PROCEEDINGS

OF THE MERCHANT MARINE COUNCIL

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SEASON'S GREETINGS

PROCEEDINGS

OF THE

MERCHANT MARINE COUNCIL

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The idea of a bowsprit "Santa" on front cover *courtesy the Safety Bulletin* of the California Shipping Co.

NOTICE: The Feature "Nautical Queries" will be resumed after all items in the Rules of the Road Exercise have been printed.

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Season's Greetings

May the spirit of Christmas be with you throughout the year and assure the safety and well-being of the mariner wherever he may be. Best wishes for a peaceful and joyous Christmas and a bountiful New Year of health and happiness.

A. C. Richmond

Admiral, U.S. Coast Guard
Commandant

INFLATABLE LIFERAFTS

By Captain Arthur W. Johnsen, USCG

AN INFLATABLE LIFERAFT opening through its own mechanism after being released from 20 feet below the surface of the water.

THE MODERN automobile has tires in which we, the motoring public, have the utmost confidence. Seldom do we think of tires as we cruise along our superhighways at 60 miles per hour or better. This has not always been the case.

It was not too many years ago when a mere 20 mile automobile trip without a flat tire was considered to be quite an achievement. I also remember when I bought my first car. Tires had improved a great deal by that time, so flats were less common, but it was still a standard operating procedure to put air in the tires each time gas was bought. Now, I venture to say, we almost completely forget our tires. All of this shows the vast improvements and developments which have been made in the rubber and synthetic rubber fields, so that now we place remarkable reliance in tires and other pneumatic devices.

One such device which has had a comparable history is the inflatable liferaft. Due to its obvious advantages in size and weight compared with the conventional lifeboat or liferaft, early attempts were made to invade the marine field. The acceptance of pneumatic devices in the marine safety field has been very deliberate and rather slow.

IDEA NOT NEW

The idea of using inflatable equipment for flotation is not new. Thousands of years B.C., bladders of goats and other animals were blown up and made into rafts for ferrying armies across swollen rivers. Later on, in the time of Nelson, sailors frequently used inflated animal bladders as a means of lifesaving.

Work and developments on inflatable liferafts have been going on in the United States since 1917. The first patented inflatable liferaft in this country was built about 1920. However, it wasn't until 1929, when some of the larger rubber companies and aircraft people entered the field, that real progress was made. These companies are considered by many to be the pioneers in liferaft manufacture and design.

FIRST SPECIFICATIONS

As a result of this pioneering work, the first Navy Specification for in-

flatable rafts was written in 1930. Since that time, there have been numerous amendments to the basic specification to keep abreast with new materials, and improvements. Probably one of the most important improvements was the development of the first workable automatic inflating mechanism. This mechanism replaced the old fashion fireplace bellows method of inflation, which sometimes required 20 to 30 minutes to fill the air chambers.

During this same period, many foreign countries, England and Italy in particular, were developing rafts independently using different techniques and materials. In spite of the many improvements, the United States Law and International Agreements such as the 1929 and 1948 Safety of Life at Sea Conventions still prohibited the use of inflatable equipment in the marine field.

AVIATION INDUSTRY CONTRIBUTIONS

Coincident with the development of the inflatable liferaft, the aviation industry was in the process of one of the most phenomenal growths in history. With the advent of long overwater flights, dependable lightweight lifesaving equipment became a necessity. This need was the challenge and financial stimulus which spurred the raft manufacturers to continue to improve their product until it achieved such a degree of acceptance that most authorities conceded its reliability. There are of course some who insist that the inflatable liferaft has not proven itself, and there are many who will not fly in planes. However, it is apparent that both are here to stay.

Inflated dinghies, both single and multi-seat, were extensively employed as a means of survival from ditched aircraft during World War II. Since that time vast improvements have been made in designs, materials and manufacturing techniques so that today the modern marine liferaft occupies an important place aboard naval and merchant ships. The most remarkable advance has been that of the inflatable liferaft.

The idea of using inflatable equipment for flotation is not a new one for history has recorded instances where the bladders of goats and other animals were inflated and made into rafts. At the time of Nelson, sailors frequently used inflated animal bladders as a means of lifesaving.

Captain Arthur W. Johnsen, USCG, Chief of the Merchant Marine Technical Division at Coast Guard Headquarters, discussed the history of the inflatable liferaft and the present regulations, use and inspection of the rafts aboard U.S. merchant vessels in the accompanying article which was presented in a panel discussion at the annual meeting of the National Safety Council's Marine Section at Chicago in October 1960. ED.

BRITISH STUDIES

Studies made by the British at the conclusion of World War II disclosed the following facts concerning casualties during the war:

(a) Two-thirds of all naval deaths were caused by exposure and drowning.

(b) The R.A.F. using inflatable rafts had saved 26,000 lives.

These facts and other studies made it obvious to the Maritime people that inflatable liferafts could and should be used in the marine field as well as for the aviation industry. The British were the first to adopt this new trend when they made the carriage of inflatable rafts mandatory for their fishing fleet. There are numerous tales of rescue of fishermen using these compact and lightweight rafts.

DEVELOPMENT AND IMPROVEMENT

Despite the lack of support for inflatable rafts as evidenced by the international conventions, the manufacturers continued to develop and improve their product, and widely publicize its use. Disasters such as the *Andria Doria* showed a need for providing vessels with lifesaving equipment which could be put overboard at extreme angles of list. Other disasters in which ships have been lost in storms with many of their lifeboats rendered useless due to unusually violent sea action have created a desire in many marine circles to at least partially equip ships at sea with inflatable rafts to enhance the chances for survival after casualty. Rescues using inflatable rafts have been made in weather, so severe, that the use of the standard rigid lifesaving equipment could or would not be attempted. Numerous other accounts of rescues using the rafts in such places as the North Sea, kept the inflatable liferaft story in the limelight. The need for such equipment became so apparent that it was one of the underlying reasons for the International Convention for Safety of Life at Sea held this year.

U.S. POSITION AT SOLAS

In anticipation of the 1960 Convention, the Coast Guard initiated action to amend the U.S. Law so as to remove our national prohibition against inflatable equipment. At the same time, we joined with the marine industry and actively participated in the establishment of the U.S. position which was taken to the 1960 SOLAS Convention regarding the construction and use of inflatable liferafts.

All planning for the use of this equipment would be futile if we did not know exactly what we wanted and where to get it. With this in mind, the Coast Guard embarked upon the task of developing a specification for inflatable liferafts. Comments and suggestions were solicited from all known manufacturers. At the same time, the service experience of the Navy, Air Force, and commercial airlines was investigated. Based upon these comments, suggestions, and experiences, the Coast Guard developed a tentative specification for a raft which was presented to the public for additional comments at the Public Hearing held early last year. The recommendations received were studied by the Merchant Marine Council, and the final draft of the specifications was approved by the Commandant and published in the Federal Register of 9 July 1959.

R.S. 4488 AMENDED

In September of that same year, the Congress amended R.S. 4488, removing the restriction against pneumatic devices for lifesaving purposes. The

ABOUT THE AUTHOR

A 1936 GRADUATE of the Coast Guard Academy, Captain Arthur W. Johnsen, USCG, served aboard various cutters until 1942 when he was assigned as a post graduate student at MIT for his Master's Degree in naval architecture and marine engineering. After various tours of engineering duty, he served for two years at Coast Guard Headquarters in the Hull Technical Section of the Merchant Marine Technical Division, which he now heads.

As technical adviser to the OCMI, Norfolk, Va., Captain Johnsen had the responsibility for checking and approving plans and safety features for the superliner SS *United States*. Captain Johnsen was later named OCMI in Norfolk. Prior to his present assignment, he was Officer in Charge of the Coast Guard's largest marine inspection office in New York and Marine Inspection Officer with supervision over all the marine inspection offices in the Third Coast Guard District.

1960 SOLAS Convention has now been concluded and specific provisions are made for inflatable liferafts aboard vessels on international voyages. Although we are now free to use the rafts on our domestic vessels, ships in the international trade are still bound by the 1948 Convention. The 1960 SOLAS Convention will not become formally in effect until a year after 15 countries have ratified the compact. The date of coming into force of the 1948 SOLAS Agreement was 4 years after the Convention itself.

TWO DOUGHNUT SHAPED TUBES

I believe you are all familiar with what an inflatable liferaft is. Essentially the raft is composed of two doughnut shaped tubes, one mounted on top of the other, each of which is capable of supporting all of the occupants. It has an inflatable floor and a canopy for the protection of its occupants from the sea and elements and contains some minimum equipment for the comfort and safety of those on board. It can be thrown from the deck of a ship and inflated in the water, or it can float free from a sinking ship and automatically inflate itself. This, in a few words, summarizes our detailed specification. I don't feel that you're particularly interested in going any further into the details of the liferaft at this time so instead of dwelling on the technicalities of construction, I'd prefer to deal with the capabilities of the raft.

In reading the various reports, one gets the impression that the inflatable liferaft is the answer to all lifesaving problems. In fact, some reports are so glowing that it seems the smart thing to do is to put an outboard on the raft and throw the ship away. I'm personally convinced that the inflatable raft has earned a definite position in the lifesaving equipment field, but I cannot subscribe to the thought that it should be used for all purposes.

SELECTING LIFESAVING EQUIPMENT

On small vessels, the problem of selecting suitable lifesaving equipment is a a difficult one. Lifeboats are impracticable as there is generally insufficient space to stow them without interferring with the intent or use of the vessel. Further, such vessels are in general very lively making the launching problem difficult, if not impossible. Of even greater importance in this regard is the fact that there are seldom sufficient personnel for the launching operation on small vessels.

Rigid type liferafts, lifefloats, and buoyant apparatus are available as possible alternatives to a lifeboat. The rigid type liferaft offers the same stowage problem as the lifeboat and could be even more difficult to launch. The lifefloats and buoyant apparatus can be more readily stowed and are easily launched, but as primary lifesaving equipment they are unsatisfactory as they offer little protection to the users, it being necessary for the occupants to be at least partially submerged.

COAST GUARD OFFICERS in the picture above inspect the release mechanism of an inflatable liferaft prior to a test of the hydrostatic release mechanism.

A GOOD SOLUTION

The inflatable liferaft appears to be a good solution to the small boat problem. Here we have equipment that is readily stowed, easy to launch—you just throw it overboard—and it offers protection from the water as well as the sun and wind. In addition, its construction is such that it has better probability of surviving in heavy seas than a small lifeboat.

Until now, I have spoken of the inflatable liferaft only for small vessels. I did not mean to imply that they should not be used for the larger vessel, but here, the circumstances are different.

In contrast to the small vessel, it *is* practicable to carry conventional lifeboats on the larger vessels. The ship presents a relatively steady launching platform, there are sufficient people to launch and man the boats, and the lifeboats are larger and more seaworthy.

ADVANTAGES OF LIFEBOAT

The lifeboat has certain advantages over the liferaft in that it can carry more equipment for its occupants, it is more maneuverable and if need be can be navigated. In addition, the search and rescue problem is easier and more efficient because there are less units to look for. A larger unit and better radar target is also easier to find. For these reasons, the lifeboat is still used as the primary lifesaving equipment on the larger vessels, particularly for off-shore service.

In spite of the fact that lifeboats have certain advantages over liferafts on the larger vessel, the liferaft can serve a useful function too. In the event of a sudden or overwhelming disaster, it may not be possible to get to the lifeboats or to launch them. In these cases, an inflatable liferaft could be thrown overboard or would float free.

Another salient feature of the inflatable raft is its ability to withstand severe slamming and banging against the side of a ship at sea and still remain in a serviceable condition. Inflatable rafts have given excellent service in rescues at sea when floated downwind from a rescue vessel to a stricken vessel in sea conditions under which most conventional lifesaving equipment would be of little value.

