PROCEEDINGS OF THE
MERCHANT MARINE COUNCIL

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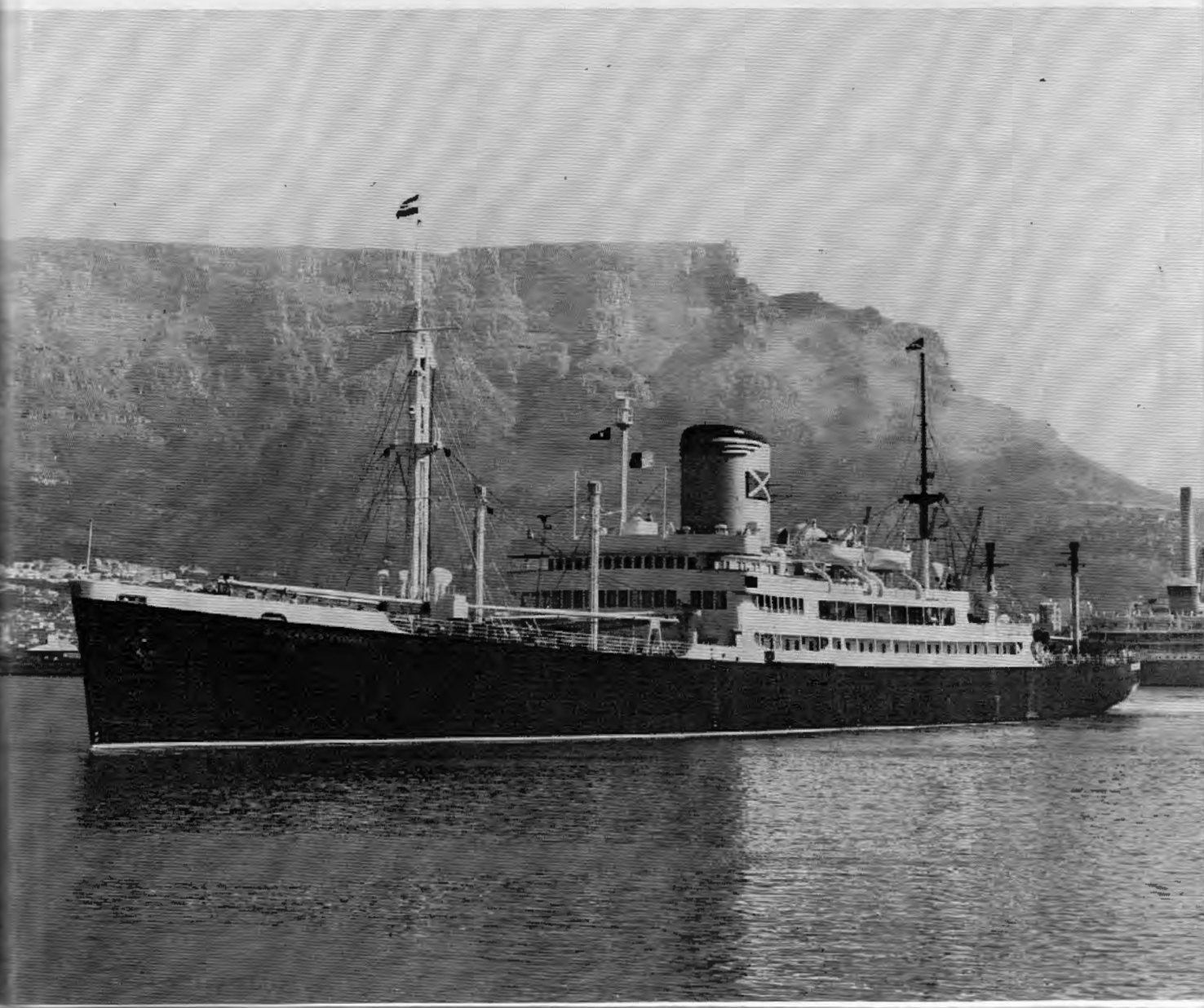

Proceedings of the

MERCHANT MARINE COUNCIL

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The Merchant Marine Council of the United States Coast Guard

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FRONT COVER

With Table Mountain as a back-drop, the SS *African Enterprise* heads seaward from Capetown. Photograph Courtesy of *Farrell Lines, Inc.*

BACK COVER

Two crew members of the *Samoset* visually check a cargo tank as it is being stripped in the early morning hours. Photograph Courtesy *Socony Mobil Oil Company, Inc.*

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NEW EXECUTIVE SECRETARY

On August 1, 1957, Commander Alexander W. Wuerker, USCG, relieved Captain Eugene A. Coffin, Jr., as Executive Secretary and Member of the Merchant Marine Council.

A 1938 graduate of the Coast Guard Academy, Commander Wuerker served afloat until his assignment to flight school in 1940. As a Coast Guard aviator he served in various stations until his return to sea duty in 1953 as executive officer of the well known icebreaker CGC *Northwind* based in Seattle, Wash.

No stranger to Washington, Commander Wuerker was stationed at Coast Guard Headquarters from November 1945 to August 1951. During this time he served as Chairman, Operational Policy Group, Air Coordinating Committee Navigation Panel; was assigned to the Civil Aeronautics Administration as Search and Rescue Coordinator for a year, and was Coast Guard Liaison Officer to the United States Congress.

His most recent duty was in the Honolulu Marine Inspection Office as Senior Inspector of Materiel.

NUCLEAR POWERED MERCHANT SHIP

"FULL AHEAD" has been signaled for the nation's first nuclear-powered merchant ship to begin service in 1960.

Clarence C. Morse, Maritime Administrator, outlined the present time table at a symposium held in Washington, D. C., recently on the Government program to develop a nuclear-powered merchant fleet. Sponsored by the Atomic Energy Commission and the Maritime Administration, the symposium was attended by government officials and representatives of the shipping and atomic industries.

It was indicated that the contract will be let this fall, the keel will be laid next spring, and the vessel will be launched in 1959. ". . . 1960 should see this ship actually sailing the oceans," Mr. Morse said.

Figured to cost $42,500,000, the ship is estimated to be able to steam 350,000 miles, or 3½ years on one fueling. The 21,000-ton vessel is expected to be between 587 and 600 feet in length, slightly longer than the Mariner type. She will have a 78-foot beam, and a draft of 29½ feet.

The ship is of the passenger-cargo type, designed on the shelter deck principle with raked stem and modified cruiser stern. The inner bottom will be used for clean ballast when required, diesel oil, and distilled water. The proposed hull is subdivided by 10 watertight bulkheads into 2 peak spaces, 7 cargo holds, an engineroom and a reactor room.

The propulsion machinery plant consists of a geared steam turbine unit driving a single propeller and supplied with steam from two main steam generators which are heated by the cooling water of a single nuclear reactor. The auxiliary electric power and steam requirements are normally provided by two geared steam turbine generator sets and one low-pressure steam generator, both supplied with steam from the main steam generators.

The standby electric and steam requirements are furnished by two diesel-powered generator sets and one oil-fired package boiler. Emergency power is furnished by a diesel-powered emergency generator located topside. Also, emergency propulsion power is furnished by a "take-home" propulsion motor powered by the standby diesel generators. This "take-home" motor is expected to propel the ship at about six knots in fair weather.

The reactor and coolant system, steam generators, reactor auxiliaries, and piping are enclosed within a sealed 210-ton containment vessel capable of withstanding high pressure

THE COAST GUARD AND THE NUCLEAR SHIP

By Captain C. P. Murphy

Chief, Merchant Marine Technical Division
Office of Merchant Marine Safety

Coast Guard activities with respect to the nuclear powered merchant vessel stem from Federal statutes which require that merchant vessels comply with certain minimum safety standards. Such vessels must be inspected by the Coast Guard to insure that they are seaworthy and can be navigated with safety to life. Based upon the statutes a set of regulations has been developed over the years which set forth the standards for construction, machinery, equipment and manning which will be accepted as complying with the requirements of the law.

Changes in the regulations are quite frequently found to be necessary, and these are made by the Commandant of the Coast Guard, on the recommendation of the Merchant Marine Council. With respect to new developments it is the normal practice of the Council to seek the advice of a committee which represents the industry on the particular subject.

It became evident early in 1955 that developments were under way which would ultimately lead to the use of nuclear power for merchant ship propulsion. It was also clear that this development would call for many changes in the standards which had thus far been drafted to cover only conventional types of powerplants. Accordingly, the Coast Guard requested help from a newly organized Atomic Energy Panel which had been established by the Society of Naval Architects and Marine Engineers.

The Society agreed to let this Panel serve the Coast Guard as an advisory group, and the Panel membership was expanded to include members familiar with the design, construction and operation of nuclear reactors as well as representatives of the shipbuilding and ship operating industries. A. R. Gatewood of the American Bureau of Shipping is chairman of the Panel.

