 30 days to 90 days in advance of the date of expiration.

The Coast Guard Document CGFR 60-36 (F.R. Doc. 60-10395) contained miscellaneous amendments to the vessel inspection regulations and was published as Part II of the Federal Register dated November 5, 1960. Among the changes set forth in this document were revised requirements for "painters" used with lifeboats on passenger vessels in 46 CFR 75.20-15(z) (25 F.R. 10628, first column). It was not intended to increase the minimum size of the manila rope painter and the amendment to 46 CFR 75.20-15(z) therefore reduces the size "3¾ inches" to "2¾ inches" which was formerly used for the minimum circumference.

Because the amendments to the regulations in this document are changes in practices and procedures or correction of a prior document, it is hereby found that the Coast Guard is exempt from compliance with the Administrative Procedure Act (respecting notice of proposed rulemaking, public rulemaking procedures thereon, and effective date requirements thereof).

By virtue of the authority vested in me as Commandant, U.S. Coast Guard, by Treasury Department Orders 120, dated July 31, 1950 (15 F.R. 6521), 167-9, dated August 3, 1954 (19 F.R. 5915), 167-14, dated November 26, 1954 (19 F.R. 8026), 167-20 dated June 18, 1956 (21 F.R. 4894), CGFR 56-28, dated July 24, 1956 (21 F.R. 7605), and 167-38 dated October 26, 1959 (24 F.R. 8857), to promulgate regulations in accordance with laws cited with the amendments set forth below, the following changes are prescribed and shall become effective on and after the date of publication of this document in the Federal Register:

(Federal Register Doc. No. 61-3512; Filed Apr. 18, 1961; and printed Apr. 19, 1961.)

TITLE 33—NAVIGATION AND NAVIGABLE WATERS

Chapter I—Coast Guard, Department of the Treasury

SUBCHAPTER D—NAVIGATION REQUIREMENTS FOR CERTAIN INLAND WATERS

[CGFR 61-12]

PART 82—BOUNDARY LINES OF INLAND WATERS

Pacific Coast

Pursuant to the notice of proposed rulemaking published in the Federal

Register of February 15, 1961 (26 F.R. 1278–1286), and Merchant Marine Council Public Hearing Agenda dated March 27, 1961 (CG–249), the Merchant Marine Council held a Public Hearing on March 27, 1961, for the purpose of receiving comments, views, and data. The proposals considered were identified as Items I through XII, and Item XII contained miscellaneous proposals regarding boundary lines to distinguish between inland waters and the high seas along the Pacific Coast for the purpose of Rules of the Road—International—Inland (CG–169). This document is the third of a series covering the regulations and actions considered at this Public Hearing and annual session of the Merchant Marine Council.

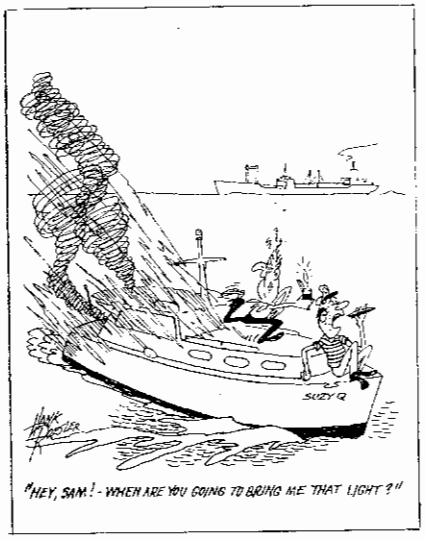
In this document are the actions taken with respect to the boundary lines in certain areas along the California coast. Except for proposals regarding Monterey Bay area, the proposals in Item XII are accepted as proposed in the Agenda. The first-alternate proposed for Monterey Bay is rejected. The second alternate for Monterey Bay is accepted with a minor revision regarding the placement of the line for Moss Landing Harbor.

By virtue of the authority vested in me as Commandant, U.S. Coast Guard, by Treasury Department Order 120, dated July 31, 1950 (15 F.R. 6521), to promulgate regulations in accordance with the statute cited with the regulations below, §§ 82.130, 82.135 and 82.140 are redesignated §§ 82.133, 82.145, and 82.157, respectively, and new regulations designated §§ 82.127 to 82.161, inclusive (including sections redesignated), are prescribed and shall be in effect on and after June 1, 1961, reading as follows:

Sec.
82.127 Crescent City Harbor.
82.129 Arcata—Humboldt Bay.
82.131 Bodega and Tomales Bays.
82.133 San Francisco Harbor.
82.135 Santa Cruz Harbor.
82.137 Moss Landing Harbor.
82.139 Monterey Harbor.
82.141 Estero—Morro Bay.
82.143 San Luis Obispo Bay.
82.145 San Pedro Bay.
82.147 Santa Barbara Harbor.
82.149 Port Hueneme.
82.151 Playa del Rey.
82.153 Redondo Harbor.
82.155 Newport Bay.
82.157 San Diego Harbor.
82.159 Isthmus Cove (Santa Catalina Island).
82.161 Avalon Bay (Santa Catalina Island).