From the foregoing, it would appear

that we should have required inflatable liferafts on inspected vessels a long time ago. The fact is that until recently, there has not been sufficient confidence in their ability to warrant such action.

Having in general thus far extolled the virtues of the inflatable liferaft it would perhaps be well at this time to utter a word of caution with regard to the use of these rafts. The inflatable raft is a pneumatic–mechanical device which must pass through several pneumatic and mechanical operations as it transforms itself from a mass of material in a cocoon to a useful lifesaving apparatus. Experience has proven this transformation has not always been successfully accomplished and there will be an occasional case where the raft does not function properly or, in fact, does not function at all.

SAFETY DIFFICULT TO ASSESS

Safety is a difficult problem to assess. Too little safety might well kill the geese which lay the golden eggs. On the other hand too much safety might price the eggs out of a market and eventually starve the geese. The assignment of lifesaving equipment to ships at sea is in itself a relative problem in probabilities. The consensus at the present time is that for many lifesaving purposes the advantages of the inflatable raft outweigh its disadvantages and its reliability is acceptable.

Since the initial inflation performance of these rafts taken as a whole is good but not foolproof, extreme care must be exercised in the approval, inspection, repair, maintenance, and repacking of this equipment.

TESTS AND INSPECTIONS

I do not want you to think that we take the reliability of an inflatable raft for granted. Before any raft design is approved, a prototype is run through a grueling test program. These tests include dropping of the raft and its container from a height of 60 feet after which it has to operate successfully. It is also moored out for a period 30 days with weights aboard to simulate a full complement of persons. It has to withstand men jumping on the canopy from a height of 15 feet, and operate successfully at temperatures from a minus 20° to plus 165°. It then has to be demonstrated that the raft can be righted by one person in the event that it should be inverted upon inflation. Finally, stability, damage, loading, seating, towing, swamping and overpressure tests are applied. Not until a raft is able to meet all of these requirements is it considered suitable for approval. Obviously, the individual rafts to be approved later are not given all of these tests, but all are manufactured from the same plans and specifications and under the supervision of our inspectors. All rafts are thoroughly inspected and given pressure tests to determine that they have been properly manufactured and are in all respects ready to be put aboard a ship.

Another factor which has slowed down the acceptance of inflatable liferafts has been inspection after the raft is aboard the vessel. Our inspectors and the public in general have been familiar with inspection procedures for conventional lifesaving equipment. However, one cannot test a rubber liferaft with present conventional methods. Determining the physical condition of an inflatable raft and prescribing repairs to this equipment will require specially trained personnel. Another difficulty with inspection is that once the raft is unpacked and examined, it has to be restowed. Unfortunately, the raft is like a parachute. If it isn't packed properly, it won't work and the only way to check it is to try it, and there you are, right back where you started from. To overcome these problems, it is proposed that the raft will be packed and sealed by the manufacturer, and will not be removed from its container while aboard ship.

Each year instead of inspecting the rafts on the vessel, they will be taken ashore to authorized repair facilities for servicing. Here under the supervision of one of our inspectors who has been specially trained for this purpose, the raft will be given a complete examination which includes a 2-hour working pressure leak test, a check of all of the equipment, and a check on the weights of the inflation cylinders. In order to insure that each repair facility is competent, at least one member of the company must have attended a service school for the particular type of raft which the facility is authorized to repair. Upon completion of all repairs each raft will be reassembled, repacked in its container, sealed, and thus be ready for return to the ship. I might add that before any company receives Coast Guard approval for one or more rafts, they must submit a list of their authorized repair facilities. The locations of these facilities must be such as to cover all of our Coastline as well as the Great Lakes.

PRESENT USES

Now that we have covered the manufacturing and inspection aspects, let us look at not only the present uses of the raft, but the future prospects as well. Judicial notice should be taken that the following summarization of regulations regarding the use of inflatable liferafts is but a rough

RAFTS MOORED during a testing period. These rafts were subjected to boarding, loading and seating, stability, maneuverability, swamp, righting, damage, and jump tests.

summary. For precise details, the regulations should be consulted.

In view of the development of inflatable liferafts since 1948 and its record in saving lives at sea over the past ten years, the Committee on Life-Saving Appliances of the 1960 International Conference on Safety of Life at Sea recommended that the existing prohibition against inflatable liferafts be removed and that these rafts should take their place in the life-saving equipment to which the Safety Conference applies. The Committee also laid down requirements to which inflatable rafts must conform. In addition, it was recommended that rigid liferafts which do not require inflation should be acceptable as alternates to the inflatable type provided that they give the same out-of-the-water support and protection from the elements to their occupants, and the Committee developed specifications to this end.

The above recommendations resulted in a re-draft of Chapter III of the 1948 Safety Conference. Let us examine this revised Chapter to see what the future holds for inflatable liferafts with respect to vessels on international voyages.

(*a*) *Passenger Vessels.*

Passenger vessels on long international voyages will be required to have lifeboatage for all persons on board. If it is not practicable to install this number of lifeboats, liferafts may be substituted for not more than 25% of the required lifeboats. These liferafts must have approved lowering devices so that they may be lowered to the water fully loaded. In addition to the foregoing, these vessels will be required to carry liferafts for 25% of the persons on board and buoyant apparatus for 3%; however, if the vessel has three compartment subdivision, a reserve of buoyant apparatus for 25% of the persons on board will be sufficient.

(*b*) *Cargo Vessels.*

Cargo vessels, in addition to the 200% boatage now carried, will carry liferafts for at least 50% of the persons on board, with proviso that the governments of the various countries may exempt from the compulsory carriage of liferafts in certain circumstances, ships or classes of ships engaged in international voyages between near neighboring countries.

(*c*) *Tankers.*

Tankers of 1600 gross tons and above need carry only the present required 200% boatage; therefore no inflatable rafts will be required to be carried. There is one exception to this rule, however, for tankers over 3000 gross tons having no amidships house, and where it is not practical to stow 4 boats, 2 on each side of the after house. In this case the government may require the vessel to have 2 boats, one on each side of the after house, each being of sufficient size to carry all persons on board, and in addition, liferafts shall be carried for one half the number of persons on board.

(*d*) *Miscellaneous Vessels.*

This category is applicable to whale factory ships, ships employed as fish processing or canning factories, and to ships engaged in the carriage of persons employed in the whaling, fish processing or canning industries. For these vessels 50% total boatage is required on each side with the provision that liferafts together with approved launching devices may be substituted for lifeboats to the extent that there is never less than 75% boatage on board. In addition to the above, an extra 50% must be provided for by liferafts.

(*e*) *Fishing Vessels.*

With regard to fishing vessels of over 500 gross tons, it was decided at the Safety Conference not to include these vessels under the convention rules. It was suggested, however, that the signatory nations take steps to insure that at least the same standards of safety be used for crews of fishing vessels as for crews of other ships, and that the existing experience of the use of inflatable liferafts on fishing vessels be considered.

(*f*) *Existing Vessels.*

Although the revised Chapter III of the rules are applicable to new vessels, signatory nations must consider the arrangement of each existing ship which does not comply with these provisions with a view towards securing substantial compliance so far as is practical and reasonable, and this compliance should be accomplished as soon as possible. However, the permissive substitution of liferafts for lifeboats on passenger vessels on long international voyages may only apply to existing ships under certain specified conditions.

Proposed regulations for the use of inflatable rafts on nonconvention or domestic trade vessels were presented for comment at a Public Hearing in Washington last Spring. The Merchant Marine Council has reviewed the comments received and it is expected that the proposed regulations governing the use of inflatable liferafts will become regulation this Fall and will permit the following usage of inflatable rafts. It should be noted that all substitutions are from presently required lifeboatage.

(*a*) *Passenger Vessels.*

(1) Under 500 gross tons—may substitute liferafts for all lifeboatage provided an approved rescue boat is furnished and properly located.

(2) Over 500 and less than 3000 gross tons—may substitute liferafts for all except two lifeboats which boats must be suitably located for rescue purposes.

(*b*) *Freight and Tank Vessels.*

(1) Under 500 gross tons—may substitute liferafts for all lifeboatage provided and approved rescue boat is installed.

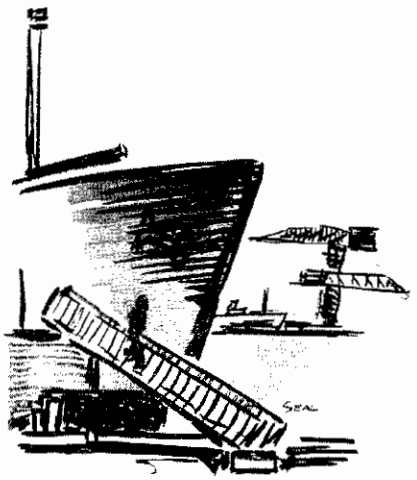
(2) 500 and less than 1600 gross tons—may substitute liferafts for all except one lifeboat which must be suitably located for rescue purposes.

(3) 1600 and less than 3000 gross tons—may substitute liferafts for all except two lifeboats which boats must be suitably located for rescue purposes.

(*c*) *Special consideration may be given by the Commandant to requests to substitute inflatable rafts on vessels of over 3000 gross tons.*

In the months to come, there will be many problems to solve, including the development of adequate and safe launching devices for inflatable rafts. We feel confident that these problems will be solved in due time by good hard work and common sense.

It should be obvious at this point that the tide of public opinion has changed in favor of the use of inflatable lifesaving equipment aboard ships at sea. During the past year, almost every barrier to the use of inflatables has been surmounted, and it should be possible in the near future to reap the benefits to be gained by having such equipment available in time of emergency.



CITY SCHOOL SHIP TRAINS YOUNGSTERS FOR SEA

By Allan Keller

A NEW YORKER who uses the East River Drive every week day, morning and evening, turned to a friend one day and said: "How in thunder can a ship line make money when it keeps a vessel tied up all the time. I've never seen that *John W. Brown* move 10 feet.

That's what he got for driving so fast; he never had time to read the words under the freighter's name. Those additional words, "Metropolitan Vocational High School, Board of Education, the City of New York," tell the story.

The *John W. Brown* is the only school ship in the United States owned by a city, and it has turned out thousands of young graduates who either went to sea as able seamen or continued on at State or Federal training schools to get additional training as merchant officers.

Except for the fact that the propeller is disconnected—officials didn't want an overenthusiastic student body to build up a head of steam and ram the former Liberty ship up on the Drive—the *Brown* is ready to go to sea.

FORMER LIBERTY SHIP

The story of the school's ship's beginnings combines a bit of foresight with a lot of luck. Years ago New York had an old sailing ship on which a few boys were trained for the seafaring life, but for decades the busiest harbor in the world had neglected to give its sons a chance to learn the ways of the sea. Then came the end of the second World War. Surplus Liberty ships were a dime a dozen. The Government gave the *Brown* to New York in one of those deals where Father Knickerbocker agreed to pay a dollar a year and keep the ship seaworthy.

So since 1946 about 400 boys a year have learned marlinspike seamanship, elementary piloting, cargo stowage, small boat handling, wire splicing and the like. Some of them with a fondness for engines have done their studying in the engine room, serving as oilers, wipers, and firemen. A smaller group of apprentices serves in the steward's department, learning to be waiters, stewards, and cooks and bakers.

Academic training is not forgotten. One week is spent in a conventional high school at subjects like mathematics, science, history, and English for every week spent on the school ship, moored at the foot of East 25th Street, East River.

At night the old Liberty ship chafes at her moorings with only a few guards aboard. Then with the coming of morning she springs to life as scores of eager young boys swarm up the steep gangplank and report for work. About a dozen instructors, no one of whom has spent less than 9 years at sea, start them off in machine repair, bench, and pipe work. The boys are taught how to handle lines, chip paint, lower and raise small boats, and some tricks of radio communications.