Soon after the design of the first ship was undertaken the joint Maritime Administration-Atomic Energy Commission group responsible for the design requested that the Coast Guard establish direct liaison with this group, with the dual purpose in mind of developing the Coast Guard's knowledge of the project, and keeping all concerned aware of the areas in which Coast Guard requirements would affect the design or in which the present requirements based upon conventional ships would prove to be impractical or inadequate. This liaison has been established, but due to the pressure of other activities it has not been possible to make available the amount of time originally requested by the Maritime Administration-Atomic Energy Commission group. The contact is proving beneficial, and initial work is being directed toward a review of the statutory background of the program, preliminary examination of the design of the main propulsion plant, and study of the hazards and safety evaluation investigations which are being undertaken.

It is recognized that the statutes under which the Atomic Energy Commission operates will also make that agency responsible for many aspects of the reactor design and operation. This dual responsibility should cause no difficulty as it is anticipated that by close contact between the agencies it will be possible to avoid any conflicting requirements. Similar situations have existed between the Coast Guard and the Public Health Service with regard to sanitation of vessels and between the Coast Guard and Federal Communication Commission with respect to radio requirements, and these have caused no difficulty in the past.

It is contemplated that the problems of safety which arise during the design of the first ship will be worked out by day-to-day contact between personnel of the Coast Guard, the American Bureau of Shipping, and the joint Maritime Administration-Atomic Energy Commission group, and where departures are necessary from the existing standards the action taken will be based upon previous experience with shore based and naval reactors, and on the studies which have been undertaken by the Panel. The formal development of such changes in the regulations as will be necessary will of necessity have to wait until the program is further developed.

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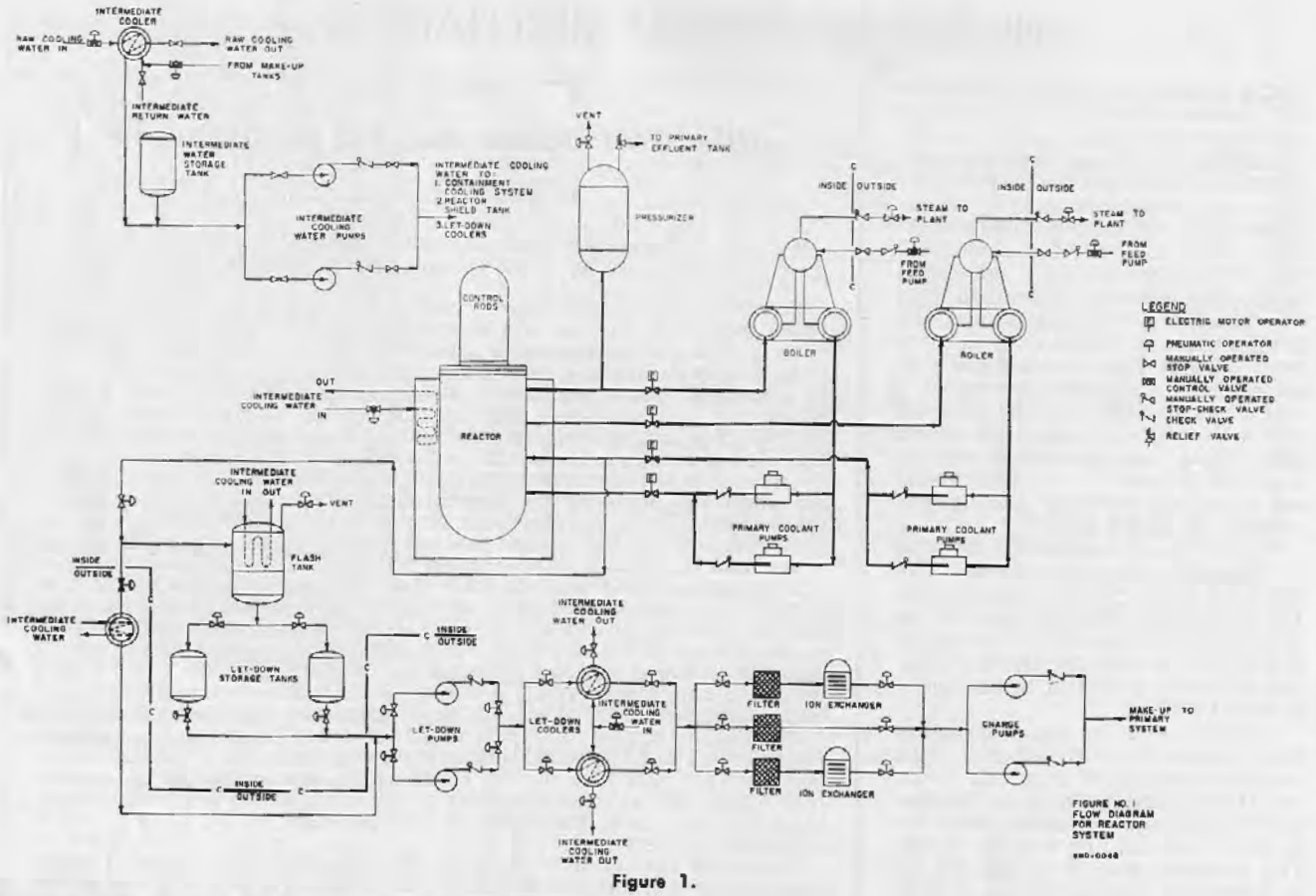

Figure 1.

and protected by steel and wood shielding against collision.

The reactor system (see figure 1) consists of a reactor cooling system, referred to as the primary cooling system, and auxiliary systems which serve the primary systems such as the pressurizer, intermediate cooling, purification, and reactor control and instrumentation systems.

The reactor pressure vessel (see figure 2) will consist of a cylindrical shell about 98 inches inside diameter with a hemispherical head at the bottom and a spherical dished head on top. The reactor vessel and all parts of the primary loop will operate under an internal pressure of 1,750 p. s. i., but will be designed for a pressure of 2,000 p. s. i. Operating temperature will never exceed 530° F., except in the pressurizer. The reactor vessel together with its shield water tank and lead will be supported by a structure which will be anchored to the ship through the containment walls.

Mr. Morse indicated the ship will have "three lives: first there will be tests and trials in American waters. We then contemplate overseas voyages which will introduce the ship throughout the maritime world. Finally we hope to see the ship in regular commercial service."

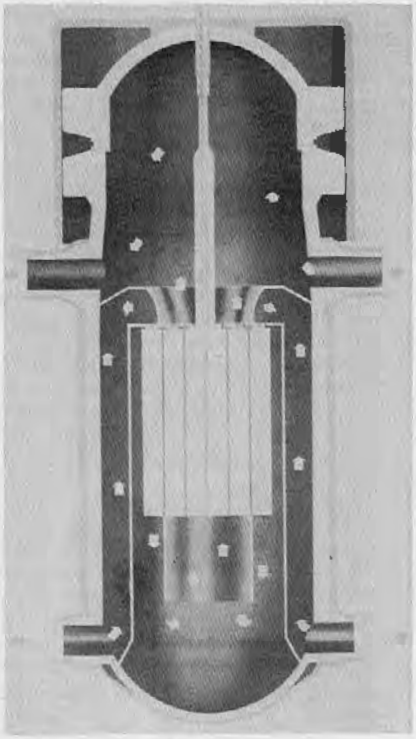

Figure 2.

It was pointed out that refueling is not a routine service, being required, under normal circumstances for this type of ship, after 3 years of operation. It therefore will be a planned operation, accomplished in a special location, where the proper facilities and safety precautions are maintained. This involves providing adequate means for preventing escape of radioactive gases, providing against radiation to personnel during the fuel element removal operation, monitoring of the operation, and adequate cooling of the spent fuel elements.

Radioactive waste, the officials said, is not discharged overboard at sea or in port, but is stored for removal by approved means in a home port at about 50-day intervals. A radiation monitoring system will be provided and will include gamma ray monitors, portable Geiger counters, air particle monitors, and a film tag installation. The gamma ray and air particle monitoring systems will be the automatic type equipment with audible and visual repeater alarms in the central control room. A small health physics lab is installed adjacent to the hospital

(*Continued on page 145*)

COUNCIL PROPOSES REGULATIONS FOR RADAR OBSERVERS

OF ALL the navigational aids aboard ship, probably none is more important than the radar set. More and more ships are installing and using this equipment and more and more deck officers are being called on to observe, interpret, and plot the information the device is capable of producing.

There is a good likelihood that every deck officer will be shipmates with this electronic device during his seagoing career. Adequate training in the use of information provided by radar has been continually stressed as an effective aid in preventing collison. Investigations of many cases show that data made available by the use of the radar was not properly utilized.