AUTHORITY: §§ 82.127 to 82.161 issued sec. 2, 28 Stat. 672, as amended, 33 U.S.C. 151.

(Federal Register Document No. 61–3726; Filed Apr. 24, 1961, and printed Apr. 25, 1961.)



Courtesy Maritime Reporter

COAST GUARD LIGHT LISTS AND OTHER MARINE AIDS

The 1961 editions of the Coast Guard List of Lights and Other Marine Aids now are available to the public. The following publications may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D.C., or from his sales agents located in the principal ports for the prices indicated:

LIST OF LIGHTS AND OTHER MARINE AIDS

Volume I, Atlantic Coast, from St. Croix River, Maine, to Little River, South Carolina, price $3.25.
Volume II, Atlantic and Gulf Coasts, from Little River, South Carolina, to Rio Grande, Texas, and the Antilles, price $3.
Volume III, Pacific Coast and Islands, price $2.25.
Volume IV, Great Lakes, price $1.75.
Volume V, Mississippi River System, price $1.75.

IMPORTANT NOTICE: THE LOCAL LIGHT LISTS FORMERLY PUBLISHED FOR EACH COAST GUARD DISTRICT HAVE BEEN DISCONTINUED.

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 March 15 to April 14, 1961 is as follows:

The Lunkenheimer Co., Cincinnati 14, Ohio, HEAT NO. 636.

ARTICLES OF SHIPS' STORES AND SUPPLIES

Articles of ships' stores and supplies certificated from April 1 to 30, 1961, 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

Dunham Chemical Co., 840 North Michigan Avenue, Chicago 11, Ill., Certificate No. 140, dated April 11, 1961, DUNHAM D–187.

AFFIDAVITS

The following affidavits were accepted during the period from March 15, to April 14, 1961:

Fluid Power Accessories, Inc., 2051 Railroad Avenue, Post Office Box 64, Glenview, Ill., VALVES.

Arco-Wynn Valve Division,[1] *Automotive Rubber Co., Inc.*, 12550 Beech Road, Detroit 39, Mich., VALVES.

Hunt Valve Co., Division of International Basic Economy Corp., 1913 East State St., Salem, Ohio, FITTINGS.

Flexonics Corp.,[2] 300 East Devon Avenue, Bartlett, Ill., FITTINGS.

[1] Affidavit covers valves for marine service limited to Class II piping and a maximum temperature of 200° F. and maximum pressure of 150 pounds per square inch.

[2] This manufacturer is currently listed in CG–190 for fittings limited to metallic flexible hose only. However, the above listing for fittings will include a limitation for bellows-type expansion joints.

MARINE SAFETY PUBLICATIONS AND PAMPHLETS

The following publications and pamphlets are available and may be obtained upon request from the nearest Marine Inspection Office of the United States Coast Guard. The date of each publication is indicated in parenthesis following its title. The dates of the Federal Registers affecting each publication are noted after the date of each edition.