Within the first week the young students learn that a wall is not a wall but a bulkhead, that floors are decks, stairs are ladders, that books, special clothing and tools are gear, and that a man goes topside or below, never upstairs or downstairs.

Dr. William T. Hudtwalker is principal of the maritime school. Capt. Joseph W. Schellings is chairman of the maritime department and teacher-in-charge aboard the ship. The curriculum they have worked out has two main paths to follow. One prepares a boy to go aboard ship after 4 years and serve with seaman's papers while the other, with more emphasis on academic work, qualifies the boys to continue at such an institution as Kings Point, Fort Schuyler, the Maine Maritime Academy at Castine, or its opposite number in Massachusetts.

Better than a quarter of all the boys have gone on to advanced training at one of the training ships, marine academies, or colleges. As Captain Schellings likes to put it, it would take a full-time secretary just to keep track of the graduates who have gone into the Navy, Coast Guard, and American merchant marine.

EDUCATION IS A HELP

"It makes you mighty proud to have the old boys come back for a visit," said Captain Schellings. "And it does the current class a world of good to have these men tell the new boys how much their education will help them as they work their way up at sea."

Many of the shipping firms that serve New York City go out of their way to take school ship graduates. Standard Oil of New Jersey, Socony, Farrell Lines, Moran Towing and Transportation Co., and the Army Corps of Engineers, all have shown fine spirit in opening their lists to boys from the *John W. Brown*.

Captain Schellings likes to tell of men like Capt. Joseph Cannon of Farrell Lines, who left the school ship and "went up through the hawse pipe" to his present high rank in the line that serves West, South, and East Africa.

Whether he plans to serve on deck, in the engine room or in the steward's department, every boy has to learn how to fight fire at sea and how to handle small boats. Day in, day out, the lifeboats are lowered, manned, operated, and raised to their davits again until the students are at home in them.

The motor lifeboat, which the young sailors have nicknamed *African Queen*, gives them a chance to lay courses with compass readings and to familiarize themselves with tides and currents. Tides in the East River are mighty tricky, and the lads soon realize that the water is nothing to fool with.

EVERYTHING SHIPSHAPE

On a normal day students will be at work in bosun's chairs, chipping and painting the stack, the king posts or the plates over the side. Others keep the engines and auxiliary units in running order and fire off the boilers, operate controls, and do everything except put to sea. This is no fooling matter, because under the terms of the contract signed with the Maritime Commission in 1946 the city had to agree to keep the *Brown* in such a state of readiness that she could go to sea within 48 hours.

Fourteen years ago on December 13, 1946, the SS *John W. Brown*, a Liberty troop ship, operated by States Lines, was turned over to the City of New York for use as a school ship by the U.S. Maritime Administration.

Since that time approximately 400 boys a year have learned marlinespike seamanship, elementary piloting, cargo storage, small boat handling, wire splicing, and the like. The *John W. Brown* is the only school ship in the United States owned by a city, and it has turned out thousands of young graduates who either went to sea as able seamen or continued on at State or Federal training schools to get additional training as merchant officers.

The accompanying article was written by Mr. Allan Keller for *Tow Line* and is reprinted here through the courtesy of the author and Moran Towing and Transportation Co. ED.

Only once has she had to go into drydock. This, says Captain Schellings, is proof of the competence and the hard work invested by the young mariners. Since many of the boys sign up on merchant ships for their summer vacations, they learn seamanship much as young sailors did a century ago through serving as apprentices under sail. Many are first generation American. Whatever their backgrounds, the training soon tends to make them mature and instills the obedience that is part of the code of the sea and being a gentleman.

THEY TELL THIS STORY ON THE *BROWN*

A group of home economics teachers came to the ship to see how the cooks and bakers were making out. One of the ladies looked at the steep ladder running from the pier to the deck and paled. She said she thought she'd remain on the dock and hear about the ship's galley at second hand. But one of the steward trainees dashed up the ladder, brought back a cup of tea for the guest, and within a few minutes had reassured her so that she made her way up the gangplank without even using the lad's proffered arm.

Since the average age of the student sailors ranges between 14 and 18 years, it was feared that there would be a high accident rate because of the hazardous nature of life aboard a freighter. It was a groundless fear. An enviable safety record has been maintained, chiefly because the teachers, with their long experience at sea, know how to instill safety-consciousness.

The teacher-officers spice the routine of instruction by taking their classes on field trips planned to prepare them better for life as seamen. The boys visit shipping terminals, maritime academies, union hiring halls, shipyards, and repair installations and go aboard freighters, tankers, and passenger liners. These field trips have a hidden bonus for the boys. They never go aboard a ship that they don't find a graduate of the *John W. Brown* serving, perhaps, as a steward on the *United States* or the *Brasil*, a junior officer on the *Esso Brooklyn*, a boatswain on an Army dredge, or a mate on a Moran tug.

A mere listing of the arts and crafts and routines the boys must master would fill a page. They must learn how to sew canvas, splice rope and wire, handle blocks and falls, operate booms and winches, as well as carpentry, metalworking, electricity, signaling, and repairs.

CITY GETS FULL VALUE

No one expects these young sailors to come out as full-fledged seamen; but it is doubtful whether any dollar spent by the city's Board of Education goes farther than it does on the *John W. Brown*. Since so many of the graduates go on to advanced marine academies, the greatest port on earth gets a good return on its investment.

Some of the instructors and many of the students feel the boys could learn more and faster if the former Liberty ship could have her propeller put back on and go to sea—to operate in the protected waters of Long Island Sound, perhaps. But the Board of Education has turned thumbs down over the years, motivated by the students' youthfulness. So it looks as if the old Liberty ship, which started out carrying supplies to the far-flung battlefronts of World War II, and then was hastily remodeled into a troopship to bring the victors home, will go on serving the Nation, moored tightly to Pier 73, East River, New York.

RENEWAL OF DECK OFFICERS' LICENSES

RULES OF THE ROAD EXERCISE

The procedure whereby deck officers actually engaged in their profession will renew their licenses was explained in the November issue of the PROCEEDINGS and in Navigation and Vessel Inspection Circular 7–60. The multiple-choice-type questions, which are to be answered as a demonstration of the deck officers' knowledge of the Rules of the Road, will be reprinted here until all of the questions contained in the exercise have been used.

INTERNATIONAL RULES OF THE ROAD

1. A vessel is under way when:
   (a) She is at anchor
   (b) She is aground
   (c) She is made fast to shore
   (d) She is none of the above

(See Rule 1)

2. Vessel "A":

   (a) Can continue on course and speed
   (b) Must alter course to left
   (c) Must alter course to right
   (d) Must back down

(See Rule 18(a))

3. If in overtaking another vessel as sketched you occasionally saw her mast lights and green side light:

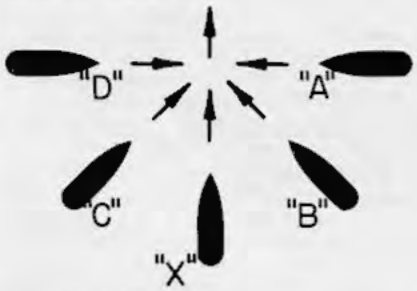
   (a) The other vessel must keep clear of you
   (b) You and the other vessel share equally the responsibility for keeping clear
   (c) You should assume that it is your duty to keep clear

(See Rule 24)

4. At different times, vessel "X" was navigated with respect to the vessels sketched. Which one was she obligated to give way to?

   (a) "A" ("A" has overtaken "X")
   (b) "B"
   (c) "C"
   (d) "D" ("X" is overtaking "D")

5. At different times, Vessel "X" was navigated with respect to the vessels sketched. Which one was she obligated to give way to?



   (a) "A"
   (b) "B" ("B" is overtaking "X")
   (c) "C" ("C" is overtaking "X")
   (d) "D"

INLAND RULES OF THE ROAD

1. Moderate speed in fog is generally interpreted to mean ability to stop within:
   (a) One-fourth the range of visibility.
   (b) One-half the range of visibility.
   (c) Two-thirds the range of visibility.
   (d) Three-fourths the range of visibility.

2. Sail vessels and vessels towed make fog signals on:
   (a) Bell
   (b) Gong
   (c) Whistle or foghorn
   (d) Whistle only
   (e) Foghorn only

(See Article 15)

3. A steam vessel under way in fog but stopped and having no way upon her blows on her whistle:
   (a) One prolonged blast every two minutes
   (b) Two prolonged blasts every two minutes
   (c) One prolonged blast every minute
   (d) One short blast every minute

(See Article 15)

4. On overtaking another vessel, before passing her on her port side you must:
   (a) Blow one short blast and be answered by one short blast
   (b) Blow two short blasts and be answered by two short blasts
   (c) Blow one short blast
   (d) Blow two short blasts

(See Article 18, Rule VIII)

5. The day signal sketched indicates that the vessel is:

   (a) Handling buoys
   (b) Anchored
   (c) Dredging
   (d) Engaged in hydrographic survey

(See Pilot Rule 80.25)

GREAT LAKES RULES OF THE ROAD

1. Moderate speed in fog is generally interpreted to mean ability to stop within:
   (a) One-fourth the range of visibility
   (b) One-half the range of visibility
   (c) Two-thirds the range of visibility
   (d) Three-fourths the range of visibility

2. Match the signal to be used between pilot and engineer with its meaning:

(a) 1 bell	A. all right
(b) 2 bells	B. check
(c) 3 bells	C. back
(d) 4 bells	D. stop

(See Pilot Rule 90.15(d))

3. On overtaking another vessel, before passing her on her port side you must:
   (a) Blow one distinct blast and be answered by one distinct blast

(b) Blow two distinct blasts and be answered by two distinct blasts
(c) Blow one distinct blast
(d) Blow two distinct blasts

(See Pilot Rule 90.8)

4. The day signal sketched indicates that the vessel is:

(a) Handling buoys
(b) Anchored
(c) Dredging
(d) Engaged in hydrographic survey

(See Rule 30)

5. A steam vessel hearing, apparently not more than four points from right ahead, the fog signal of another vessel shall at once reduce her speed to:

(a) Slow ahead
(b) Zero
(c) Bare steerageway

(See Rule 15)

WESTERN RIVERS RULES OF THE ROAD

1. Moderate speed in fog is generally interpreted to mean ability to stop within:

(a) One-fourth the range of visibility
(b) One-half the range of visibility
(c) Two-thirds the range of visibility
(d) Three-fourths the range of visibility

2. When underway, sail vessels and vessels towed make fog signals on the:

(a) Bell
(b) Whistle or fog horn
(c) Whistle
(d) Fog horn

(See Rule Numbered 15)

3. A vessel displaying two black balls in a vertical line, as sketched, would be:

(a) Fishing
(b) Not under command
(c) Dredging
(d) Tending a navigational aid

(See Western Rivers Pilot Rule 95.55)

4. You are overtaking another vessel and there is risk of collision. Before passing her on her port side you should:

(a) Blow one distinct blast and be answered by one distinct blast
(b) Blow two distinct blasts and be answered by two distinct blasts
(c) Blow one distinct blast
(d) Blow two distinct blasts

(See Rule Numbered 22)

5. The day signal sketched indicates that the vessel is:

(a) Handling buoys
(b) Anchored in a fairway or channel
(c) Dredging
(d) Engaged in hydrographic survey

(See Western Rivers Pilot Rule 95.59)

PLASTIC LIFEBOAT

A new fibrous glass reinforced plastic hand-propelled lifeboat shown in the above photographs is tested prior to Coast Guard approval. The boat was loaded with weights distributed around the fittings, side benches, and thwarts. Concrete blocks were loaded on the fittings in the bottom of the boat simulating the weight of the equipment and provisions. Bags of shot were placed along the side benches and thwarts simulating the distribution of weight of people in a fully loaded lifeboat.

