PROCEEDINGS

OF THE MERCHANT MARINE COUNCIL

UNITED STATES COAST GUARD

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CG–129

IN THIS ISSUE . . .

A series is commenced surveying the many phases of American Merchant Marine training, beginning page 195.

Proposals for Bridge-to-Bridge VHF radio regulation are carried on page 200.

More papers from the May Search and Rescue Seminar appear, beginning page 201.

SHIP SAFETY ACHIEVEMENT AWARD pennant is raised on board Humble Oil & Refining Co. tanker *Esso Miami* at Jacksonville. The award, jointly sponsored by American Merchant Marine Institute and Marine Section, National Safety Council, was made for outstanding feat of ship safety by an American-flag tanker during 1964: Contral and extinguishing of a massive fire resulting from explosion of a barge alongside during unloading operations. Holding flag are (left) Capt. William N. Sims, Master, and Rear Adm. Louis M. Thayer, USCG, Commander, 7th Coast Guard District. Behind hoist of flag is Joseph Andreae, General Manager, Marine Division, Humble Oil & Refining Co. See page 211 for details.

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PROCEEDINGS

OF THE

MERCHANT MARINE COUNCIL

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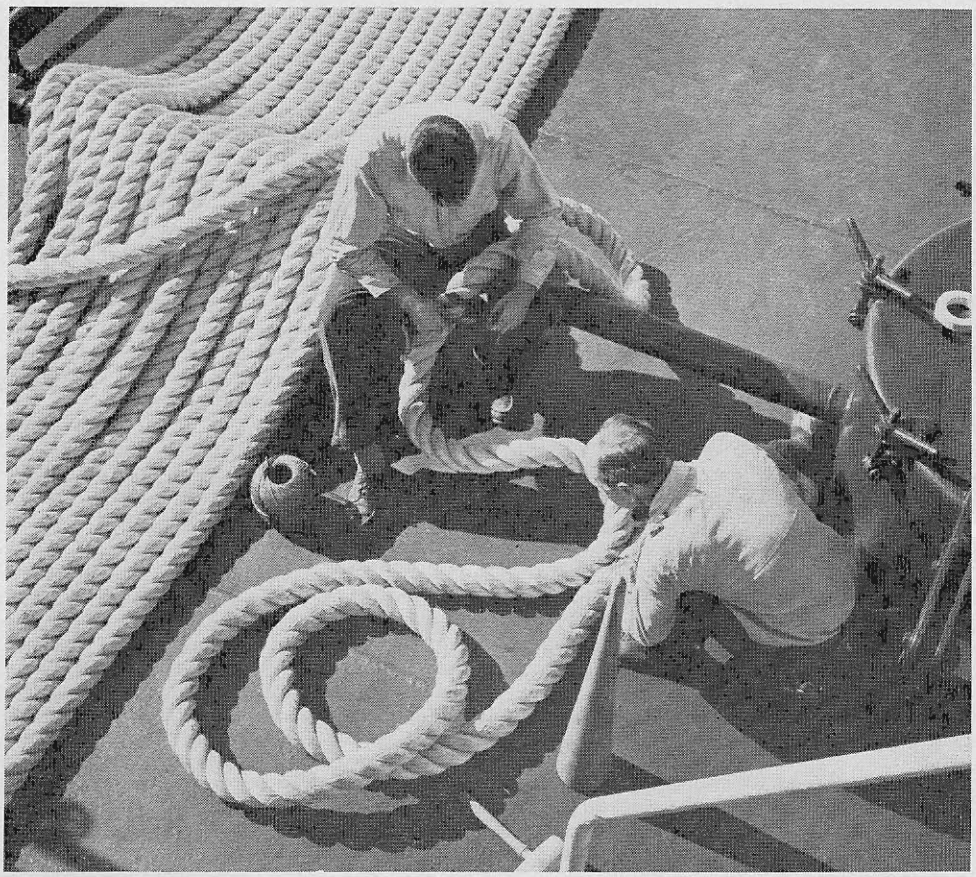
Lieutenant A. J. Arnett, USCG, *Editor*

T. A. DeNardo, *Assistant Editor*

Beginning A Series

Training of the American Merchant Marine



A MANY FACETED thing is the training of the American Merchant Marine. Some training is formal, some informal; some is granted Government "approval," some not; some is subsidized, some isn't. The unions train, the companies train, private schools train and the Government trains. Often there is overlap, then, too, sometimes there is a training gap. Some training is for the uninitiated, other training is for expanding the knowledge of the experienced seaman.