In the recent *Andrea Doria—Stockholm* tragedy, a staff report of the Committee on Merchant Marine and Fisheries made to the House of Representatives said: ". . . . Adequate training and plotting based on the use of radar have been continually stressed, but collision cases continue in increasing numbers. Investigation of such cases shows that data made available by the use of radar obviously were not properly utilized to prevent collision. The *Andrea Doria—Stockholm* collision would have been prevented if the information provided by radar had been properly used . . . . It is an important step forward to require that deck officers demonstrate ability to make use of perhaps the most useful aid to safety of navigation ever devised."

The Supreme Court of Canada, in the *Chinook-Dagmar Salen* case, stated: "If radar is to furnish a new sight through fog, then the report which it brings must be interpreted by active and constant intelligence on the part of the operator." In the *Anna Salem* case the court commented, "This collision ought never to have happened if both vessels had made intelligent use of the scientific instruments with which they were equipped."

The House committee recommended that action should be instituted to provide . . . . "adequate training for deck officers; including a requirement for certification of such officers as radar observers." The Merchant Marine Council, aware of the number of U. S. merchant vessels equipped with radar, and because serious casualties result from improper evaluation and interpretation of the data obtained, has proposed an amendment to Coast Guard regulations for licensing of deck officers to be included in the 1958 agenda of the council. This proposed regulation will provide:

> That such applicant for an original license or a raise of grade of license for service on inspected vessels of 300 gross tons or over, operating on ocean, coastwise, or Great Lakes waters shall be required to demonstrate that he is qualified as a radar observer.

To establish the proficiency of a deck officer as a radar observer, it will be proposed to include in their regular professional examination for an original license or raise of grade, a new and additional subject, radar, which will cover the following aspects of the proper operation and utilization of marine radar equipment:

1. Fundamentals of radar
   a. How radar works
   b. Factors affecting the performance and accuracy of marine radar
   c. Description of the purpose and functions of the main components that comprise a typical marine radar installation.
2. Operation and use of radar
   a. The purpose and adjustment of controls
   b. The detection of malfunctioning, false and indirect echoes and other radar phenomena
   c. The effect of sea return and weather
   d. The limitations of radar resulting from design factors
   e. Precautions to be observed during internal examination of radar components
   f. Range and bearing measurement
   g. Effect of size, shape, and composition of ship targets on echo
3. Interpretation and analysis of radar information
   a. Determining the course and speed of another vessel
   b. Determining the time and distance of closest point of approach of a crossing, meeting, overtaking or overtaken vessel
   c. Detecting changes of course and/or speed of another vessel after its initial course and speed have been established
   d. Factors to consider when determining change in course and/or speed of own vessel to prevent collision on the basis of radar observation of another vessel or vessels
4. Plotting (any method that is graphically correct may be used)
   a. The principles and methods of plotting relative and true motion
   b. Practical plotting problems

For information on plotting, there are several standard reference texts available, such as Dutton's Navigation and Nautical Astronomy, Tenth Edition. Prospective candidates for licenses are also referred to the standard plotting form H. D. 2665a, Maneuvering Board, published by the Hydrographic Office. This form which is widely used, contains convenient scales for solving problems commonly encountered in plotting. It is intended that a certificate of satisfactory completion of a course of training at a maritime administration or other Government operated school, approved by the Commandant, may be accepted as evidence of qualification without examination.

If the above proposal is adopted by the Merchant Marine Council after public hearing in the Spring of 1958, the new requirement will become effective 30 days after publication in the Federal Register. Written comments on this proposal will be solicited from the public when the agenda for the 1958 meeting is published. All comments received will be considered by the Council before action is taken to make the proposed new requirements effective.

MERCHANT MARINE STATISTICS

There were 1,154 vessels of 1,000 gross tons and over in the active oceangoing United States merchant fleet on July 1, 1957, according to information released by the Maritime Administration, U. S. Department of Commerce. This was 6 less than the number active on June 1, 1957.

There were 163 Government-owned and 991 privately owned ships in active service. These figures do not include privately owned vessels temporarily inactive, or Government-owned vessels employed in loading grain for storage or undergoing repairs. They also exclude 48 vessels in the custody of the Department of Defense, State, and Interior.

There were no orders for new ships placed and no ships delivered during the month, leaving the total of merchant oceangoing ships being built or converted at 119.

Seafaring jobs on active United States-flag ships of 1,000 gross tons or over, exclusive of civilian seamen manning Military Sea Transportation Service ships, was 60,723. Prospective officers in training in Federal and State nautical schools numbered 1,557.

PRECISION NAVIGATION

By Captain L. E. Brunner, USCG

(An address delivered at the American Petroleum Institute Annual Tanker Conference in San Francisco)

THE PRESENT situation in the precision and safe marine navigation field is adequately described in the Safety of Life at Sea Study conducted by the Congressional Committee on Merchant Marine and Fisheries on the *Andrea Doria–Stockholm* collision. A portion of this report states:

> "There is available today basic scientific knowledge which, if properly applied, would produce new devices and systems which would greatly increase safety in marine navigation and operation. Numerous projects will become evident or will suggest themselves, following study and analysis of the entire safety problem.
>
> "However, before the adoption of any device or system is even considered, it is most essential that convincing experience under practical operating conditions be obtained, as greater progress is evidenced in industry by voluntary installations."

I am reminded of the story of the Hawaiian boy. It was an old Polynesian custom for each family to be granted a pie-shaped piece of the island. In this way, each family had a piece of the seashore on which to fish, a piece of the valley on which to farm and a piece of the mountain on which to hunt meat. One day the Hawaiian boy grew tired of fish and coconuts and decided to go to the mountain to hunt. He picked up a club on the beach and proceeded through the valley to the mountain to kill a wild pig. As he went through the valley, he noticed that the bamboo was growing strong and straight. Perhaps a bamboo spear would be more effective than the driftwood club. He threw his club away and started to cut a spear. As he did so, he looked up the side of the mountain and saw a tree that was harder and straighter. This would make a better spear. As he approached the tree, he noticed that further along the path the trees were stronger and straighter. He decided to wait a little longer to cut his weapon. The story ends with the pig eating the Hawaiian. My point is, "When do we cut our spear?" I believe that the American Petroleum Institute could perform a real service by helping to cut and shape the marine precision navigation spear from present basic scientific knowledge and by deriving the most effective methods and procedures for using it.

ABOUT THE AUTHOR:

Chief of the Electronics Engineering Division at Coast Guard Headquarters, Captain Brunner was graduated from the Coast Guard Academy in 1935 and holds B. S. and M. S. degrees from the Massachusetts Institute of Technology in electrical engineering. He also completed the MIT Radar School and saw duty in WW II as Commanding Officer of a mobile Loran detachment in the Pacific area. He was program supervisor of the first IMMRAN held in the United States and was the original secretary at the formation of RTCM. In addition to command duty at sea he was Coast Guard liaison officer to the Navy Bureau of Ships on Precision Navigation.

BASIC KNOWLEDGE

We have basic scientific knowledge on how to provide a ship with reliable detection and precise ranging equipment. This same knowledge can provide a shore device with a still greater degree of precision. We know how to electronically identify particular ships and how to provide a voice channel between them. In fact, highly precise present position will provide one of the simplest means of identification. We know how to transmit video data such as weather charts, current charts or even the presentation of a high precision shore-based ranging and detection system. In a test of one of these video systems, the Coast Guard successfully transmitted the Sunday funny papers to one of our vessels in the Arctic region. We know how to lay down a highly precise system of electronic lines of position and how to provide the ship with instruments to accurately read off these lines of position. We can make this instrument actuate a track plotter or a present position indicator. For instance, the Coast Guard has investigated procedures, which if applied to our standard loran system, could lay down lines of position for several hundred miles with an accuracy of less than 100 feet. The electronic state of art has produced both digital and analog computers that can almost instantaneously solve all problems of the spherical triangle as well as readily transfer from polar to cartesian coordinates or from either of these to hyperbolic coordinates of the common hyperbolic electronic navigation systems. The vector solutions of plane motion such as are normally solved at sea by the maneuvering board will hardly warm up a modern electronic computer. Whole sets of tables, including the Nautical Almanac, can be put on small memory devices. Present position indicators such as precise track plotters are in existence for use with either hyperbolic or polar coordinate electronic navigation systems. We cannot overlook the self-contained systems. Inertial systems with a highly precise dead reckoning capability are a reality. Micro-second electronic clocks that will keep time for days on end are in the laboratory.

Having in mind all the scientific potential heretofore outlined that may have a marine application, we will now examine the marine navigational problem and see how it is presently solved.

The principal navigation problem is to precisely and safely navigate a vessel from alongside a dock, out through the harbor, the harbor entrance channel, and over the high seas to a similar set of circumstances at the terminal end under all states of weather and sea. One of the complications is that other vessels are trying to do the same thing at the same time.