In the first photo the boat is prepared for the drop test. The second photo shows the drop at the moment of impact. The spray thrown up is an indication of the force involved.

Plastic boats have many advantages over the heavier but less costly metal craft that have been standard equipment on seagoing vessels. The chief advantage is low maintenance costs. Corrosion is eliminated and few repair and maintenance layups are required. The plastic boat above is 30 feet in length with a 10-foot beam and a 78-person capacity. It is made of fibrous glass cloth, mat, woven rovings and tape reinforcing the polyester resin, which is fire retardant without additives.

STANDING ORDERS

In view of the considerable interest in the subject of radar and its operating procedures voiced at the recent SOLAS Convention, and the publication of the "Radar Annex" to the Convention, the Coast Guard has solicited the Standing Orders and Radar Instructions for Deck Officers from various steamship companies. These will be printed from time to time in the PROCEEDINGS for information as a matter of general interest to our readers.

The following has been received from *States Marine Lines:*

STANDING ORDERS FROM THE MASTER TO ALL WATCH OFFICERS ON THE STEAMSHIP

These, my Standing Orders, are in effect both day and night. They shall be obeyed by all watchkeeping officers. If any situation should arise requiring the exercise of your discretion or judgment or action which is not covered by my written orders, then each Watch Officer shall thereupon exercise his best judgment and discretion by action for the continued safety of the ship, the persons on board, and her cargo. Any time that you are in doubt call me immediately. Resolve all doubt in favor of safety.

When action is required in any situation or under any circumstances or by any conditions, take such proper action that is TIMELY, POSITIVE, and ADEQUATE, so as to avoid RISK of danger, before danger can arise.

All watchkeeping officers are warned against assumptions based on overconfidence, leading to a false sense of security for the safety of the vessel, which may follow from inattention to details which I consider are necessary for the continued safety of this ship, the persons on board, and her cargo.

All officers shall comply strictly with the Rules for Prevention of Collisions at Sea and any local Rules of navigation applicable to Inland Waters. In most instances, there is no reasonable justification for a Watch Officer taking any risk relating to the safety of the ship, the persons on board of her, and her cargo. When a situation is thrust upon any Watch Officer involving a risk to continued safety, which requires action, then avoiding action which includes the hazard of a calculated risk can only be justified in order to avoid or minimize a greater impending risk or imminent peril.

(1) The paramount consideration of every Watch Officer is the safety of the ship, the persons on board of her, and her cargo.

Each watchkeeping officer shall:

Read, sign, and obey these my Standing Orders.

Read and obey my current Special Night Orders for your watch. Also, familiarize yourself with my Special Night Orders for the watches preceding and succeeding your watch.

Read and obey my Standing Radar Orders.

(2) Each Watch Officer, before relieving the Officer on Watch, shall:

(a) Reread these Standing Orders.

(b) Read and sign the Special Night Orders current for the day and period of his watch.

(c) Determine to his satisfaction the safe position of the ship and her projected course on the chart in use, and the characteristics of all aids to navigation in sight, or anticipated to be sighted, during his watch.

(d) Determine the true and gyro courses being steered and to be steered during his watch, including a cross-check of the courses by the standard and steering magnetic compasses, together with the compass errors and deviation.

(e) Determine the engine revolutions per minute and evaluate the relative speed of the ship over the ground in the then existing circumstances and conditions, and in the circumstances and conditions to be reasonably anticipated during the period of his watch.

(f) Determine the proximity of any hazards to navigation which may be encountered on or adjacent to the path of progression of the ship.

(g) Determine, when material, the elapsed time interval and the distance to go before making a landfall or the next visible aid to navigation.

(h) Determine, when anticipating or making a landfall or in the course of coastal navigation, that the proper chart is in use, and that the next succeeding chart to be used, sailing directions, light lists, tide and current tables are on hand and immediately available for use.

(i) Examine the course recorder for evaluation of steerage limits, and the attentiveness of wheelsmen.

(j) Determine that the wheelsman is alert and attentive to his duties, and is on and understands the compass course to steer.

(k) Determine that an alert lookout is properly posted—on the bow, weather permitting.

(l) Determine that the navigation running lights are set and burning brightly, and that any unnecessary lights or those which might interfere with the visibility of the navigating running lights or impair night vision of the Officer on Watch are either properly shielded, or extinguished.

(m) Determine that the "Out of Command" signals are ready for immediate use.

(n) Before accepting charge of and responsibility for the watch, make sure your eyes are adjusted for good night vision.

(o) Discuss and evaluate with the Watch Officer to be relieved the state of the weather, conditions of wind, sea, and visibility, and the outlook for any change, together with the present extent of ventilation of quarters and cargo spaces.

(p) Before the Watch Officer accepts relief he shall determine with certainty from the Officer on Watch and by his independent observation whether any traffic is in sight and, if so, evaluate the situation in relation to compliance with the Rules for Prevention of Collisions at Sea.

(3) The officer being relieved from watch shall, before leaving the bridge, synchronize the course recorder and the engine and bridge clocks.

Every Watch Officer shall:

(4) Not leave the navigating bridge unless properly relieved by another qualified officer.

(5) When the helmsman is relieved, make a check that the proper course is given and steered. Periodically check the wheelsman's steering by sight and by course recorder.

(6) Compare compasses at frequent intervals, and, if practical, at intervals of not less than each hour. In the event of any unusual error or variance in the compasses, call me at once.

(7) In the event there is any momentary cutoff of electric power or failure of electric power, check the gyro compasses immediately and let me know—meantime maintaining a close comparison between the gyro and magnetic compasses.

(8) Each officer shall take azimuth bearings to determine compass error and reliability, as necessary, and, when practicable, check the continued accuracy of the compasses at least once in each watch and on each occasion the compass course is altered, visibility and traffic permitting.

(9) Reflect upon the Rules for the Prevention of Collisions at Sea, in relation to which such Rules may become applicable to circumstances likely to arise on your watch. When complying with the Rules, give all ships a wide berth. If it is prudent or necessary under the Rules to change course or speed, let all such changes be TIMELY, POSITIVE, and ADEQUATE. I am available to and will welcome a call from the Officer on Watch at any time.

(10) Call me immediately if traffic in the offing appears to be heavy or you can foresee any situation which may require maneuvering with respect to ships underway in relation to hazards of navigation, such as in areas of limited navible water or in coastal areas.

(11) Attend to the ventilation, particularly in the cargo spaces. Call me at once on the approach of worsening wind, sea, or conditions restricting visibility.

(12) Call me at once when visibility is restricted from any cause. Energize the radar. If restricted visibility shuts down before my arrival on the bridge, comply immediately with the applicable Rules for Prevention of Collisions at Sea.

(13) The radar, direction finder, fathometer, and other aids to navigation are aids for your free use. Understand these aids and use each or all of them for the purpose for which they are intended—safe navigation.

(14) The standby watch seaman, furnished with a hand-light, shall make periodic inspections of the decks and hatches (wind and sea permitting safe access to the decks) not less than twice during each watch. Call me at once if there is any situation or condition requiring remedial action.

In the course of land approach and in coastwise navigation, my Special Night Orders will contain my instructions in regard to the Closest Point of Approach (Fleet abbreviation—C.P.A.) to any hazard, shoal, points of land or aids to navigation. Consideration of that factor must be remembered by every Watch Officer not only in the regular course of navigation, but when alterations of course are made in compliance with the Rules for the Prevention of Collisions at Sea, or otherwise, in order to assure the maintenance of a safe margin of clearance from any points or areas which I have designated at the Closest Point of Approach.

Each duly licensed Watch Officer is reminded that carefully observed bearings, to progressively fix the position of this ship along her course during a land approach and during coastal navigation, are prerequisites to assure safety. The same principle applies with respect to due care and alertness to assure a continuation of my vessel's safe position while at anchor in any roadstead or harbor. When at anchor, special attention to her position is warranted when she swings under the influence of changes of tidal current or direction and strength of the wind.

EACH OF YOU IS ADMONISHED TO TAKE NO CHANCES—WHEN IN DOUBT ALWAYS CALL ME.

RADAR STANDING ORDERS

GENERAL INSTRUCTIONS

1. Radar is an AID to navigation. The fact that you have and must use the Radar instrument will not excuse any failure to comply with the requirements of the International, U.S. Inland and Pilot Rules, and any applicable Local Rules governing navigation in foreign ports and waters. Strict compliance with the Rules of Navigation is obligatory at all times, Radar or no Radar.

2. Radar is for the FREE use of the ship's deck watch officer. IT MUST BE USED:

A. Whenever the deck watch officer deems it advisable;

B. When visibility is reduced, or where it is anticipated visibility may be reduced, including the approach toward or of fog banks, rain, snow, or any other condition similarly restricting visibility;

C. While skirting or navigating in the vicinity of an area of reduced visibility, such as fog, snow, falling rain, or any other condition similarly restricting visibility;

D. Sufficiently often to keep officers concerned thoroughly familiar with all aspects of Radar operation;

E. In circumstances or conditions when in your judgment the safety of the vessel would be further assured by the use of the instrument as a supplement to the regular lookout.

3. "Pips" must be plotted whenever Radar is used by any method with which the watch officer is most familiar and proficient.

Determine extended "pip" motion and the object's course and speed as quickly as possible.

Analysis of the extended "pip" motion and "pip" location should include simultaneous comparison of both true and relative bearings in order to avoid possible misinterpretation.

4. The Radar shall be operated at least 1 to 1½ hours every day to dry the transmitter equipment of any moisture which may have developed or otherwise accumulated during the preceding 24 hours. That daily duty is assigned to the desk officer in charge of the 4–8 watch.

5. Do not hesitate to ask questions or seek information to develop or amplify your knowledge of Radar or to obtain information concerning matters you do not understand in connection with Radar, its use or operation.

6. PRACTICE analyzing "pip" movement so that you will be completely proficient in putting into use the information that can be furnished to you by Radar in the regular course of navigation. Confidence in your ability to use and properly interpret the information disclosed by Radar can be developed by PRACTICE. A crucial period, when a quick, competent decision is necessary to avoid danger, is not the time to endeavor to develop confidence that you should have previously acquired through PRACTICE.

It is the duty of all watch and navigating officers to familiarize themselves with the proper use and operation of Radar and analyses of the information furnished by use of the Radar equipment. Proper use and operation of the equipment and analyses of information disclosed by the Radar shall be practiced by comparison of visual and Radar observations. Comparison plottings of visual observations and bearings, etc., with those obtained by Radar and analyses of both will serve as a cross-check of your proficiency as a Radar analyst.

7. Whenever the Radar equipment is not in proper working condition, it MUST be turned off and its use discontinued until it has been restored to proper working condition. Appropriate entries MUST be made in the Deck Log showing the date, hour, and reason when its use is discontinued and the date and hour when use is resumed.

Repairs to the Radar are to be made only in accordance with current FCC Regulations.

8. Protect the scope face from as much light as possible.

POINTS TO REMEMBER

1. REMEMBER that there is/may be a partial blind sector forward due to mast and boom interference from —° to —° Relative!!!!!

2. REMEMBER that the FTC will bring prominent objects out of mass presentations (ships from rain, towers from flat beach, etc.). It works on all objects at all ranges, and may give better definition of the presentation on the shortest range (1½ to 5 miles).

3. REMEMBER that the SUPPRESSION control when correctly set is limited to 6-mile operation with maximum GAIN reductions toward the center of the scope. USE THIS CONTROL SPARINGLY!