With a goal in mind of bringing into focus the myriad marine training programs operating in the land, a series of articles is commenced with this issue. Articles describing the programs of union, industry, Government and private and corporate organizations will be featured. Those organizations and schools not already solicited for contributions are invited to take part in this survey by sending to the *Proceedings* a resumé and short history of their particular program. Many will be used.

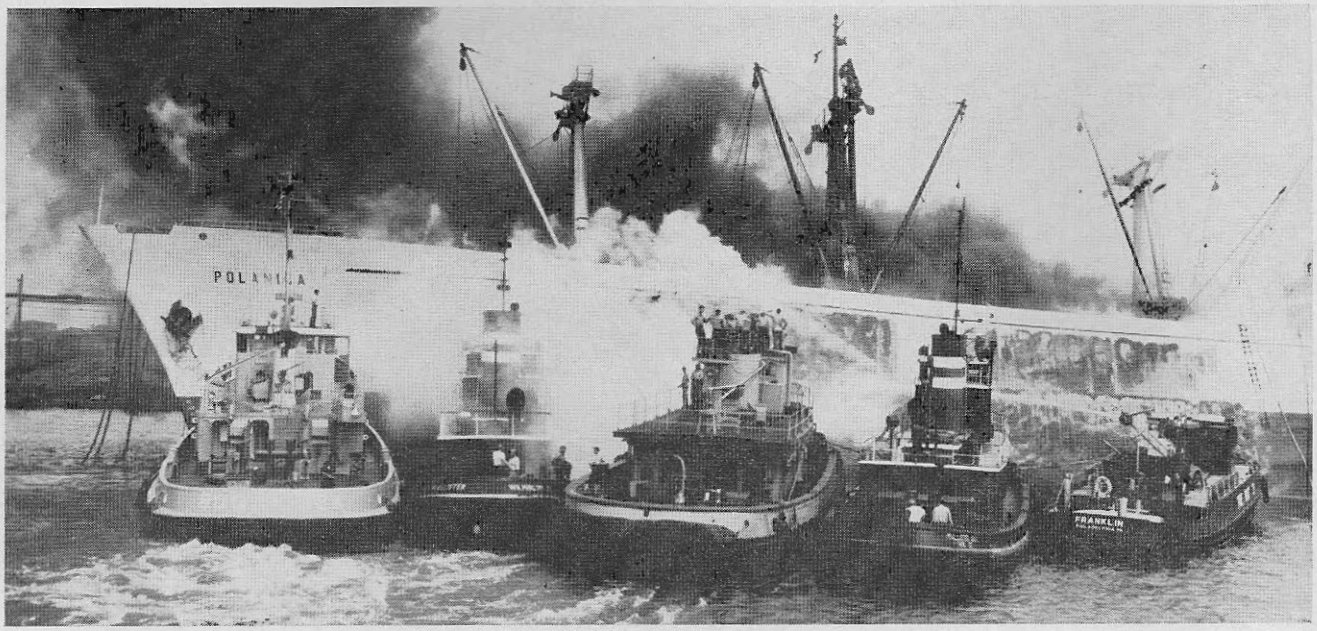
Training by the Lake Carriers' Association, the U.S. Navy's Damage Control School, the Sailors' Union of the Pacific and the Marine Cooks and Stewards Union opens the series.

Merchant Mariners Too Can Train At

U.S. Naval Damage Control Training Center

By Lt. (jg.) Jack A. Eckert, USCG

Assisted by Lt. John J. Donnelly, USN, Both of the Center



Tugs line up to extinguish an out of control blaze on the SS *Polanica*.

Worldwide, based on the Liverpool Underwriters Report for 1964, 442 vessel casualties resulted from fires and explosions. This represents an average of 1.211 plus per day. Obviously *the best fire protection is fire prevention*. Coupled closely is training the crew in firefighting. To many untrained personnel, fire and fear are synonymous. From a cursory glance it would seem to the casual observer that the only course of action to be taken by the Master is to increase the frequency of drills. Without a doubt this is an excellent step in the right direction. But in firefighting this would not fully complete the training required. The crux of the matter is that it is very difficult to institute a training program in firefighting and structural casualty control aboard ship. It is one thing to employ "on-the-job training" to increase the proficiency of bridge and engineroom watchstanders but an entirely different matter to train competent firefighters. No rational Master would permit the kindling of actual fires on board his vessel to exercise his crew. But the fact remains that when a fire breaks out, no time remains to develop techniques not already possessed and there is no way of ascertaining the psychological effect on the crew.