PLOT NECESSARY

The master of a vessel has to know several things as well as to compute or derive several other bits of information to do this. Under present practice, when he needs to know the ship's heading he must go to look at a compass repeater. If he wants the ship's speed through the water he looks at the revolution indicator, usually located on the forward side of the wheelhouse, and then consults a table to get speed through the water. This is not speed over the ground. He must consult a set of current tables and make a vector solution to get true ground speed. If he wants present position he must go through the manipulations of a loran receiver indicator, or do much the same thing on a radio direction finder, or take a round of visual bearings, or even take a set of celestial observations. He must then plot the whole thing and evaluate an answer. He never has present position. He is only able to get past position. If he wants the water depth he must fire up a fathometer and take a series of readings. If he wants true wind direction and

velocity he observes relative wind and goes through a series of mathematical contortions to get true wind. If the radar indicates a target he must play like a deaf and dumb mute trying to determine what the other vessel is doing by plotting on a maneuvering board. He hopes, maybe, that the other vessel's whistle signal will tell him of this vessel's intentions, providing the meeting of the two vessels have reached a stage where danger of collision exists. Should we not design a system to remove this danger and at the same time remove as many as possible of the chances of human error?

The state of art of ship and shore based radar, electronic navigation, radiotelephone, television, electronic computers and memory devices will provide every facility we need. I am sure that none of us would expect our secretary to use a goosequill and berry juice to prepare our letters nor would we trust the manual computations of out office clerks in preference to the use of computing machines.

The technical details of how to modernize the marine navigation approach are not a part of this paper. This is appropriately the subject of a marine research study. The techniques and the system formalities are likewise a splendid research subject.

DIAGRAMMATIC SKETCH

Figure 1 is a diagrammatical sketch of a navigation console that I have dreamed of as both a deck officer and commanding officer many times. I want all my navigation indicators and computers in one place, much like the instrument panel in a control center. I want that place to be in a position affording good vision and still have the ship controls at my fingertips. I would have all my navigation data presented without plotting, without reference to tables or without making demands on a second person. In this way I would be able to give my entire attention to the minute-to-minute developments, unburdened by tiresome detail, and probably most important of all, not becoming hypnotized by repetitive formalities.

You will note that I have a chronometer for time. I have a compass repeater for ship's heading. My barometer gives me a Captain Hornblower feeling as I have included a video indicator from which I expect to receive scheduled transmissions of weather maps. This will also provide me with current charts, scheduled up-to-date plots of dangers to navigation, and if I wish to know about the congestion in the harbor I can shift to the harbor surveillance transmission channel. If my radar is a little lacking in precision, I can also use this to give me true motion presentation as I enter the coverage of this device. My automatic and precise track plotter will tell me at all times exactly where I am. I can press the button on the depth finder and check on the water depth. This is checked against my present position. If my shipboard radar indicates the presence of a vessel, I can identify myself as being vessel at *blue lane three—black lane five* calling vessel at *blue lane four—black lane five* now on my starboard bow, distance 8 miles, bearing constant, am altering my course to permit your passing clear. If no response can be obtained I will reduce speed as I must assume he does not have the system installed and cannot communicate with me. If he does not know of my presence he is not likely to maneuver to avoid me. At any rate, my automatic tracker will soon tell me if he does not maintain course and speed.

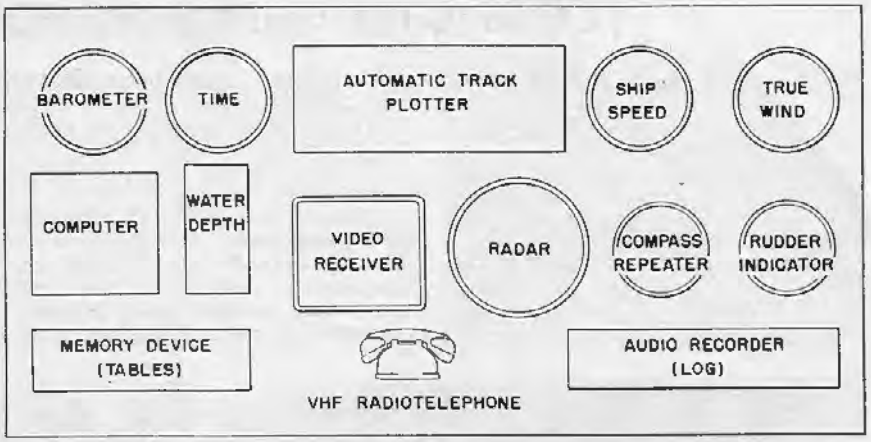

Figure 1.

I am fully aware that I have ignored most of the traditions and customs of the sea, but our present practices have led to many radar controlled collisions. I believe that precise navigation, along with precise and reliable detection, used with appropriate computers properly instrumented and adjusted to human responses in accordance with human engineering, may well be the final answer to safe marine navigation. It can probably be done within the present rules.

DRAWBRIDGE REQUIREMENTS

Drawbridges shall not be required to open for craft carrying appurtenances unessential to navigation along the Intracoastal Waterway from the Virginia-North Carolina boundary to Key West, Fla., and the tributaries thereto, the Corps of Engineers, Department of the Army, announced.

This ruling, published in the Federal Register, 27 July 1957, page 5955 reads: "Appurtenances unessential for navigation shall include but not be limited to fishing outriggers, radio and television antennae, false stacks, and masts purely for ornamental purposes."

This rule requires owners and operators of drawbridges to report to the local district engineer any boat carrying such unessential appurtenances and requiring a bridge to be opened because of them. An inspection procedure is outlined and provisions are made to allow reasonable time to make necessary alterations which require opening of the bridge if the appurtenances are found unessential.

U. S. TONNAGE LEADER

A Lloyd's Register of Shipping report indicated the United States led the world in total gross tonnage of shipping under its flag during 1956.

The United States had 22.47 percent of the world flag distribution of shipping, excluding the Great Lakes, with Britain in second place with 18.58 percent. Others were Norway with 7.64 percent, Liberia 5.31 percent, Italy 3.99 percent, Japan 3.87 percent, the Netherlands 3.81 percent, France 3.75 percent, Panama 3.73 percent, West Germany 3.05 percent, and the Soviet Union 2.57 percent.

Out of the total of the gross shipping tonnage of 105,200,361 gross tons, the United States led with 26,145,642 tons.

LYKES CITES FOUR SHIPS FOR SAFETY

FOUR SHIPS of the fleet of Lykes Bros. Steamship Co., Inc., have won top honors in the annual Fleet Safety Awards Program inaugurated by the company in 1956. Lost time injury frequency rules of the National Safety Council were used to determine the winners in the 54 ship fleet.

A green safety cross, symbol of the National Safety Council, was painted on the smokestack of each ship winning top honors in her class—SS *Sylvia Lykes*, SS *Jesse Lykes*, SS *Norman Lykes* and SS *Thompson Lykes*.

In advising the ships of their standing in the safety competition, Solon B. Turman, Lykes Lines president, said:

"This is a recognition that you men have gone about your work in the safe way—which is the right way. The result is that during 1956 fewer of you had to suffer pain or inconvenience, or lose sailing time on account of personal injuries. It also represents thoughtfulness and teamwork aboard your ship.

"Safety is part of every man's job and should be part of every task he undertakes; further, good seamanship is safe seamanship. It involves working and living in such a way as to avoid injury not only to himself but also to every other man with whom he works, or for whose supervision he is responsible."

BEST SAFETY record among C–1 class ships was made by the SS *Thompson Lykes*. Company officials and crew members participating in award ceremonies are, left to right: Captain B. D. Case, supervisor of accident prevention; Cyril D. Claverie, P. & I. section; Howard Stanley, deck department; Woodrow G. Crowder, chief mate; Val Ring, chief engineer; Conrad J. Spatz, assistant manager, maintenance and repair department; Captain C. E. Biggers, manager of marine division; Captain G. E. Parker of the *Thompson Lykes*; William G. Irion, engine department; and Vice President Robert F. Rader.

TOPS IN SAFETY among C–2 class vessels, and only ship in the Lykes fleet without a lost-time injury in 1956, was the SS *Sylvia Lykes*. Pictured, left to right, as award was made are: J. W. Throgmorton, chief mate; Mr. Claverie; L. H. Johnson, chief steward; Fua Din Boon, steward department; Perry Davis, chief engineer; Mr. Rader; Captain F. Kosieracki of the *Sylvia Lykes*; Captain Biggers; Manuel R. Sinclair, deck department; C. J. Spatz, assistant manager, M & R department; and Captain Case.