4. REMEMBER that reduced GAIN can separate prominent objects from masses also. ALWAYS RETURN IT to its NORMAL setting after reduced setting usage.

5. Throw the ANTENNA CIRCUIT BREAKER on the lower panel OFF whenever anyone gets up the mast!

6. When repairs are being made to the antenna, a sign is to be placed over the power supply switch to the effect that "men are working aloft."

OPERATING INSTRUCTIONS

RADIOMARINE RADAR CR–101

1. SETUP PROCEDURE:

a. All controls should be turned to give least scope presentation before turning the instrument ON, GAIN to "0," SUPPRESSOR to "10," and all of the controls fully counterclockwise.

b. Range switch to 15-mile setting.

c. Sweep should come on barely visible with "0" GAIN; if not visible or too bright, an internal adjustment by a technician will need be made.

d. Turn GAIN up so that sweep speckles and there is background color contrast each side of the rotating sweep.

e. Turn SUPPRESSOR control to as low a setting as possible without allowing excessive sea return to appear around the center of the scope.

f. Turn Marker Rings and Flasher up so that they are barely visible when needed.

g. Turn FTC ON only if needed for a specific search or on shortest range setting.

2. START ALL PLOTS WHILE THE "PIPS" ARE AS CLOSE TO THE EDGE OF THE SCOPE AS POSSIBLE! YOU NEVER KNOW NOW WHAT INFORMATION YOU MAY NEED LATER.

3. *All* "pips," where circumstances permit, are to be plotted when the set is turned ON.

A. Be sure the ship is on course when making plots.

B. Mark crosses accurately in center of "pips."

C. Note times to nearest half minute when starting each plot and when practicable as plotting progresses.

D. Use standard legend for all scope and other plots:

Predicted pip motion (broken line) — — — — — —

Actual plots of "pip" positions (crosses) XXXXX

First and last plot with times (circled crosses) ⊗ X X ⊗ ⊗

Predicted times (circles) OOOOO

Construction lines (fine solid lines) ————————

4. Check scope orientation for TRUE and RELATIVE bearing accuracy frequently.

5. Direct comparison of charted versus scope presented object may answer navigation problems which would otherwise be difficult to solve.

6. Whenever you are using the 1½- or 5-mile scale for any considerable period DON'T FORGET TO SWITCH TO THE 15- or 50-MILE SCALES FREQUENTLY so that an object can't suddenly appear on the short-range scale, leaving you with very little time to analyze the situation and to act on short notice. One of the basic functions of the Radar is to keep you from ever being "surprised"!

7. We have been supplied with a Radar Log which shall be maintained in all respects.

Keep the Radar Log Book carefully. Note all discrepancies from "normal."

The entries required to be made in the Operational Radar Log:

A. An entry is to be made for each watch during which the Radar is used.

B. The entry should include the following information:

(1) Date.

(2) Approximate time during the watch when the set was used.

(3) Rough location of the ship.

(4) State of the weather, sea, and visibility.

(5) Use being made of the Radar.

(6) Hours on the time meter reading if the set was turned off during the watch.

(7) Any slight deficiency noted in the operation of the Radar.

(8) Signed by the Deck Watch Officer, with the full name, not initials.

C. All work completed by a service engineer should be noted in this record, including the date, location of the ship when service is performed, full name of the engineer making the repair, and the number of the Radar endorsement to his telegrapher's license.

CALL ME IMMEDIATELY WHEN IN DOUBT

CALL ME IMMEDIATELY WHEN ANOTHER VESSEL IS ON AN APPARENT COLLISION COURSE

WATCH YOUR PLUGS

By E. J. Gossen, Chief Machinist, USCG

A CONTROLLED EXPERIMENT where a variety of electrical plugs were subjected to heat can be seen in the picture above. Item "A" is translucent, yellow in color, and resembles in this form the familiar screwdriver handle. It may be struck repeatedly without breaking, and, despite its flammability, acts as a good electrical insulation. Items "B" and "C" are dark brown in color due to a coating of paint or varnish. For further comparison, item "D" is a conventional three-prong grounded plug approved for use by the National Underwriters Laboratories. Item "E" is a type of watertight plug used on Navy and Coast Guard vessels. Another type, not pictured above, has been found with the appearance of white porcelain. When ignited to demonstrate its insidious nature, vessel personnel asserted, "It must be soaked in gasoline because porcelain won't burn."

One example of unsatisfactory electrical equipment—a highly flammable plug—was recently found aboard a merchant vessel and removed before it had the opportunity to add to a casualty list.

The plugs were made from a type of pyroxaline—a substance made by nitrifying certain types of soluble cellulose which bears a strong chemical relationship to celluloid guncotton. Celluloid, because of its highly flammable nature, has not been used in the manufacture of collars, eyeglass frames, film, or other articles for many years, and has been considered a dangerous item aboard ship. Pyroxaline or cellulose nitrate, when shaved or finely ground and ignited, will provide a propelling force similar to gunpowder or military guncotton. The products of combustion are highly toxic oxides of nitrogen.

Purchasing agents and engineering officers should note that any item manufactured from this type of material is not acceptable for use on merchant vessels. Any replacement parts purchased for older electrical equipment should be examined and tested for safety characteristics. Many engineers of older vessels may be using improper plugs. Reference specifications, standards and codes acceptable to the Coast Guard can be found in the Electrical Engineering Regulations, subpart 110-10 of Title 46, Code of Federal Regulations.

SS CRISTOBAL ON MEDICO TEAM

The Atlantic Merchant Vessel Report (AMVER) Center in New York continually gives vessel position information to Coast Guard Rescue Coordination Centers as they call for it. Except for preporedness purposes, the most frequent type of situation prompting calling for AMVER plot information is the MEDICO. While AMVER itself is but one phase of the overall Search and Rescue system, it often plays an important part. A recent case typifies the role of AMVER, and illustrates as well, the value of Rescue Coordination Centers in the Coast Guard's SAR Organization.

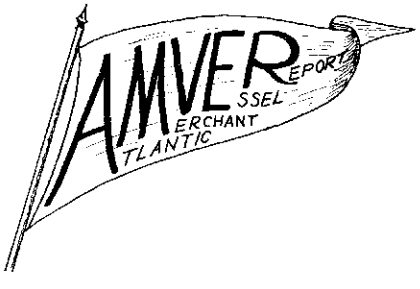
On September 7 the SS *Ore Saturn*, an 18,000-ton ore-carrier under the flag of Liberia, was on a passage from Trinidad to Baltimore. Some 500 miles east of the Bahama Islands, the first assistant engineer, Donald Duthie from California, became weak and was coughing blood. The *Ore Saturn*'s Master reported the symptoms to the Coast Guard by radio, whereupon the Rescue Coordination Center, Norfolk, assumed control and classified the case as MEDICO. The RCC Controller called the staff doctor of the U.S. Public Health Service Hospital in Norfolk.

The patient's illness was diagnosed as a probable perforated ulcer. The doctor recommended treatment and precautions, and this advice was radioed back to *Ore Saturn* with a request for periodic progress reports. Meanwhile, as a preparedness measure, the RCC Controller called AMVER in New York to get the disposition of vessels carrying doctors in the general area of *Ore Saturn*. In minutes, a listing with three such vessels was before him on a teletype print. The situation then was not serious enough to warrant a vessel-diversion and boat-transfer at sea. The AMVER report was, therefore, simply attached to the case record pending developments.

Developments came. Progress reports at first showed the patient improving, but the following afternoon the opposite was apparent. The doctor pronounced the patient's condition critical and advised removal to a hospital as soon as possible. The *Ore Saturn* was now about 220 miles southeast of Cape Hatteras. Was there a vessel with a doctor near enough to help now? This problem was for AMVER. The RCC, Norfolk got the answer almost immediately. Yes, there was. The AMVER plot showed the Panama Lines passenger liner SS *Cristobal* only about 45 miles from *Ore Saturn*'s reported position. AMVER information included the liner's call sign, course, speed and destination, plus the fact that she carried a full time radio watch and a ship-shore telephone. Under the circumstances, it was simplest for the Norfolk duty officer to call the *Cristobal* by telephone. He advised Captain Francis Gorman, Master of the liner, about the *Ore Saturn* situation. Captain Gorman was most cooperative and immediately offered to help. The 10,000-ton Panama R.R. Co. liner made radio contact with the *Ore Saturn*. A successful rendezvous was made without delay, and in the darkness of early evening the patient was transferred by boat to the liner's hospital. This did not end the rescue phase, however.

About midnight the same evening, *Cristobal's* doctor reported the patient needed blood and that the blood-type was not available on board. Back in Norfolk, the RCC made some fast decisions. Locating a supply of the needed blood-type at the U.S. Marine Corps' Camp LeJeune, N.C., a Marine Corps staff officer offered to carry the blood by helicopter to the Coast Guard lifeboat station at Fort Macon, N.C. There a waiting 40-ft. patrol boat put to sea with the blood to meet the *Cristobal*. The liner, meanwhile, had diverted somewhat to approach the coast, and by 6 a.m. local time transfer of the patient to the boat was successfully completed. While the boat was making best speed to shore, the patient was given a blood transfusion. At the pier an ambulance was waiting; and as soon as the boat arrived, the patient was whisked to the Memorial Hospital in Morehead City, N.C. In this instance a man's life was saved, by means of timely efforts by many individuals and activities. No other units were needlessly engaged. For its part, the AMVER system was ready and was used.

Keeping the AMVER system ready means processing of the voluntary reports of thousands of merchant vessels. The more vessels regularly reporting means a greater degree of readiness of AMVER to help in critical situations. The splendid cooperation of thousands of merchant vessels already participating is much appreciated.



MERCHANT MARINE STATISTICS

There were 944 vessels of 1,000 gross tons and over in the active oceangoing U.S. merchant fleet on October 1, 1960, 9 less than the number active on September 1, 1960, according to the Maritime Administration.

There were 37 Government-owned and 907 privately owned ships in active service. These figures did not include privately owned vessels temporarily inactive, or Government-owned vessels employed in loading grain for storage. They also exclude 26 vessels in the custody of the Departments of Defense, State, and Interior.

There was a decrease of 12 active vessels and an increase of 3 inactive vessels in the privately owned fleet. One cargo ship, the *Export Ambassador*, was delivered from construction. Two combination passenger-cargo ships and seven freighters were traded in to the Government for credits on new construction. One tanker was sold foreign. The privately owned fleet decreased by 9 to 1,003. Of the 96 privately owned inactive vessels, 34 dry cargo, 2 combination passenger-cargo ships, and 48 tankers were laid up for lack of employment, 9 more than on September 1. Most of the others were undergoing repair or conversion.

The Maritime Administration's active fleet increased by 3, while its inactive fleet increased by 6. Four Liberty ships were sold for scrap. Four Navy-owned ships were placed in Reserve Fleet custody and 9 ships were traded in by private owners. This increased the Administration's fleet by 9 to a total of 2,045. The total U.S. merchant fleet remained at 3,048.

Fifteen contracts for cargo ships were placed during the month of September. One freighter was completed. The total of large merchant ships on order or under construction in U.S. shipyards rose by 14 to 75.

Seafaring jobs on active oceangoing U.S.-flag ships of 1,000 gross tons and over, excluding civilian seamen manning Military Sea Transportation Service ships, were 49,191. Prospective officers in training in Federal and State nautical schools numbered 2,319.