There remains only one answer to this enigma. That is to seek out and provide for the necessary fundamentals at an existing facility. A facility such as this should provide for short periods of intensive training stressing the necessary skills and techniques. An installation such as this is the U.S. Naval Damage Control Training Center, located adjacent to the Philadelphia Naval Shipyard.

One of the departments at NDCTC is the Firefighting Training Department. It is located on a four-acre asphalt field where between 100 and 400 fires are set weekly, depending upon student load. There are three open tanks containing fuel oil with a raised concrete platform for permitting the students to combat special hazards such as magnesium fires, aircraft fires and others. There is a mocked up Engineroom, a Fireroom, and a Forecastle. There are special areas set aside for the use of portable firefighting pumps and just about every conceivable device to teach the tools and techniques of firefighting.

In the various courses offered, the stress is placed on field evolutions. After a minimum of classroom time the student moves on to the field for actual participation in fire extinguishment. The motto for the school is "Learn or Burn." And learn or burn it is, for each trainee in a typical 5-day course must extinguish approximately 35 fires. He will be only feet away from live flames, dense smoke, and intense heat. He will learn that he and the rest of the members of his team can minimize their personal danger by properly using his equipment. If it is an oil fire, his fog will protect him. He learns the proper method of cooling and extinguishment. As the course progresses he uses foam, carbon dioxide, dry chemicals to extinguish class A, B, and C fires. Each successive day ends with being dirty, greasy, and tired, but he is content in the knowledge that he can successfully combat a lot of fire. Confidence and competence are being gained. And finally at the end of the period he is on the road to becoming an accomplished firefighter.

Since its inception over 20 years ago, the school has advanced with the times. As firefighting equipment and techniques have improved, the courses have been up-dated and improved.

Briefly, firefighting is only one of the many faces of the Damage Control Training Center. It has several

schools teaching self-protection for ships. Its graduates number in the tens of thousands and thousands more are being added each year. Some of the areas instructed include, Nuclear, Biological and Chemical Defense afloat, Practical Damage Control, Plastic Pipe patching techniques, and others too numerous to mention. Probably the most famous training aid that it possesses is the U.S.S. *Buttercup,* the first ship other than a submarine that was designed to sink. Since it was first commissioned on February 17, 1945 it has sunk thousands of times.

The *Buttercup* is actually a seven compartment, cross section of a cruiser, hinged on one side, and floating in a large concrete tank. An integral cofferdam is flooded which allows water to enter into a large berthing compartment through a number of holes of various sizes. The objective is to patch and plug all the holes before the vessel sinks and then to get all the pumps in operation for dewatering. Sounds simple, doesn't it? Nothing to it! However there are a few distractions provided. A class "A" fire, a ruptured fire main that must be isolated and repaired, loss of all electrical power, a steam leak, constant background noise, and everything that can be introduced consistent with safety requirements. Unchecked, *Buttercup* bottoms in about seventeen minutes. Prior to the commencement of the evolution, teams of men are selected and assigned. Before the evolution is completed, these men are in fact working together as teams, psychologically convinced that they are on an actual ship fighting for survival.

The October 1959 issue of the *Naval Institute Proceedings* carried a very interesting article entitled "Those Who Can . . . " by Lt. (JG.) J. J. St. John, USNR. A running account was given concerning an incident that occurred involving Fire Fighter Instructors assigned to NDCTC who, on June 8, 1953, were called on to extinguish an out-of-control 80 octane gasoline fire on the SS *Pan Massachusetts* which was then adrift in the Delaware River. Up to this time almost every firefighting agency in the entire area had tried and then given up the attempt to extinguish the fire. Coast Guard Cutters and local fireboats were brought to bear on the burning vesel. Time and time again the furiously burning *Pan Massachusetts* rebuffed the futile attempts. It was finally decided to let the vessel drift until it burned itself out. It was estimated it would take about 2 weeks for the fire to entirely consume the gasoline cargo. At this time the only parties who had not given up the attempt to save the ship were represented by sentatives from the company. As a last resort, the Fourth Naval District Commandant was contacted for assistance.

U.S. Navy Photo

Time for a rest. One of the firefighters who combated the uncontrolled fire on the USS *Pan Massachusetts* wipes off the sweat and water from his brow. The clothing he is wearing is typical of that worn by students undergoing firefighting training at the U.S. Naval Damage Control Training Center, Philadelphia.—Official.