CG No.	TITLE OF PUBLICATION
101	Specimen Examinations for Merchant Marine Deck Officers (7–1–58).
108	Rules and Regulations for Military Explosives and Hazardous Munitions (8–1–58).
115	Marine Engineering Regulations and Material Specifications (2–1–61.)
123	Rules and Regulations for Tank Vessels (12–1–59). F.R. 3–30–60, 10–25–60, 11–5–60, 12–8–60.
129	Proceedings of the Merchant Marine Council (Monthly).
169	Rules of the Road—International—Inland (5–1–59). F.R. 5–21–59, 6–6–59, 5–20–60, 9–21–60, 4–14–61, 4–25–61.
172	Rules of the Road—Great Lakes (5–1–59). F.R. 6–1–59, 1–7–60, 3–17–60, 5–20–60, 9–21–60.
174	A Manual for the Safe Handling of Inflammable and Combustible Liquids (7–2–51).
175	Manual for Lifeboatman, Able Seamen, and Qualified Members of Engine Department (9–1–60).
176	Load Line Regulation (9–2–58). F.R. 9–5–59, 8–2–60, 11–17–60.
182	Specimen Examinations for Merchant Marine Engineer Licenses (12–1–59).
184	Rules of the Road—Western Rivers (5–1–59). F.R. 6–1–59, 6–6–59, 5–20–60, 9–21–60, 10–8–60, 12–23–60, 4–14–61, 4–25–61.
190	Equipment Lists (4–1–60). F.R. 6–21–60, 8–16–60, 8–25–60, 8–31–60, 9–21–60, 9–28–60, 10–25–60, 11–17–60, 12–23–60, 12–24–60.
191	Rules and Regulations for Licensing and Certificating of Merchant Marine Personnel (11–1–60). F.R. 11–30–60, 1–4–61, 4–19–61.
200	Marine Investigation Regulations and Suspension and Revocation Proceedings (7–1–58). F.R. 3–30–60, 5–6–60, 12–8–60.
220	Specimen Examination Questions for Licenses as Master, Mate, and Pilot of Central Western Rivers Vessels (4–1–57).
227	Laws Governing Marine Inspection (7–3–50).
239	Security of Vessels and Waterfront Facilities (7–1–58). F.R. 11–1–58, 12–18–58, 12–30–58, 9–19–59, 2–24–60, 3–30–60, 7–29–60, 3–18–61.
249	Merchant Marine Council Public Hearing Agenda (Annually).
256	Rules and Regulations for Passenger Vessels (3–2–59). F.R. 4–25–59, 6–18–59, 6–20–59, 7–9–59, 7–21–59, 9–5–59, 1–8–60, 5–6–60, 8–18–60, 10–25–60, 11–5–60, 11–17–60, 12–8–60, 12–24–60, 12–29–60, 4–19–61.
257	Rules and Regulations for Cargo and Miscellaneous Vessels (3–2–59). F.R. 4–25–59, 6–18–59, 6–20–59, 7–9–59, 7–21–59, 9–5–59, 5–6–60, 5–12–60, 10–25–60, 11–5–60, 11–17–60, 12–8–60, 12–24–60.
258	Rules and Regulations for Uninspected Vessels (9–1–59). F.R. 3–17–60, 11–5–60, 12–8–60, 12–29–60.
259	Electrical Engineering Regulations (12–1–60).
266	Rules and Regulations for Bulk Grain Cargoes (5–1–59).
267	Rules and Regulations for the Numbering of Undocumented Vessels and the Reporting of Boating Accidents (5–1–59). F.R.7–11–59, 7–18–59, 7–25–59, 9–5–59, 9–17–59, 10–2–59, 10–23–59, 11–19–59, 11–21–59, 12–5–59, 12–29–59, 1–1–60, 1–30–60, 2–13–60, 3–4–60, 3–17–60, 3–18–60, 4–6–60, 4–14–60, 4–20–60, 5–6–60, 5–11–60, 6–25–60, 6–29–60, 7–14–60, 7–29–60, 10–25–60, 12–8–60, 3–16–61.
268	Rules and Regulations for Manning of Vessels (9–1–60).
269	Rules and Regulations for Nautical Schools (3–1–60). F.R. 3–30–60, 8–18–60, 11–5–60.
270	Rules and Regulations for Marine Engineering Installations Contracted for Prior to July 1, 1935 (11–19–52). F.R. 12–5–53, 12–28–55, 6–20–59, 3–17–60.
290	Pleasure Craft (7–1–59).
293	Miscellaneous Electrical Equipment List (3–7–60).
320	Rules and Regulations for Artificial Islands and Fixed Structures on the Outer Continental Shelf (10–1–59). F.R. 10–25–60.
323	Rules and Regulations for Small Passenger Vessels (Not More Than 65 feet in Length) (6–1–58). F.R. 9–29–60, 4–19–61.
329	Fire Fighting Manual for Tank Vessels (4–1–58).