Photos courtesy *Lykes Bros. Steamship Co., Inc.*

AMONG C–3 VESSELS, the SS *Norman Lykes* had top safety performance. Ship personnel representatives and those taking part in presentation of award are, left to right, Captain E. B. Hendrix, port captain at Galveston; Captain S. T. Hand, assistant manager, marine division, west gulf area; C. F. McLaughlin, chief engineer; J. M. Lykes, Jr., vice president; Captain M. N. Olson, master of SS *Norman Lykes*; Orville Burkard, deck department; Captain B. D. Case; T. C. Bryan, assistant supervisor of accident prevention; J. M. Coll, steward; Frank Zach, junior engineer; and P. J. Wright, chief mate.

WINNING SECOND place safety award among C–2 class vessels was the SS *Jesse Lykes*. Because of the larger number of ships of the C–2 type in Lykes fleet, there were two awards made in this category. Along with being second in her class, the "Jesse" posted the third best 1956 safety record in the entire fleet. On hand when award was made were, left to right, Francis Kelly, electrician; J. P. Champagne, deck department; Captain Leon Scott, fleet inspector and voyage analyst; Gail D. Spafford, chief mate; Captain J. B. Telford, master of SS *Jesse Lykes*; and Captain B. D. Case.

MORMACMAIL RESCUES 56 AT SEA

RESPONDING to an SOS in rough South Atlantic waters, the SS *Mormacmail* rescued all 56 persons who abandoned in lifeboats the burning Swedish MV *La Plata* 160 miles east of Ilheus, Brazil.

The captain of the Scandinavian vessel ordered "abandon ship" at 11:30 a. m. and the *Mormacmail* was alongside at 5:30 p. m. that evening. Passengers reported the seas rough and efforts to bolster their spirits were made by singing. The fire was so intense on the *La Plata* that none of the survivors were able to save any personal possessions, it was indicated.

The *Mormacmail*, a Pascagoula built C-3 freighter owned by Moore-McCormack Lines, Inc., was enroute from New York to South American ports, and the *La Plata* sailed from Stockholm for Santos. Cause of the fire aboard the vessel has not been determined.

Captain Spencer S. Pardoe of the *Mormacmail* embarked the captain of the *La Plata*, 45 crewmembers, and 10 passengers in what was reported as a "model of efficiency."

Captain Pardoe and his crew performed their duty in an outstanding manner and their actions were in keeping with the highest traditions of the United States merchant marine.

SEEN ABOVE is the SS *Mormacmail* on arrival in Rio De Janeiro with survivors from the Swedish MV *La Plata*. Photos Courtesy Moore-McCormack Lines, Inc.

PICTURED ON ARRIVAL in port are the survivors of the *La Plata* with Captain Spencer S. Pardoe of the *Mormacmail*, seen standing at left in uniform.

DOG-TIRED BEAVER

Not only the mariner is plagued by fog, but nature's creatures as well sometimes run amuck in the thick gray walls of weather.

On April 25, Captain J. E. Diamond had anchored the steamer *Thomas* 3 miles off Detour Reef Light in a heavy fog. Watchmen discovered a beaver swimming around the anchor chain, looking for something to hang onto, and in obvious need of assistance. The ship's parcel bag was lowered and the beaver climbed in it without hesitation.

Weighing about 25 pounds, and showing signs of age, he surprised the crew by being as friendly as a domesticated pet. Crewmen carried him around the ship, as much entertained by him as he was by them.

The next day when the *Thomas* arrived at the Detour Coal Dock, he was returned to nature, released the same way he was brought aboard, in the parcel bag. He was obviously pleased to be returned to the refuge of the river.

The last the crew saw of him, he was climbing onto the beach, upriver from the dock.

Pittsburgh Sidelights

NUCLEAR

(*Continued from page 140*)

area, and a decontamination area is provided in the reactor compartment, with separate entrance and exit and shower facilities.

The outstanding characteristic of the ship, compared to a conventional type, is its tremendous cruising range without refueling. It's principal advantage would be best shown on long trade routes at sustained high speeds, officials said.

Statistics indicate the ship will displace 11,650 light displacement and 21,280 tons "full and down."

The agenda for the symposium included introductory remarks by Mr. Morse, Chairman Lewis E. Strauss of the AEC, and Richard P. Godwin, Nuclear Projects Officer, Maritime Administration, who acted as moderator.

Other speakers were: D. C. MacMillan, President, George G. Sharpe, Inc.; R. P. Grimes, Project Engineer, Babcock and Wilcox Co.; Arthur Gatewood, Vice President, American Bureau of Shipping; Captain C. P. Murphy, Chief, Merchant Marine Technical Division, U. S. Coast Guard; Malcolm C. Hope, Chief, Engineering Program, Public Health Service; Clifford G. Cornwell, American Institute of Marine Underwriters.

Ernest G. Stout, Project Engineer, Ralph M. Parsons Co.; C. Jackson, Stanford Research Institute; D. L. Conklin, American-Standard, AEC; R. L. Whitelaw, Project Engineer, Babcock and Wilcox Co.; C. J. Brous, Manager, Nuclear Engineering Laboratory, American Machine and Foundry; Dr. C. Starr, President, Atomics International; R. L. Stoker, Assistant to Technical Director, Atomic Power Department, Westinghouse Electric Corporation.

C. R. Russell, Nuclear Engineer, Nuclear Power Engineering, General Motors; Theodore Jarvis, Division of Nuclear Engineering, Ford Instrument Co.; and Dr. Frederic de Hoffman, Vice President, General Dynamics Corporation.

EDITOR'S NOTE: Technical data obtained from papers presented at the Symposium on Nuclear Powered Merchant Ships, July 30, 1957. Diagrams from a paper presented by R. P. Grimes, The Babcock & Wilcox Co., Atomic Energy Division.

COURT DISMISSES SALVAGE CLAIM

NOTHING CAPTURES the imagination of fiction writers more than the dramatic climax to a sea story with the master going down with his ship. Usually, he is pictured in his faultlessly tailored uniform fitting a cigarette in a holder and barely stifling a yawn at the boredom of it all. Sometimes he is a salt-encrusted seafarer shouting oaths and shaking a horny fist at the sea which dares to take his ship from him.

Alas, this so-called duty exists more in fiction than in fact, although there can be no doubt that he must risk even that, in some measure, if by remaining aboard he may be able to save her. This opinion was expressed by the U. S. District Court of Massachusetts in an interesting case published in American Maritime Cases.

The vessel in question, an 85-foot scallop boat, was rammed by another fishing vessel causing her to make water rapidly. The break was behind fuel tanks and could not be reached. The captain then concluded that with 5 feet of water already in the engineroom the rest of the vessel would soon fill and she would sink. The crew shared his opinion, and a good deal of excitement prevailed.

Using the dory, all 11 men aboard the rammed boat transferred to a waiting fishing boat. At this time the stern of the vessel was awash, but, instead of settling further as had been expected, she remained in this position. The captain held a conference and decided to return to his vessel. On his return he found the engineroom not much deeper than before. He also discovered that much of the flooding was diesel oil from the tanks, which in the excitement previously had created the illusion of more water coming in than was the fact. He then raised a fishhold hatch and discovered that the watertight bulkhead was keeping the vessel dry forward of the engineroom. With the aid of three of the crew who returned with him matters were brought sufficiently under control to arrange for the vessel to be towed to port.

The captain and the three men then claimed salvage!

It was here the court stepped in with some direct comments on the relationship of a captain to his vessel.

"The relationship of a master to a ship is a peculiarly close one. His duty has been described as fiduciary. It includes doing, at all times, everything possible to preserve the vessel. A master should not be allowed to claim salvage for doing his duty.

"Furthermore, it cannot be suggested that work of any kind performed by a captain and crew before they had abandoned ship could be regarded as salvage. Salvage is a special payment for persons who are strangers to a vessel. It is the master who gives the order to abandon. It would be establishing a very poor principle to hold that a master could, by giving such an order, terminate his own duty towards the vessel and put himself in the position of a stranger able to make a substantial extra claim against the owners."

The captain testified, ". . . it hadn't dawned on me that was a watertight bulkhead—there aren't many in the fleet," when he was questioned on why he didn't look in the fishhold to check earlier. The court remarked, "At any rate it seems unthinkable that a man could be captain of an 85-foot vessel for several trips without knowing she had watertight bulkheads."

"The return to the vessel," the court continued, "and the work done by these libellants was in the highest tradition of the sea. I do not think it would be appropriate, however, to hold that it was done by strangers to the vessel, and that the libellants should be treated as salvors. They were members of a crew of a vessel which had been struck, and they must share in the bad as well as the good."

"The libel is dismissed."

WHAT GOES UP MUST COME DOWN

An English newspaper, the Manchester Guardian, recently published the following news item; an unsigned letter from a bricklayer in the Barbados to his employer:

"Respected Sir,

"When I got to the building, I found that the hurricane had knocked some bricks off the top. So I rigged up a beam with a pulley at the top of the building and hoisted up a couple of barrels full of bricks. When I had fixed the building, there was a lot of bricks left over.