MARITIME SIDELIGHTS

SAFETY CERTIFICATES OF HONOR

REPRESENTATIVES of seven American-flag steamship and oil companies pose with Rear Admiral Edwin J. Roland, USCG, Commander, Third Coast Guard District and Eastern Area, and Robert E. O'Brien, Vice President, Moore-McCormack Lines, and General Chairman, Marine Section, National Safety Council, at ceremonies for the presentation of Ship Safety Certificates of Honor, in the New York Yacht Club, October 4, 1960. Certificates, jointly awarded by the Marine Section, National Safety Council, and the American Merchant Marine Institute, to honor U.S.-flag ships with records of 2 years or more of continuous accident-free operation, were presented by Admiral Roland to 27 ships of these companies. Receiving Certificates on behalf of their respective fleets were, front row, left to right: G. H. Eppleman, Marine Superintendent, United Fruit Co.; Jones F. Devlin, Jr., Vice President, U.S. Lines; Admiral Roland; Mr. O'Brien; Glenn E. Ankrum, Safety Director, Tidewater Oil Co.; rear row: F. A. Billhardt, President, Alcoa Steamship Co.; J. V. C. Malcolmson, General Manager, Texaco, Inc.; E. J. McDermott, Marine Manager, Sinclair Refining Co.; J. P. O'Kelly, Assistant Secretary, Lykes Bros. Steamship Co.

Twenty-seven American-flag merchant ships with a collective record for accident-free operation of 83 years 9½ months were honored recently by the Marine Section, National Safety Council, and the American Merchant Marine Institute.

The Certificate of Honor is an award newly created this year by the joint Ship Safety Achievement Awards Committee of the Marine Section and the Institute. Any merchant vessel of United States registry becomes eligible to receive it at the end of 2 calendar years of operation without a lost-time accident.

Of the ships honored 15 were tankers flying the houseflag of Texaco, Inc. Their individual records, as of last December 31, ranged from 740 to 2,174 consecutive days of accident-free service. The latter score, highest of the 27, was attained by the tanker *New Jersey*. The Texaco certificates were received by J. V. C. Malcolmson, General Manager of the Company's Marine Department.

The remaining certificates went to two ships of the Alcoa Steamship Co. (877 and 1,404 days), three of Lykes Bros. Steamship Co. (737–838 days), one of Sinclair Refining Co. (1,372 days), two of Tidewater Oil Co. (783 and 1,171 days), one of United Fruit Co. (919 days), and three of United States Lines (807–873 days). Receiving the certificates for their respective fleets were: F. A. Billhardt, President, Alcoa Steamship Co.; J. P. O'Kelly, Assistant Secretary, Lykes Bros. Steamship Co.; E. J. McDermott, Marine Manager, Sinclair Refining Co.; Charles A. Mellendeck, Eastern Division Marine Manager, Tidewater Oil Co.; G. H. Eppelman, Marine Superintendent, United Fruit Co.; and Jones F. Devlin, Jr., Vice President, U.S. Lines.

A proposal by Goodyear Aircraft Corporation, Arizona Division, at Litchfield Park, Arizona, for the development of an experimental radar data computer has been selected as a basis for contract negotiations by the Maritime Administration.

It is anticipated that the computer will be able automatically to plot the projected course of as many as ten ships simultaneously. In addition, it is designed to sound an alarm in the event the closest point of approach is less than a predetermined safe, anti-collision minimum.

The device will indicate the course, speed, bearing and range of up to ten targets in either true or relative position. Of particular importance to safety at sea will be automatic determination of an appropriate avoidance maneuver in the event a possibility of collision is indicated. The latter electronic computation will not only include avoidance of a single vessel but others in the area as well.

Success of the experimental radar data computer could eliminate human error in interpretation of the information contained on the ship's radar scope and materially reduce ship collision danger.

Development of the radar data computer is being carried out as part of the Maritime Administration's continuing research and development program to improve efficiency and safety aboard American-flag merchant ships.

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United States shipyards received a bigger boost in freighter construction business during the month of September than at any similar period within the last nine years. The tonnage figures and the number of vessels involved according to the monthly report of the Shipbuilders Council of America are the largest for cargo shipbuilding during any one month since 1951. The monthly figures are also the highest for all sorts of vessel construction in U.S. yards since December, 1956 when 22 tankers of 713,300 gross tons were constructed. In September agreements were signed for the building of 15 new cargo vessels.

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A giant maritime jigsaw puzzle is now being solved on the shores of Lake Victoria in Africa, according to the *New York Times*. The puzzle's pieces were in some 1,500 crates and bundles that weighed about 1,200 tons.

The puzzle will emerge later this year as the Royal Mail's *Victoria* and join the fleet of passenger and cargo ships that ply Africa's largest lake. When fully assembled and launched, the *Victoria* will be a 1,570-gross-ton twin-screw motorship. The 261-foot vessel will carry 500 passengers, 200 tons of general cargo, refrigerated cargo, 10 cars, and 40 bicycles.

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A contract for the construction of six new cargo ships has been signed by the Federal Maritime Board, Farrell Lines, Inc., and the Ingalls Shipbuilding Corp. The Ingalls Shipbuilding Corp. was awarded the contract as the low bidder among the 12 yards submitting bids. The ships will be built at Ingalls' Pascagoula, Miss., shipyard. The contract calls for delivery of the first ship in 720 days, with delivery of the other five ships scheduled at 60-day intervals.

Designated as Maritime Administration Design C4–S–58a, the ships will have the following characteristics:

Length overall—572 feet.
Beam—75 feet.
Draft—30½ feet.
Gross tons—11,600.
Total deadweight tons—12,401.
Service speed—20 knots.
Passengers—12.
Dry cargo bale—660,026 cu. ft.
Reefer cargo—28,000 cu. ft.
Machinery—single-screw geared turbine.

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Two 6,000 h.p. towboats, among the largest and most powerful on the Inland Waterways, will be added to the Union Barge Line Corp. fleet next year. The 190-foot vessels, which will be built at the Neville Island Shipyard of Dravo Corp., Pittsburgh, will operate primarily on the Mississippi River betweeen New Orleans and St. Louis.

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United States Lines Distinguished Service Medals were awarded today to Capt. F. G. Collison and 14 officers and crewmen of the *Pioneer Main* for the rescue last April of four Taiwan-Chinese fishermen from a swamped trawler in the China Sea. Presentation of the awards, with accompanying scroll and citations was made by Capt. Jones F. Devlin, vice president in charge of operations for United States Lines, in a ceremony abroad the vessel at her North River pier.

MERCHANT MARINE PERSONNEL STATISTICS

MERCHANT MARINE OFFICER LICENSES ISSUED

QUARTER ENDING 30 SEPTEMBER 1960

DECK

Grade	Original	Renewal
Master:		
Ocean	38	352
Coastwise	7	40
Great Lakes	4	15
B.S. & L	12	112
Rivers	18	42
Radio Officer Licenses Issued	7	79
Chief mate:		
Ocean	33	106
Coastwise	----	----
Mate:		
Great Lakes	----	----
B.S. & L	----	----
Rivers	----	----
Second mate:		
Ocean	34	99
Coastwise	1	1
Third mate:		
Ocean	173	84
Coastwise	----	----
Pilots:		
Great Lakes	4	9
B.S. & L	115	34
Rivers	92	42
Master: Uninspected Vessels	11	23
Mate: Uninspected Vessels	20	41
Motorboat Operators	281	526
Total	**850**	**1,605**
Grand Total	**2,455**	

ENGINEER

Grade	Original	Renewal
STEAM		
Chief engineer:		
Unlimited	37	502
Limited	6	102
First assistant engineer:		
Unlimited	48	207
Limited	2	13
Second assistant engineer:		
Unlimited	37	277
Limited	-	2
Third assistant engineer:		
Unlimited	209	341
Limited	----	1
MOTOR		
Chief engineer:		
Unlimited	12	111
Limited	24	146
MOTOR—continued		
First assistant engineer:		
Unlimited	11	24
Limited	15	24
Second assistant engineer:		
Unlimited	5	23
Limited	2	1
Third assistant engineer:		
Unlimited	181	424
Limited	3	2
Chief engineer: Uninspected vessels	9	17
Assistant Engineer: Uninspected vessels	3	2
Total	**604**	**2,279**
Grand total	**2,883**	

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	1	----	1	----	2
Ordinary Seamen for Able Seamen	----	----	----	----	----
Wiper or coalpassers for qualified member engine dept	----	----	1	----	1
Total Waivers	1	----	2	----	3
Number of vessels	1	----	2	----	3

INVESTIGATING UNITS

Coast Guard Merchant Marine Investigating Units and Merchant Marine Details investigated a total of 3,327 cases during the third quarter of 1960. From this number, hearings before Examiners resulted involving 40 officers and 223 unlicensed men. In the case of officers, 3 licenses were revoked, 3 were suspended without probation granted, 6 were suspended with probation granted, 4 cases were dismissed after hearing, and 4 hearings were closed with admonition. Of the unlicensed personnel, 13 documents were revoked, 5 were suspended without probation granted, 80 were suspended with probation granted, 16 cases were dismissed after hearing, and 19 hearings were closed with admonition. Seven licenses and 88 documents were voluntarily surrendered.

ORIGINAL SEAMEN'S DOCUMENTS ISSUED

Type of document	Atlantic Coast	Gulf Coast	Pacific Coast	Great Lakes and rivers	Total
Staff Officer	36	8	31	6	81
Continuous Discharge Book	219	18	1	----	238
Merchant Mariner's Documents	1,328	673	871	1,077	3,949
AB any waters, unlimited	177	49	58	36	320
AB any waters, 12 months	43	16	15	58	132
AB Great Lakes, 18 months	2	----	1	20	23
AB Tugs and Towboats, any waters	-	23	2	----	25
AB Bays and Sounds	1	1	----	----	2
AB Seagoing Barges	----	----	----	----	0
Lifeboatman	322	11	70	13	416
QMED	260	46	80	85	471
Radio Officer	----	3	3	----	6
Certificate of Service	1,310	633	786	986	3,715
Tankerman	16	62	13	74	165
Total	**3,714**	**1,543**	**1,931**	**2,355**	**9,543**

TABULATION OF UNSAFE PRACTICES

January through June 1960

	Atlantic	Great Lakes and Rivers	Gulf	Pacific	Total
A. Access to Vessel					
Gangways, accommodation ladders, etc.					
1. Length, width, strength, etc., inadequate	14	22	9	7	52
2. Rigged or secured improperly	13	17	13	8	51
3. Angle too steep	4	14	2	5	25
4. Not clear at either end	6	2	2		10
5. Water discharging onto	1	4	1	3	9
6. Hand ropes or rails not provided or inadequate	15	16	6	8	45
7. Insufficient number		2			2
8. Lifeboat or other object suspended over access	1			2	3
9. Ring lifebuoy with lanyard not provided or inadequate	26	23	16	9	74
10. Other	6	7	8	1	22
B. Access to Spaces on Board Vessel					
Ladders					
11. Rigged improperly	5	3	5	1	14
12. Rungs, steps, or treads missing or loose	44	11	7	15	77
13. Deteriorated or weakened	28	3	11	12	54
14. Handrails missing or inadequate	19	19	7	5	50
15. Doors or passages cluttered	8	3	8	5	24
16. Escape means blocked or locked	13	7	4	1	25
17. Other	5	1	3	6	15
C. Deck and Hull Openings					
18. Hatch covers, dangerously piled or placed	5	1	5	5	16
19. Hatch covers, missing or defective	10	11	5	4	30
20. Hatch covers, securing means defective	7	9	10	2	28
21. Hatch beam locking lugs missing or defective	1	4	3	5	13
22. Lifelines, chains, rails, or guards missing or inadequate	28	4	9	20	61
23. Other	5	5	10	2	22
D. Decks and Platforms					
24. Slippery due to oil, grease, etc	46	35	42	26	149
25. Cluttered	42	7	12	14	75
26. Floor plates or gratings loose or not in place	22	8	5	8	43
27. Rails and guards missing or inadequate	27	25	12	12	76
28. Other	14	4	3	3	24
E. Cargo Handling					
29. Safe load not marked on booms	1	1	6	6	14
30. Guys, falls, booms, etc., improperly rigged	1		2		3
31. Overloading gear					
32. Jury rig winch controls					
33. Failure to use guards and gates or cargo elevators and escalators					
34. Using defective cargo gear	1	1	2		4
35. Smoking prohibition disregarded	2		2	14	18
36. Stowage or handling of cargo or gear	1	1	1		3
37. Other	1		1	1	3
F. Lifesaving Equipment					
38. Not ready for use	50	10	19	12	91
Lifeboats					
39. Hoisting fully loaded		1		1	2
40. Personnel riding to fully stowed position		1		1	2
41. Preventive lashings not used when working in boat		1	1	10	12
42. Winch power not shut off when using hand crank or performing maintenance					
43. Starting engine without ventilating				2	2
44. Bypassed safety devices	1			1	2
45. Tricing and frapping lines improperly used	3			1	4
46. Davit span lifelines not ready for use	3		6		9
47. Other	33	14	16	6	69
G. Fire Fighting Equipment					
48. Not ready for use	68	21	37	74	200
49. Fire screen doors blocked	5			5	10
50. Other	50	17	13	8	88
H. Ventilation					
51. Neglect to observe safety precautions prior to entering					
52. Use of toxic solvent in confined spaces	1			2	3
53. Grease, dust, litter in ventilation system	5	8		5	18
54. Cowls, mushrooms, etc., frozen	9	1	11	8	29
55. Insufficient ventilation	12	7	3		22
56. Other	19	10	5	3	37