Even though the Navy had no fireboats of its own, the tug *Toka* was made ready. Ten volunteer Instructors from the NDCTC were assigned. Necessary equipment and foam were loaded, checked, and rechecked. At 0900 on June 9 the tug made its approach on the burning vessel, training water streams onto the hull in an effort to cool it and projecting foam into the tanks in an effort to board it so as to combat it firsthand. Several difficulties were encountered. The ship had a 3-day preburn and was intensely hot after a violent explosion that was heard for some 20 miles. Foam eventually became in short supply. More was sent for. The truck ultimately dispatched and loaded with the foam had a flat tire and 4 more hours of direct combat were lost. After the foam arrived, operations were resumed. The vessel was again boarded. Even under the stress conditions that prevailed, the fire was finally declared out at 1720. At 1830 the fire was overhauled and the exhausted team secured. To make a long story short, salvage operations indicated that 80 percent of the cargo was saved, the ship was repaired and once again joined the merchant fleet. All in all, the company saved over $4 million. This is one of the most important instances, but not the only one in the history of the Naval Damage Control Training Center. The moral is that in the case of these dedicated men they not only teach, but "can do", too.

As a matter of statistics during the calendar year 1964, NDCTC had a total of 12,741 students participating in the various courses. Numerically the bulk of the students were members of the U.S. Navy. However out of 1,590 military officer students, 174 were Coast Guard officers. Out of the remaining 11,151 military students, 1,298 were Coastguardsmen. There were several hundred foreign students and a total of 599 civilian students. But a few of the agencies and companies represented were:

American Oil Co.
Gulf Oil Co.
Sun Oil Co.
Philadelphia Fire Department
Texaco Oil Co.
Creole Petroleum Co.
Military Sea Transport Service
Camden Fire Department
Chester Fire Department
Boy Scouts of America
Scott Paper Co.
New York Ship Building Co.
U.S. Gypsum Co.

The firefighting courses available at NDCTC include:

One Day Special (on specific request only)
Two Day Indoctrination and Refresher Course (convenes on Mondays and Wednesdays)
Five Day Firefighter (convenes every Monday)
Four Week Firefighter Instructor (convenes every fourth Monday)

Other courses are available to civilian groups upon request and further information may be obtained by contacting NDCTC directly at the following address:

Commanding Officer
U.S. Naval Damage Control Training Center
U.S. Naval Base
Philadelphia, Pa., 19112

Quotas will normally be controlled on a space available basis. Efforts will be made consistent with group sizes, to assist you in the instruction and utilization of other than nonstandard Navy Equipment on a provide-your-own basis. ⚓

The SUP'S

Andrew Furuseth School

Since the early days of WWII when there was a desperate need to help man the U.S. merchant fleet carrying supplies to the military forces of America and her Allies, as well as help support the civilian economies, the Andrew Furuseth School of Seamanship has proved a valuable institution for the Sailors' Union of the Pacific (SUP) and the West Coast maritime industry.

The School program started in 1941. In that wartime year the SUP found it necessary to use young and old men, "cowboys and clerks" and what else—almost universally without any sea experience or knowledge—to help crew up the civilian-manned American merchant marine.

To help these newcomers to the industry, the SUP proposed and set up a training school. Thousands of men from all the free world countries trained there from 1942 to 1946.

The SUP continues to operate the school jointly with the Pacific Maritime Association (an organization of West Coast shipowners) and the California Board of Education, who share the costs.

The school, located in San Francisco and named after the man who for half a century headed the SUP, is composed of two departments: a Rigging Loft in the SUP Headquarters Building, and a Lifeboat School at Pier 54. Both the Lifeboat School and Rigging Loft offer full facilities and instruction in practical seamanship not only to apprentice seamen but to men wishing to qualify for a "Lifeboat Ticket."

The SUP requires that everyone with 90 days' sea time who does not have a "Lifeboat Ticket" must complete a 2-week course at the school and obtain it. As a result, the SUP's membership is credited with having the largest percentage of qualified Lifeboatmen of any similar group anywhere in the world. The school is also used to examine applicants for SUP full-book membership or for a Bosun's endorsement.

The sessions at the Rigging Loft require another 2 weeks to acquaint the apprentice seamen with such marlinespike seamanship as he will be required to know aboard ship. He is taught such rudiments as the basic knots and hitches and how to apply them, wire splicing, rigging a stage and a bosun's chair, reeving off multi-sheaved purchases, rigging cargo gear, and standing watch.

Each instructor is fully qualified. Each holds a teacher's certificate from the State of California.