"I hoisted the barrel back up again and secured the line at the bottom, and then went up and filled the barrel with extra bricks. Then I went to the bottom and cast off the line.

"Unfortunately, the barrel of bricks was heavier than I was, and before I knew what was happening the barrel started down, jerking me off the ground. I decided to hang on and halfway up I met the barrel coming down and received a severe blow on the shoulder.

"I then continued to the top, banging my head against the beam and getting my fingers jammed in the pulley. When the barrel hit the ground it bursted its bottom, allowing all the bricks to spill out.

"I was now heavier than the barrel and so started down again at high speed. Halfway, I met the barrel coming up and received severe injuries to my shins. When I hit the ground I landed on the bricks, getting several painful cuts from the sharp edges.

"At this point I must have lost my presence of mind, because I let go the line. The barrel then came down giving me another heavy blow on the head and putting me in the hospital.

"I respectfully request sick leave."

Imperial Oil, Ltd., Safety Bulletin

USE OF CG FORM 735-T DISCUSSED

AMONG THE MANY duties of a master of a United States merchant vessel is the submission of form CG 735 (T), Report of Ship Personnel Not Shipped or Discharged Before a United States Shipping Commissioner, as required by 46 U. S. C. 643.

This report is required by merchant vessels of 100 gross tons and over in the following categories:

- Vessels in the coastwise trade
- Vessels on the Great Lakes
- Vessels in trade on lakes other than the Great Lakes, bays, sounds, bayous, canals, and harbors, unless the certificate of inspection issued to the vessel is for "rivers" only, or in the case of a vessel not subject to inspection if its operations are confined to waters for which a certificate of inspection for "rivers" would be normally issued.

Of prime importance is the fact that this report *does not* take the place of articles of agreement between the master and seamen of a vessel in accordance with R. S. 4520 (46 U. S. C. 574) which reads as follows:

Every master of any vessel of the burden of 50 tons or upward, bound from a port in one State to a port in any other than an adjoining State, except vessels of the burden of 75 tons or upward, bound from a port on the Atlantic to a port on the Pacific, or vice-versa, shall, before he proceeds on such voyage, make an agreement in writing or in print, with every seaman on board such vessel except such as shall be apprentice or servant to himself or owners, declaring the voyage or term of time for which such seaman shall be shipped.

There is no requirement that such articles of agreement be submitted to Coast Guard headquarters which makes the submission of Form CG 735 (T) an important shipboard function. Records of seamen shipped in coastwise or nearby foreign trades where signing the crew before a shipping commissioner is not required or maintained from this report. Accurate records, which are becoming increasingly important, particularly in view of welfare and other plans, are maintained from the reports submitted by the masters.

Seamen, who have had the misfortune to lose their service records, must rely on the Merchant Vessel Personnel Division of the Coast Guard to furnish duplicate records or verify their service. These records reflect the accuracy of Form CG 735 (T).

The majority of reports are in proper form: However, some contain discrepancies which could be eliminated by observance of the following:

- In submitting Form CG 735 (T), it is essential that a seaman's name and number be listed correctly. The spelling of his name should be in agreement with his seaman's document.
- The dates of engagement and discharge on the certificate of discharge or record of entry in the continuous discharge book should coincide with the information reported on Form CG 735 (T).
- Upon a seaman's discharge, dates and places of engagement and discharge should be entered on this form even though the information as to engagement had previously been submitted. When a seaman deserts, is hospitalized or otherwise fails to join the vessel at sailing time, the date and place of such failure to join should be entered on Form CG 735 (T); the same as if the seaman had been discharged. Service dates should not overlap; that is, if a seaman has been reported as discharged at the end of a particular voyage but remains in the vessel, date of engagement on subsequent reports should be shown as a date subsequent to last reported date of discharge, not his original date of joining vessel.
- If a seaman's rating is changed, he should be listed on the report as if he were discharged on the date he last served in his old rating and as again engaged on the date he enters into the new rating.

The submission of Form CG 735 (T) is required under the following conditions:

- *Coastwise voyages*

When the vessel is sailing on a voyage which will extend to the ocean or the Gulf of Mexico and when coastwise shipping articles are opened, or when the vessel is departing on a coastwise voyage for which shipping articles are not required, the master shall, *immediately prior to sailing*, submit a Form CG 735 (T) listing the name, as well as the other data required by the form with the exception of the date and place of discharge, of each member of the crew. Thereafter, at each domestic port visited on the voyage, the master shall, prior to departure, submit a supplementary report on Form CG 735 (T) listing the name, as well as the other date required by the form of each seaman engaged or discharged or whose services were otherwise terminated since the previous submission of the form. When coastwise shipping articles are completed or when a voyage on which shipping articles are not required is completed, the master shall submit a Form CG 735 (T) listing the name, as well as the other data required by the form, of each member of the crew on board at the time of the completion of the voyage.

- *Great Lakes voyages*

When the vessel is employed exclusively in trade on the Great Lakes, the master shall submit Form CG 735 (T) at the commencement of the season, or when the vessel is put into service, listing the name, as well as the other data required by the form with the exception of date and place of discharge, of each member of the crew. Thereafter, at the end of each calendar month, the master shall submit a supplementary report on Form CG 735 (T) listing the name, as well as other data required by the form, of (1) each seaman whose employment was terminated during the month and who was not re-engaged on the vessel's next trip and (2) each seaman engaged during the month who was not also employed on the vessel in the same capacity on her last trip preceding the engagement. At the close of the season, or when the vessel is withdrawn from service, the master shall submit a final report on Form CG 735 (T) listing the name, as well as the other data required by the form, of each seaman who has not been previously reported as discharged.

- *Vessels engaged in trade on lakes (other than the Great Lakes), bays, sounds, bayous, canals and harbors*

When the vessel is employed exclusively in trade on the lakes (other than the Great Lakes), bays, sounds, bayous, canals or harbors, the master shall submit Form CG 735 (T) on 1 September 1953, or when the vessel is put into service, listing the name, as well as other data required by the form with the exception of date and place of discharge, of each member of the crew. Thereafter, at the end of each calendar month, the master shall submit a supplementary report on Form CG 735 (T) listing the name, as well as other data required by the form, of (1) each seaman whose employment was terminated outright, or whose employment was temporarily interrupted during the month and (2) each seaman engaged during the month, either as a new crew member, or who is returning to the vessel after a break in his service. If the vessel is withdrawn from service, the master shall submit a final report on Form CG 735 (T) listing the name, as well as other data required by the form, of each seaman who has not been previously reported as discharged.

nautical queries

Q. What attention do the air compressor receivers or storage tanks require?

A. The receiver or storage tank should be drained regularly to eliminate the collected condensate. The safety valve should be inspected and tested regularly at given intervals. The recommended interval is once a week. They should be checked by running the pressure up to the popping pressure set on the safety valve. The receivers should be opened at least yearly and inspected for signs of corrosion and for cleaning.

Q. What opens and closes the inlet and discharge valves of present-day air compressors?

A. Inlet and discharge valves of present-day compressors are of the automatic type. The opening and closing of the valves is caused by the difference in pressure between the air within the compressor cylinder and the external air on the opposite sides of the valves. A light spring is usually included to assist in the closing of the valves.

Q. Of what use is the knowledge of the cetane number of a fuel to a diesel engineer?

A. The cetane number is a measure of the ignition quality of the fuel and is of assistance in determining the timing of the engine, that is, the point at which injection of the fuel should begin.

Q. Which diesel engine, the 2-cycle or the 4-cycle, usually requires less compressed air for starting? Why?

A. The 2-cycle engine usually requires less air for starting because of the absence of the exhaust and suction strokes which are made at the expense of flywheel energy.

Q. How is the compression ratio of a diesel engine determined? What is the usual compression ratio of a diesel engine?

A. The compression ratio of a diesel engine is the ratio of the volume in cubic inches of the gases in the cylinder with the piston at bottom center to the volume of the gases with the piston at top center. The compression ratio of diesel engines are from 12:1 to about 19:1.

Q. What are the usual causes of oil being discharged from the water outlet of the centrifugal oil purifier?

A. Oil may be discharged from the water outlet due to improper sealing or priming of the bowl; the installation of an improper dam or discharge ring; or to the bowl or spindle being clogged with dirt.

Q. What governs the size of the dam or discharge ring installed in a centrifugal oil purifier?

A. The general choice of the size of the dam or discharge ring is governed by the relative density of the oil and the water. Heavy oils require a high dam or a discharge ring with a small aperture, while lighter oils require lower dams or a discharge ring with a larger aperture.