	Atlantic	Great Lakes and Rivers	Gulf	Pacific	Total
I. Electrical					
57. Extension cords defective	23	18	5	14	60
58. Portable equipment not grounded	9	27	8	23	67
59. Overfused circuits	47	2	19	15	83
60. Jury rigged circuits	70	24	24	33	151
61. Caps for receptacle outlets not in place	109	18	32	67	226
62. Switch and fuse box panels in passenger spaces left unlocked	6	2	2		10
63. General alarm bells muffled or dampened	35	16	14	16	81
64. Vapor globes and guards not in place	159	45	41	66	311
65. Use of defective equipment in hazardous spaces	17	17	4	2	40
66. Other	49	28	16	15	108
J. Machinery					
67. Failure to take safety precautions in lighting-off boiler	1	1	5	4	11
68. Spring-loaded valves on sounding pipes secured in open position or not in place	34	1	11	24	70
69. Machinery guards not in place or defective	20	10	5	17	52
70. Failure to block or safeguard steam valves when working on steam lines or inside a boiler, evaporator, etc		1	1		2
71. Other	30	16	21	7	74
K. Welding, Burning, Heating, or Riveting					
72. No gas-free certificate for "hot work" where required		3	1		4
73. Inadequate fire watch	1	2	1	1	5
74. Ventilation insufficient		1		1	2
75. Personnel protective equipment inadequate					
76. Other	2				2
L. Tank Vessels					
77. Ullage holes or expansion trunk openings open without flame screens	14	21	20	3	58
78. Vent header drains left open		2			2
79. Deck battens or wooden gratings not provided where needed		4	1		5
80. Failure to comply with "Declaration of Inspection Prior to Bulk Cargo Transfer"	1				1
81. Other	16	43	49	7	115
M. Ferry and Excursion Vessels					
82. Vehicles not properly secured during navigation	1			1	2
83. Vehicle motors not turned off during navigation	1				1
84. Insufficient clearance between vehicles for egress of passengers in emergency					
85. Barricades and gates opened prior to docking					
86. Passenger supervision inadequate					
87. Other	1	1		3	5
N. Miscellaneous					
88. Job supervision inadequate	7	3	1	1	12
89. Lack of supervision in maintenance of equipment	11	9	5	3	28
90. Lack of supervision in conducting drills	1	2	2		5
91. Lack of sufficient personnel	5		1		6
92. Oil, fuel, and/or debris in bilges	43	3	23	2	71
93. Stoves, ranges, heaters, hotplates, lanterns, etc., not secured against vessel's movement	2	2			4
94. Inadequate deck, gangway, passageway lighting	6	1			7
95. Unsanitary conditions	12	3	6	1	22
96. Chain falls improperly used	1				1
97. Lack of precautions while effecting repairs (including warning notices, etc.)	4	3	2		9
98. First aid equipment not ready for use (medicine chest, litter)	1		1		2
99. Stowage of ship's stores improper	7	6	3	8	24
100. Access over deckloads					
101. Other	21	8	3	7	39
Grand Total	1448	704	670	690	3512

[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 F—NAVIGATION REQUIREMENTS FOR WESTERN RIVERS

[CGFR 60-66]

PART 96—INTERPRETATIVE RULINGS

Subpart 96.10—Steering and Sailing

MOVING A VESSEL FROM HER DOCK OR ANCHORAGE

Rule Numbered 24(c) of the Western Rivers Rules prescribes a signal of three distinct blasts of her whistle to be given when a steam vessel is "moved from her dock or anchorage." Inquiries have been received asking if this signal need be sounded if tugs with tows tie off to river banks rather than the conventional mooring to docks or in anchorages. Rule Numbered 24(c) (33 U.S.C. 349) reads as follows:

> When a steam vessel is moved from her dock, or anchorage, she shall give the same signal as in the case of a steam vessel nearing a bend, but she and any approaching vessel shall be governed by rules 25 and 26 until her course is apparent, and then both vessels shall be governed by the other steering and sailing rules.

Briefly, this rules requires a prescribed signal shall be given when a vessel is "moved from her dock or anchorage." The inquiry raises a question of what does "dock or anchorage" mean when the custom is to tie tugs with tows to river banks. To promote safety it is considered necessary to require a vessel when moved from a mooring to a river bank or from a mooring of any type to sound the prescribed signal. Therefore, the phrase "moved from her dock or anchorage" should mean moving from a mooring of any type.

Part 96 is amended by adding a new Subpart 96.10—Steering and Sailing, and it consists of § 96.10–1 reading as follows:

§ 96.10–1 Vessel moved from dock or anchorage.

(a) Rule Numbered 24(c) of Section 4233 of the Revised Statutes as amended (33 U.S.C. 349) requires "when a steam vessel is moved from her dock or anchorage" to give a prescribed signal of three distinct blasts on her whistle. The phrase "moved from her dock or anchorage" means moving from a mooring to a riverbank or from a mooring of any type.

(Federal Register Document No. 60 9459; Filed October 7, 1960, and printed October 8, 1960)

TITLE 46—SHIPPING

Chapter I—Coast Guard, Department of the Treasury

[CGFR 60 65]

VESSELS UTILIZING NUCLEAR ENERGY OR HANDLING RADIOACTIVE MATERIALS

This document contains the actions taken with respect to the proposals regarding "nuclear energy" as set forth under Item IX—Marine Engineering (CG–249, pp. 152–155). The regulations in this document are general in nature and authorize the Commandant to prescribe the detailed requirements applicable to each vessel pending the development of specific safety standards, which will be based on additional service experience expected to be gained from the actual operation of the "N.S. Savannah." Their intent is to provide a uniform basis for evaluating and establishing necessary safety standards for vessels when having aboard nuclear energy as a source of power for propulsion or for other purposes, as well as to provide safety standards for vessels when handling, processing or having on board radioactive materials. By this control the Coast Guard will carry out one of its primary duties, i.e., to promote "safety of life and property on the high seas and on waters subject to the jurisdiction of the United States."

The Coast Guard is most appreciative of the assistance and advice received from the Atomic Energy Commission. The requirements designated 46 CFR Subpart 57.30 were revised to reflect the views of both the Atomic Energy Commission and the Coast Guard. In order to show the application of these new regulations to vessels, appropriate cross references describing application have been inserted in the various pertinent regulations.

SUBCHAPTER D—TANK VESSELS

PART 31—INSPECTION AND CERTIFICATION

Subpart 31.30—Marine Engineering

Section 31.30–1 is amended to read as follows:

§ 31.30–1 Marine engineering regulations and material specifications—TB/ALL.

(a) All tank vessels are subject to the regulations contained in Parts 50 to 61, inclusive, of Subchapter F (Marine Engineering) of this chapter, whenever applicable, except as such regulations are modified by the regulations in this subchapter for tank vessels.

(b) All vessels utilizing nuclear energy for propulsion or for any other purpose, or handling radioactive materials other than as cargo shall comply with the applicable requirements in Subpart 57.30 of Part 57 of Subchapter F (Marine Engineering) of this chapter. The regulations covering the transportation and handling of radioactive materials as cargo are contained in Part 146 of Subchapter N (Explosives or Other Dangerous Articles or Substances and Combustible Liquids on Board Vessels) of this chapter.

SUBCHAPTER F—MARINE ENGINEERING

PART 57—MAIN AND AUXILIARY MACHINERY

Subpart 57.30—Nuclear Energy

§ 57.30–1 Scope.

(a) The requirements in this subpart apply to all installations, systems, and components thereof, utilizing nuclear energy for propulsion or for any other purpose, or handling radioactive materials other than as cargo.

(b) The regulations covering the transportation and handling of radioactive materials as cargo are contained in Part 146 of Subchapter N (Explosives or Other Dangerous Articles or Substances and Combustible Liquids on Board Vessels) of this chapter.

§ 57.30–5 Definitions.

(a) The term "nuclear vessel" means any vessel in which power for propulsion, or for any other purpose, is derived from nuclear energy; or any vessel handling or processing substantial amounts of radioactive material other than as cargo.

(b) The term "nuclear energy" means all forms of energy released by nuclear fission or radioactive decay, or

by any other form of nuclear transformation.

(c) The term "radioactive material" means any material or combination of materials that spontaneously emits ionizing radiation.

§ 57.30–10 General safety requirements.

(a) Every nuclear vessel subject to this subchapter shall be inspected by the U.S. Coast Guard at least annually to ascertain that the hull, nuclear systems, machinery, equipment, appliances, etc., of the vessel comply with the regulations in this chapter.

(b) The Standards for Protection Against Radiation, set forth in 10 CFR Part 20, will be the radiation protection standards followed by the U.S. Coast Guard, except as otherwise provided for by law.

(c) Prior to the issuance of a certificate of inspection by the U.S. Coast Guard for a nuclear vessel, it shall be shown to the satisfaction of the Commandant that:

(1) The vessel provides a degree of safety for the non-nuclear portion at least equivalent to the relevant requirements prescribed in this chapter for a conventionally-powered ocean-going passenger vessel of similar size, capacity, and tonnage. In this respect components and systems such as watertight subdivision, stability, fire protection, bilge pumping arrangements, fire extinguishing arrangements, electrical installations, steering gear, astern power, and navigational aids will be evaluated in order to provide for the maximum practicable safety for the vessel.

(2) The vessel complies with such additional requirements as may be prescribed by the Commandant and with the requirements of the Atomic Energy Commission.

(3) The design, construction, and operation of the vessel do not create an unreasonable nuclear hazard to the crew, passengers, public, waterways, or food and water supply.

(4) The nuclear systems or components thereof are provided with means for preventing the uncontrolled release of hazardous amounts of radioactive material to normally accessible spaces or to the ship's environment in the event of accident or malfunctioning of the nuclear system.

(5) The vessel has standby and emergency components essential to its safe operation in order to provide maximum protection in the event of an accident or malfunctioning of the nuclear system.

(d) A license or other certificate issued by the Atomic Energy Commission may be accepted by the Commandant as evidence that the vessel complies with the requirements of the Atomic Energy Commission and paragraph (c) (3) and (4) of this section.

§ 57.30–15 Special operating procedures.