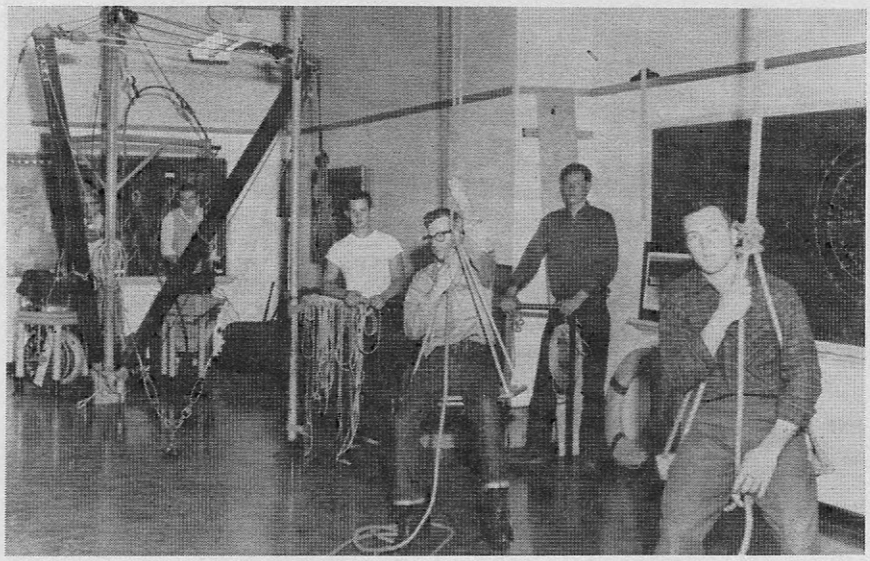
Men going up for an "AB ticket" use the school as a means of brushing up on some of their rusty points. Prior to appearing before an SUP Membership Committee, which passes on applications for union books and Bosun and other ratings, the applicant is required to pass an examination in basic seamanship in the school.

The SUP agreement with its contract companies states that the union will furnish qualified men, and the Committee has consistently held that an apprentice who is not conscientious at the school will not be a credit to his union, his ship, or his shipmates. Subjects thus taught at the school also cover subjects necessary for the member to upgrade himself.

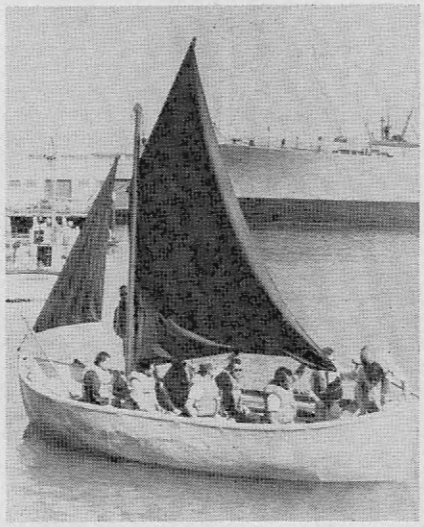
An Able-Bodied seaman will be required to know 10 practical knots and their application; how to rig a Bosun's chair and a stage; how to put various types of splices in manila, put a thimble or a Liverpool splice in wire rope, reeve off a three-fold purchase; handle and rig cargo gear; and he must display a working knowledge of palm and needle work.

The Bosun's must be able to put a Liverpool and logger (West Coast) splice in wire rope; parcel and serve with both marline and seizing wire; explain and set up Frisco gear and demonstrate a working knowledge of standard shipboard problems.

The school holds there is no better teacher than actual experience, so the subjects taught are not intended to take the place of actual sea experience. In fact, seamen must qualify by sea time before they are permitted to take any upgrading examination or test for membership. ⚓



At the Andrew Furuseth rigging loft.



A work out in the lifeboat at the Furuseth School.

Nears 50th Anniversary

Lake Carriers' Schools

The Lake Carriers' Association school in navigation and marine engineering, one of the oldest such institutions in the United States, will mark its 50th anniversary next year.

Cleveland classes were inaugurated in 1916. They have been held each year since the school opened, except in 1932, at the depth of the depression, when lake shipping declined to a dribble, and only 3,567,985 tons of iron ore were moved. For many years, the Association has cooperated with the Duluth Board of Education in holding engineering classes each winter at Duluth.

The Cleveland school opens early in January and continues for about 8 weeks. Classes are held from 8 a.m. to 4 p.m. daily except Sunday, at the Association's Assembly Room at 2132 West 25th Street.