Q. What is the effect of the earth's rotation on the direction of a current?

A. Currents, like winds react to the Coriolis force of rotation, suffering a deflection to the right in the Northern and to the left in the Southern Hemisphere. From mathematical calculations and from current and wind observations, it has been shown that currents in the Northern Hemisphere set from 20° to 45° to the right of the wind direction and a corresponding distance to the left in the Southern.

Q. To avert danger to other vessels, what obligation is imposed by the 1948 Convention for the Safety of Life at Sea upon every shipmaster who encounters dangerous ice at sea?

A. The master of every ship which meets with dangerous ice is bound to communicate the information by all the means at his disposal to ships in the vicinity, and also to the competent authorities at the first point on the coast with which he can communicate. The form in which the information is sent is not obligatory. It may be transmitted either in plain language (preferably English) or by means of the International Code of Signals (Radio Section). It should be broadcast to all ships in the vicinity and sent to the first point on the coast to which communication can be made, with a request that it be transmitted to the appropriate authorities.

Q. When is the ice coverage at a minimum in Arctic waters?

A. Late summer and early fall. Approximately 1 August to 15 October.

Q. On merchant vessels when using booms to handle heavy weights or delicate objects, how do you reduce dynamic stresses; that is, stresses due to change of velocity of the load, such as taking up fast on a load at rest, increasing speed of hoisting, or suddenly stopping?

A. Dynamic stresses are reduced by using a tackle with multiple parts at the moving block so that the object moves slowly with respect to the speed of the winch. Using the low gears in a winch fitted with more than one set of gears also works toward the same purpose. Doubling up on derricks fitted with single whip falls is a common means of reducing potential dynamic stresses as well as increasing power and reducing boom thrust. By reducing the speed of hoisting or lowering dynamic stresses are minimized and the ease of handling of delicate objects is increased.

Q. What is meant by:
(a) Hummocked ice
(b) Ice jamming
(c) Icebergs

A. (a) Hummocked ice refers to ice piled haphazardly, one piece over another.

(b) Ice jamming refers to the action of ice that is being squeezed or crowded together into a compact mass.

(c) An iceberg is a large mass of floating or stranded ice, more than 5 m. (16.4 ft.) above sea level, which has broken away either from a glacier or from a shelf-ice formation.

Q. Define:
(a) The set of a current.
(b) The drift of a current.

A. (a) The set of a current is the direction toward which it flows.

(b) The drift of a current is its speed.

Q. Under certain conditions in the Northern Hemisphere it may be assumed that the current sets 30° to the right of the direction in which it is driven by the wind and its velocity is 2 percent of the wind velocity.

(a) Basing your answer on the foregoing statement, estimate the direction and velocity of the current that may be expected if the wind is from west at 50 knots.

(b) Using direction and velocity of current estimated in (a) find the course to steer to make good a course of 030° if the speed of your vessel is 10 knots. To solve this problem consider current only, disregarding any other factors that might be involved.

A. (a) 120°——1.0 knot.
(b) 024°.3

MERCHANT MARINE PERSONNEL STATISTICS

MERCHANT MARINE OFFICER LICENSES ISSUED

QUARTER ENDING 30 JUNE 1957

DECK

Grade	Original	Renewal
Master:		
Ocean	57	638
Coastwise	5	30
Great Lakes	1	22
B. S. & L	6	89
Rivers	6	54
Radio officer licenses issued	21	125
Chief mate:		
Ocean	39	130
Coastwise	2	3
Mate:		
Great Lakes		
B. S. & L	4	11
Rivers	10	36
Second mate:		
Ocean	48	149
Second mate—Continued		
Coastwise		
Third mate:		
Ocean	46	136
Coastwise		
Pilots:		
Great Lakes	14	13
B. S. & L	127	90
Rivers	106	38
Master: Uninspected vessels	7	17
Mate: Uninspected vessels	1	1
Total	500	1,582
Grand total	2,082	

ENGINEER

Grade	Original	Renewal
STEAM		
Chief engineer:		
Unlimited	56	699
Limited	7	127
First assistant engineer:		
Unlimited	51	222
Limited	4	34
Second assistant engineer:		
Unlimited	56	292
Limited	1	9
Third assistant engineer:		
Unlimited	122	281
Limited	3	
MOTOR		
Chief engineer:		
Unlimited	4	132
Limited	28	133
MOTOR—continued		
First assistant engineer:		
Unlimited	2	36
Limited	19	44
Second assistant engineer:		
Unlimited	3	41
Limited	1	16
Third assistant engineer:		
Unlimited	67	198
Limited	2	1
Chief engineer: Uninspected vessels	2	8
Assistant engineer: Uninspected vessels	4	4
Total	432	2,277
Grand total	2,709	

WAIVER OF MANNING REQUIREMENTS

Waivers	Atlantic coast	Gulf coast	Pacific coast	Great Lakes	Total
Deck officers substituted for higher ratings				13	13
Engineer officers substituted for higher ratings	2		2	8	12
O. S. for A. B	2		7	1	10
Wiper or coalpassers for QMED	3	2			5
Total waivers	7	2	9	22	40
Number of vessels	7	2	7	19	35

INVESTIGATING UNITS

Coast Guard merchant marine investigating units and merchant marine details investigated a total of 4,209 cases during the second quarter of 1957. From this number, hearings before examiners resulted involving 62 officers and 340 unlicensed men. In the case of officers, no licenses were revoked, 9 were suspended without probation, 23 were suspended with probation granted, 9 cases were dismissed after hearing, and no hearings were closed with admonition. Of the unlicensed personnel, 34 documents were revoked, 25 were suspended without probation, 154 were suspended with probation granted, 30 hearings were closed with admonition, and 31 cases were dismissed after hearing. Fifteen licenses and 179 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	51	7	40	8	106
Continuous discharge book	1	31	1		33
Merchant mariner's documents	1,931	796	1,319	3,146	7,192
AB any waters unlimited	146	37	50	43	276
AB any waters, 12 months	43	19	41	107	210
AB Great Lakes, 18 months	1	1	4	52	58
AB tugs and towboats, any waters			1		1
AB bays and sounds	1				1
AB seagoing barges		1			1
Lifeboatman	171	31	99	98	399
QMED	160	54	51	118	383
Radio operators	5	6			11
Certificate of service	1,927	786	1,294	3,084	7,091
Tankerman	18	52	6	111	187
Total	4,455	1,815	2,912	6,767	15,949

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

APPENDIX

AMENDMENTS TO REGULATIONS

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

TITLE 46—SHIPPING

Chapter I—Coast Guard, Department of the Treasury

[CGFR 57-32]

PART 10—LICENSING OF OFFICERS AND MOTORBOAT OPERATORS AND REGISTRATION OF STAFF OFFICERS

PART 12—CERTIFICATION OF SEAMEN

FIRST ASSISTANT ENGINEER OF VESSELS NOT OVER 2,000 HORSEPOWER AND EXAMINATION OF LIFEBOATMEN AND ABLE SEAMEN

Notices regarding proposed changes in the navigation and vessel inspection regulations were published in the Federal Register dated March 7, 1957 (22 F. R. 1433–1439), March 28, 1957 (22 F. R. 2047), and May 4, 1957 (22 F. R. 3185, 3186), as Items I through XVIII of the Agenda to be considered by the Merchant Marine Council. Pursuant to these notices a public hearing was held on May 7, 1957, by the Merchant Marine Council at Washington, D. C. This document is the sixth of a series covering the regulations considered at this public hearing. The first document (CGFR 57–26) deals with inspection of cargo gear on passenger, cargo, and miscellaneous vessels. The second document (CGFR 57–27) deals with lifesaving, fire protection, and grain loading requirements for passenger, cargo, and miscellaneous vessels. The third document (CGFR 57–29) deals with cargo tanks for liquefied inflammable gases and anhydrous ammonia, stowage of baled cotton, and use of equivalents or alternative procedures respecting dangerous cargoes. The fourth document (CGFR 57–30) deals with crew accommodations on tank ships. The fifth document (CGFR 57–31) deals with drydocking of passenger, tank, cargo, and miscellaneous vessels.

All the comments, views, and data submitted in connection with the items considered by the Merchant Marine Council at this public hearing have been very helpful to the Coast

Guard and are very much appreciated. On the basis of the information received certain proposed regulations were revised. The following items considered at the public hearing held May 7, 1957, as revised, are adopted and included in this document:

ITEM II—LIFEBOATMEN, EXAMINATION AND DEMONSTRATION OF ABILITY

ITEM III—LICENSE AS FIRST ASSISTANT ENGINEER OF STEAM AND MOTOR VESSELS OF NOT OVER 1,000 HORSEPOWER

The proposal in Item II of the Agenda was changed with respect to the handling of a boat in a heavy sea and the operation of davits. The examination for lifeboatmen as adopted materially changes the scope of the examination in 46 CFR 12.10–5. In the future the applicant will be examined as a lifeboat commander in addition to being a skilled member of a boat crew. The portion of the lifeboatmen's examination syllabus with respect to being a lifeboat commander is based on a portion of the able seamen's examination syllabus in 46 CFR 12.05–9 (b) (2) and (3). For these items changes were made to clarify the language and, therefore, editorial changes are made in 46 CFR 12.05–9 (b) (2) and (3) regarding the able seamen's examination syllabus so that the description of the examination syllabus will be the same as in 46 CFR 12.10–5 (b) (2) and (3) regarding the lifeboatmen's examination syllabus.