(a) In addition to the requirements specified in this chapter, all nuclear vessels may be subject to additional requirements governing fueling, start-up, and operation.

§ 57.30–20 Inspection, overhaul, and repair.

(a) In addition to the requirements for inspection, test, overhaul, and repair specified in this chapter, nuclear vessels may be subject to such additional requirements as may be prescribed by the Commandant for inspection, test, overhaul, and repair.

SUBCHAPTER H—PASSENGER VESSELS

PART 70—GENERAL PROVISIONS

Subpart 70.20—General Marine Engineering Requirements

2. Subpart 70.20 is amended by adding after § 70.20–1 a new section reading as follows:

§ 70.20–5 Vessels utilizing nuclear energy or handling radioactive materials.

(a) All vessels utilizing nuclear energy for propulsion or for any other purpose, or handling radioactive materials other than as cargo shall comply with the applicable requirements in Subpart 57.30 of Part 57 of Subchapter F (Marine Engineering) of this chapter. The regulations covering the transportation and handling of radioactive materials as cargo are contained in Part 146 of Subchapter N (Explosives or Other Dangerous Articles or Substances and Combustible Liquids on Board Vessels) of this chapter.

SUBCHAPTER I—CARGO AND MISCELLANEOUS VESSELS

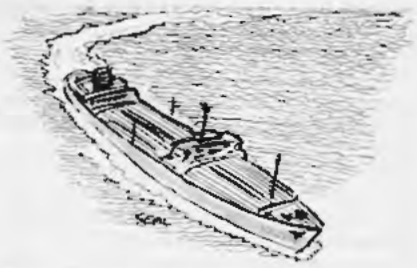
PART 90—GENERAL PROVISIONS

Subpart 90.20—General Marine Engineering Requirements

Subpart 90.20 is amended by adding after § 90.20–1 a new section reading as follows:

§ 90.20–5 Vessels utilizing nuclear energy or handling radioactive materials.

(a) All vessels utilizing nuclear energy for propulsion or for any other purpose, or handling radioactive materials other than as cargo shall comply with the applicable requirements in Subpart 57.30 of Part 57 of Subchapter F (Marine Engineering) of this chapter. The regulations covering the transportation and handling of radioactive materials as cargo are contained in Part 146 of Subchapter N (Explosives or Other Dangerous Articles or Substances and Combustible Liquids on Board Vessels) of this chapter.



PART 98—SPECIAL CONSTRUCTION, ARRANGEMENT, AND PROVISIONS FOR CERTAIN DANGEROUS CARGOES IN BULK

Part 98 is amended by adding at the end thereof a new Subpart 98.30, consisting of § 98.30–1, reading as follows:

Subpart 98.30—Nuclear Energy

§ 98.30–1 Vessels handling radioactive materials.

(a) All vessels handling or processing radioactive materials in substantial amounts other than as cargo shall comply with the applicable requirements in Subpart 57.30 of Part 57 of Subchapter F (Marine Engineering) of this chapter. The regulations covering the transportation and handling of radioactive materials as cargo are contained in Part 146 of Subchapter N (Explosives or Other Dangerous Articles or Substances and Combustible Liquids on Board Vessels) of this chapter.

SUBCHAPTER N—EXPLOSIVES OR OTHER DANGEROUS ARTICLES OR SUBSTANCES AND COMBUSTIBLE LIQUIDS ON BOARD VESSELS

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

Subpart—Detailed Regulations Governing Poisonous Articles

Part 146 is amended by inserting after § 146.25–60 a new section reading as follows:

§ 146.25–65 Vessels utilizing nuclear energy or handling radioactive materials.

(a) All vessels utilizing nuclear energy for propulsion or for any other purpose, or handling radioactive materials other than as cargo shall comply with the applicable requirements in Subpart 57.30 of Part 57 of Subchapter F (Marine Engineering) of this chapter. The regulations covering the transportation and handling of radioactive materials as cargo are set forth in this subpart.

SUBCHAPTER S—NUMBERING OF UNDOCUMENTED VESSELS, STATISTICS ON NUMBERING, AND "BOATING ACCIDENT REPORTS" AND BOATING ACCIDENT STATISTICS

[CGFR 60-67]

PART 172—INTERPRETIVE RULINGS—FEDERAL BOATING ACT AND ACT OF APRIL 25, 1940, AS AMENDED

Federal Boating Act of 1958; Interpretive Ruling

The Coast Guard is charged with the responsibility for the general superintendence of the administration and enforcement of the Federal Boating Act of 1958 and the Act of April 25, 1940, as amended, which apply primarily to recreational boating on the navigable waters of the United States and the high seas under the jurisdiction of the United States. From time to time inquiries are received concerning the meaning of specific provisions of law and requesting official statements of the Commandant's position in such matters. Inasmuch as these interpretations are of interest to the general public and may affect them under certain circumstances, these interpretations are being published in the FEDERAL REGISTER and designated as 46 CFR Part 172.

An inquiry was received from a State official concerning the meaning of the word "use" as found in subsection 3(b) of the Federal Boating Act of 1958 (46 U.S.C. 527a(b)). This provision of law reads as follows:

> The owner of an undocumented vessel required to be numbered under subsection (a) of this section shall secure a number for such vessel in the State in which it is principally used, in accordance with the State numbering system approved by the Secretary in accordance with subsection (c) of this section, or if no such numbering system has been approved by the Secretary for the State where such vessel is principally used, shall secure a number for such vessel in accordance with subsection (d) of this section.

Although no specific legislative pronouncement is found, the Coast Guard has considered that the Congress in recognition of the mobility of the boating public, and the fact that the vessel may be maintained at some distance from the residence of the owner, adopted the phrase "* * * State in which it is principally used, *" in the above quoted law so that a boat owner could ascertain with a reasonable degree of certainty where to secure a number. To carry out this intent the phrase "* * * using the navigable water of the United States * * *" in subsection 3(a) of this Act (46 U.S.C. 527a(a)) is interpreted by the Coast Guard not as a legal term or expression, but as ordinary words in common use, meaning when a vessel is "on" the navigable waters of the United States. Thus the Coast Guard considers the term "principally used" to include the time when the vessel is not in motion, as for instance when she is moored or at anchor, equally with the time when the vessel is being navigated. Since the Act would be only applicable to the vessel when it is on the navigable waters of the United States, those periods when the vessel is being transported by trailer or is stored on land are excluded from any computation of time in determining principal use.

(Federal Register Document No. 60002; Filed October 24, 1960, and printed October 25, 1960)

EQUIPMENT APPROVED BY THE COMMANDANT

[EDITOR'S NOTE.—Due to space limitations, it is not possible to publish the documents regarding approvals and terminations of approvals of equipment published in the Federal Register dated October 25, 1960 (CGFR 60-68). Copies of these documents may be obtained from the Superintendent of Documents, Washington 25, D.C.]

ARTICLES OF SHIPS' STORES AND SUPPLIES

Articles of ships' stores and supplies certificated from 1 October to 31 October 1960, inclusive, for use on board such 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

Maritec Corp., 42 Broadway, New York 4, N.Y., Certificate No. 450, dated 7 October 1960, ELECTRICAL EQUIPMENT CLEANER FF 0004.

Purex Corp., Ltd., P.O. Box 9686, Philadelphia 31, Pa., Certificate No. 451, dated 10 October 1960, PUREX SPECIAL ANTI-SLIP FLOOR WAX.

Purex Corp., Ltd., P.O. Box 9686, Philadelphia 31, Pa., Certificate No. 452, dated 11 October 1960, PUREX BRYTENE NON-SCUFF POLYMER FLOOR POLISH.

Purex Corp., Ltd., P.O. Box 9686, Philadelphia 31, Pa., Certificate No. 453, dated 11 October 1960, PUREX SPOTLIGHT SELF-POLISHING FLOOR WAX.

Astor Supply Co., Inc., 140 Perry St., New York 14, N.Y., Certificate No. 454, dated 17 October 1960, HICO ASTOR GLOSS CLEANER.

United-Heckathorn, 600 South Fourth St., Richmond, Calif., Certificate No. 455, dated 24 October 1960, UNITED DUAL PURPOSE OIL ADDITIVE.

United-Heckathorn, 600 South Fourth St., Richmond, Calif., Certificate No. 456, dated 24 October 1960, DESCALER.

United-Heckathorn, 600 South Fourth St., Richmond, Calif., Certificate No. 457, dated 24 October 1960, UNDERWAY TANK CLEANER.

United-Heckathorn, 600 South Fourth St., Richmond, Calif., Certificate No. 458, dated 24 October 1960, OIL SPILL EMULSIFIER.

United-Heckathorn, 600 South Fourth St., Richmond, Calif., Certificate No. 459, dated 24 October 1960, OILSIDE CLEANER.

United-Heckathorn, 600 South Fourth St., Richmond, Calif., Certificate No. 460, dated 24 October 1960, BURNER TIP CLEANER.

AFFIDAVITS

The following affidavits were accepted during the period from 15 September 1960 to 15 October 1960:

Manitowoc Engineering Corp., Manitowoc, Wis., BOLTING.

Flange Specialists Mfg. Co.,[1] Division of Universal Marion Corp., 3330 Evergreen Ave., P.O. Box 2212, Jacksonville 3, Fla., FITTINGS.

Henry Pratt Co., Inc.,[2] 319 West Van Buren St., Chicago 7, Ill., VALVES.

McDonough Iron Works, 2701 Avenue A, Galveston, Texas, BOLTING.

Tube Turns, Division of Chemetron Corp., 224 East Broadway, Louisville 1, Ky., FITTINGS.

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[1] Currently listed in CG 190 for Flanges under former name of Southern Pipe & Supply Co. Change of name should also be indicated for this company.

[2] Synthetic rubber lined butterfly valves limited to Class II piping and a maximum temperature of 200° F. and to the acceptable piping systems.

[3] Currently listed in CG-190 for fittings. The listing is hereby annotated to indicate that the listing includes bellows type expansion joints designed for a maximum allowable pressure of 15 p.s.i.

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Changes Published During October 1960

The following publications have been modified by Federal Register:

CG–184 Federal Register, October 8, 1960.

CG–115, CG–123, CG–190, CG–256, CG–257, CG–267, and CG–320 Federal Register, October 25, 1960 (25 cents).

NATIONAL SAFETY COUNCIL

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 (3–1–58). F.R. 5–10–58, 4–25–59, 9–5–59, 3–17–60, 10–25–60.
123	Rules and Regulations for Tank Vessels (12–1–59). F.R. 3–30–60, 10–25–60.
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.
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 Lifeboatmen and Able Seamen, Qualified Members of Engine Department, and Tankerman (6–1–55).
176	Load Line Regulations (9–2–58). F.R. 9–5–59, 8–2–60.
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, 6–6–50, 5–20–60, 9–21–60, 10–8–60.
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.
191	Rules and Regulations for Licensing and Certificating of Merchant Marine Personnel (5–1–59). F.R. 5–26–59, 6–20–59, 7–21–59, 8–15–59, 9–5–59, 1–8–60, 3–17–60, 3–30–60, 5–6–60, 7–8–60, 9–24–60.
200	Marine Investigation Regulations and Suspension and Revocation Proceedings (7–1–58). F.R. 3–30–60, 5–6–60.
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.
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.
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.
258	Rules and Regulations for Uninspected Vessels (9–1–59). F.R. 3–17–60.
259	Electrical Engineering Regulations (9–2–58). F.R. 6–20–59, 7–21–59, 9–5–59, 1–8–60.
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.
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.
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.
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 on the table of changes.

The Merchant Marine Council gratefully acknowledges the many constructive suggestions and helpful ideas from its readers during the past year which have assisted in the improvement of our publication.

Merry Christmas and a Safe and Happy New Year.