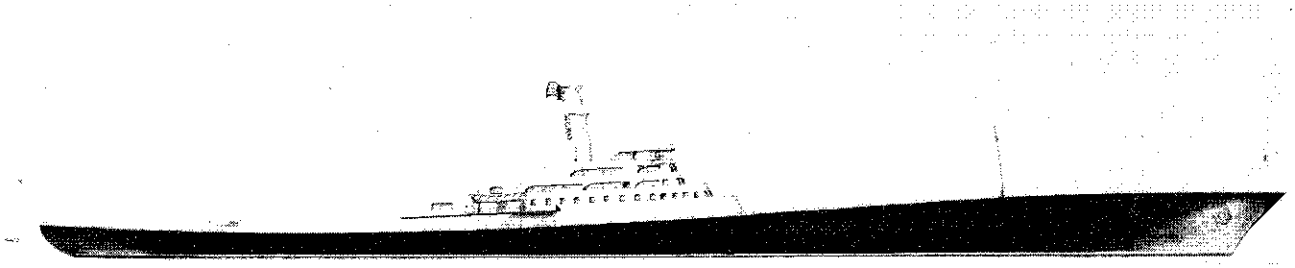
Official changes in rules and regulations are published in the Federal Register, which is printed daily except Sunday, Monday, and days following holidays. The Federal Register is a sales publication and may be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D.C. It is furnished by mail to subscribers for $1.50 per month or $15 per year, payable in advance. Individual copies desired may be purchased as long as they are available. The charge for individual copies of the Federal Register varies in proportion to the size of the issue and will be 15 cents unless otherwise noted in the table of changes below.

CHANGES PUBLISHED DURING APRIL 1961

The following have been modified by Federal Register:
CG–169 and 184 Federal Registers, April 14 and April 25, 1961.
CG–191, 256, and 323 Federal Register, April 19, 1961.

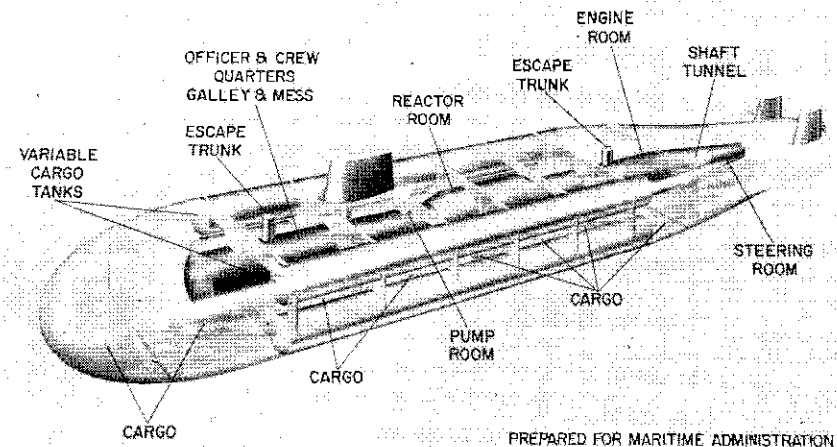
U.S. GOVERNMENT PRINTING OFFICE: 1961

NEW HORIZONS IN MARINE DESIGN



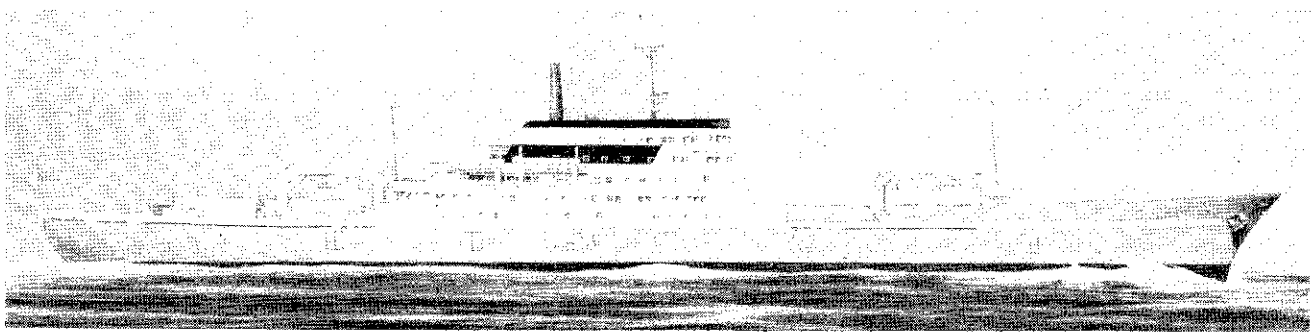
Proposed Nuclear Tanker.

ARTIST'S CONCEPTION OF NUCLEAR POWERED SUBMARINE TANKER



NOTE
ALL SPACE WITH THE EXCEPTION OF CENTRAL CYLINDER IS AVAILABLE AS FUEL OIL CARGO SPACE

PREPARED FOR MARITIME ADMINISTRATION BY ELECTRIC BOAT DIVISION, GENERAL DYNAMICS CORPORATION



One of the Proposed "Santas" to Serve South America.