The proposal in Item III of the Agenda was revised so that third assistant engineers with unlimited licenses who are 21 years of age or over will be eligible for an examination as first assistant engineer of towing or ferry vessels of not over 2,000 horsepower. In view of the increase in the horsepower from 1,000 horsepower to 2,000 horsepower, the provisions in 46 CFR 10.10–13 (a) (4) and 10.10–15 (a) (4) were likewise revised.

By virtue of the authority vested in me as Commandant, United States Coast Guard, by Treasury Department Order No. 120, dated July 31, 1950 (15 F. R. 6521), Treasury Department Order 167–14, dated November 26, 1954 (19 F. R. 8026), and Treasury Department Order CGFR 56–28, dated July 24, 1956 (21 F. R. 5659), to promulgate regulations in accordance with the statutes cited with the regulations below, the following amendments are prescribed and shall become effective 30 days after the date of publication of this document in the Federal Register:

(Federal Register of Thursday, July 25, 1957.)

NUMBERED AND UNDOCUMENTED VESSELS

The table below gives the cumulative total of undocumented vessels numbered under the provisions of the act of June 7, 1918, as amended (46 U. S. C. 288), in each Coast Guard district by customs ports for the quarter ended 30 June 1957. Generally speaking, undocumented vessels are those machinery-propelled vessels of less than 5 net tons engaged in trade which by reason of tonnage are exempt from documentation. They also include all other vessels propelled in whole or in part by machinery which have not been issued marine documents by the customs, owned in the United States and found on the navigable waters thereof.

Coast Guard District	Customs Port	Total
1 (Boston)	(4) Boston	16,759
	(1) Portland, Maine	9,594
	(2) St. Albans	949
	(5) Providence	4,972
	Total	32,274
2 (St. Louis)	(45) St. Louis	11,679
	(12) Pittsburgh	2,441
	(34) Pembina	181
	(35) Minneapolis	2,893
	(40) Indianapolis	6,064
	(42) Louisville	3,122
	(43) Memphis (part)	6,233
	(46) Omaha	401
	(47) Denver	37
	Total	33,051
3 (New York)	(10) New York	52,230
	(6) Bridgeport	10,174
	(11) Philadelphia	21,908
	Total	84,312
5 (Norfolk)	(14) Norfolk	17,044
	(13) Baltimore	24,041
	(15) Wilmington, N C	8,524
	Total	49,609
7 (Miami)	(18) Tampa (part)	27,409
	(16) Charleston	1,609
	(17) Savannah	2,525
	(49) San Juan	478
	(51) St. Thomas	126
	Total	32,147
8 (New Orleans)	(20) New Orleans	22,063
	(18) Tampa (part)	560
	(19) Mobile	8,549
	(21) Port Arthur	4,676
	(22) Galveston	9,988
	(23) Laredo	1,719
	(24) El Paso	23
	(43) Memphis (part)	65
	Total	47,643
9 (Cleveland)	(41) Cleveland	11,068
	(7) Ogdensburg	2,743
	(8) Rochester	6,130
	(9) Buffalo	4,319
	(30) Duluth	2,648
	(37) Milwaukee	4,147
	(38) Detroit	23,258
	(39) Chicago	9,407
	Total	63,720
11 (Long Beach)	(27) Los Angeles	14,277
	(25) San Diego	2,502
	(26) Nogales	156
	Total	16,935
12 (San Francisco)	(28) San Francisco	15,859
13 (Seattle)	(30) Seattle	21,938
	(29) Portland, Oreg	8,884
	(33) Great Falls	685
	Total	31,507
14 (Honolulu)	(32) Honolulu	3,779
17 (Juneau)	(31) Juneau	8,282
	Grand total	419,118

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 May 29, 1957 (CGFR 57-24)-(CGFR 57-25). 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 June to 30 June 1957, inclusive, for use on board vessels in accordance with the provisions of Part 147 of the regulations governing "Explosives or Other Dangerous Articles on Board Vessels," are as follows:

Perolin Co., Inc., 350 Fifth Ave., New York 1, N. Y., Certificate No. 137, dated June 6, 1957, "PERO-KLEAN MARINE CLEANER NO. 805."

Perolin Co., Inc., 350 Fifth Ave., New York 1, N. Y., Certificate No. 159, dated June 6, 1957, "PERO-KLEAN MARINE CLEANER NO. 802."

AFFIDAVITS

The following affidavits were accepted during the period from 15 May 1957 to 15 July 1957:

Flodar Corporation, 16911 St. Clair Ave., Cleveland 10, Ohio. PIPE FITTINGS.

Vernon Tool Co., Inc., Greenwood Valve Division, 1101 Meridian Ave., Alhambra, Calif., VALVES.

Wedgelock Corporation, 5446 Satsuma Ave., North Hollywood, Calif., VALVES.

FUSIBLE PLUGS

The regulations prescribed in Subpart 162.014, Subchapter Q, Specifications, require that manufacturers submit samples from each heat of fusible plugs for test prior to plugs manufactured from the heat being used on vessels subject to inspection by the Coast Guard. A list of approved heats which have been tested and found acceptable during the period from 15 May 1957 to 14 June 1957 is as follows:

The Lunkenheimer Co., Cincinnati 14, Ohio. Heat No. 561.

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, except for cost publications which may be obtained upon application to the Superintendent of Documents, Government Printing Office, Washington 25, D. C. Date of each publication is indicated following title.

CG No.	*Title of Publication*
101	Specimen Examinations for Merchant Marine Deck Officers. 1–50
108	Rules and Regulations for Military Explosives. 5–15–54
115	Marine Engineering Regulations and Material Specifications. 3–1–56
118	Overtime Services. 8–46
123	Rules and Regulations for Tank Vessels. 10–1–56
129	Proceedings of the Merchant Marine Council. Monthly
169	Rules to Prevent Collisions of Vessels and Pilot Rules for Certain Inland Waters of the Atlantic and Pacific Coasts and of the Coast of the Gulf of Mexico. 1–2–57
172	Pilot Rules for the Great Lakes and their connecting and Tributary Waters. 7–1–57
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. 3–5–54
176	Load Line Regulations. 11–1–53
182	Specimen Examinations for Merchant Marine Engineer Licenses. 5–49
184	Pilot Rules for the Western Rivers and the Red River of the North. 1–3–55
187	Explosives or Other Dangerous Articles on Board Vessels. 7–1–54 (Cost Pub. $2.50 from GPO)
190	Equipment Lists. 3–1–56
191	Rules and Regulations for Licensing and Certificating of Merchant Marine Personnel. 9–15–55
200	Marine Investigation Regulations and Suspension and Revocation Proceedings. 4–13–53
220	Specimen Examination Questions for Licenses as Master, Mate, and Pilot of Central Western Rivers Vessels. 6–51
227	Laws Governing Marine Inspection. 7–3–50
239	Security of Vessels and Waterfront Facilities. 6–16–52
249	Merchant Marine Council Public Hearing Agenda. Annually
256	Rules and Regulations for Passenger Vessels. 3–1–57
257	Rules and Regulations for Cargo and Miscellaneous Vessels. 6–1–55
258	Rules and Regulations for Uninspected Vessels. 7–1–55
259	Electrical Engineering Regulations. 6–1–55
266	Rules and Regulations for Bulk Grain Cargo. 2–13–53
267	Rules and Regulations for Numbering Undocumented Vessels. 1–15–53
268	Rules and Regulations for Manning of Vessels. 11–19–52
269	Rules and Regulations for Nautical Schools. 11–1–53
270	Rules and Regulations for Marine Engineering Installations Contracted for Prior to July 1, 1935. 11–19–52
290	Motorboats. 4–15–57
293	Miscellaneous Electrical Equipment List. 2–1–57
320	Rules and Regulations for Artificial Islands and Fixed Structures on the Outer Continental Shelf. 1–2–57

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 $15.00 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 below.

Changes Published During July 1957

The following have been modified by Federal Registers:

CG–123, CG–256, CG–257 Federal Register July 20, 1957.
CG–191 Federal Register July 25, 1957.

U. S. GOVERNMENT PRINTING OFFICE: 1957