Veteran ships' officers conduct the courses which prepare men to write for original or raise-of-grade licenses in navigation and marine engineering. In addition to textbook and classroom instruction, supplemental lectures are given by representatives of equipment companies, the U.S. Weather Bureau, the U.S. Department of Public Health, Education, and Welfare, and the American Red Cross. Motion pictures and slides are also used.

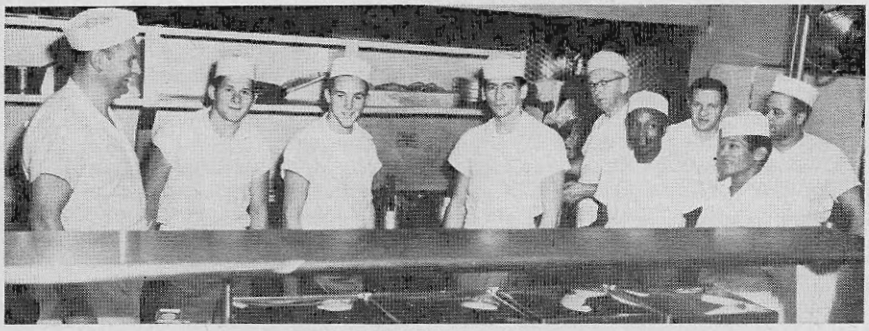
Tuition is free to employees of member companies. Study kits, including textbooks and other printed material, are provided the men at a cost of $5. Free summer correspondence courses are available, and are recommended as preliminary training to the winter classes whose instructors, while off watch on their ships, correct the students' papers and return them with the next set of questions. This provides the men with basic information and allows more time for discussion of difficult problems with the instructors in class the following winter.

In the 50 years the school has been operating, 1,522 students have received original pilot's licenses, 500 have received master's licenses, 1,956 original engineer's licenses, and 1,809 advanced engineer's papers. In addition, 494 men have had limits removed on their pilot's licenses.

The Association also sponsors winter diesel classes in Cleveland, and special classes for engineering officers at the U.S. Merchant Marine Academy, Kings Point, N.Y. ⚓

From the Forest to the Sea

Marine Cooks & Stewards Union Training Program



Learning the trade at the Marine Cooks and Stewards Training Camp.

Nearly a decade ago, representatives of the Marine Cooks & Stewards Union, and the employer group, Pacific Maritime Association, agreed that new cooks and stewards should be trained in accordance with the changing needs of the industry. Further, some sort of program whereby the temperament, abilities and attitudes of prospective members of the Steward department could be evaluated prior to their actually shipping out, was recognized as an obvious necessity.

Following appropriate studies and preparations, a 350-acre facility was established near Santa Rosa, Calif. It was designed to work in conjunction with a union-employer recreation area and housing for retired seamen. The entire program has been administered jointly by a board of education composed of equal numbers of union and employer representatives.

The training program consists primarily of "on-the-job" training. The program operates seven days a week; work schedules and discipline are keyed to shipboard life in every manner possible.

Training courses are given in cooking, baking, butchering, pantry work, storekeeping and "hotel section" ratings such as bedroom steward and waiter. Instructors have been drawn from the maritime industry itself.

Trainees, in addition to their actual practical training, receive lectures and demonstrations in theories and the practice of shipboard hygiene and sanitation, shipboard safety, and shipboard discipline.

Since 1957 more than 2,000 young men have been trained at the facility, known as Stewards Training Center. In addition, training facilities have been utilized to "upgrade" men who have had seagoing experience but desire training in higher-paying jobs.

The Center has a worldwide reputation. It has been used by the University of California for various seminars as well as by the U.S. Department of State and the Peace Corps as a conference center.

The Center itself is situated on 350 acres of rolling wooded hills in Sonoma County, Calif. The complex, 31 of one to three bedroom cabins and 10 dormitories, is centered around a completely equipped and air-conditioned dining hall. Three hundred people can be seated at one time. In conjunction with this, of course, is a completely equipped galley, butcher shop, and bake shop. Equipment in these areas duplicates, as much as possible the equipment the men will find aboard ship.

The facility is approved by the Department of Education of the State of California and is authorized to issue diplomas under the State Education Code.

The 8 years of successful operation at Santa Rosa led to a request by the U.S. Department of Labor that the Marine Cooks & Stewards assist in a job re-training program under the Manpower Development and Retraining Act of 1962. In cooperation with the International Union of Operating Engineers, Local 3, the U.S. Army and the Department of Labor, a special training program was initiated at Camp Roberts, Calif., in January of 1964 and again in January of 1965. These programs were each 12 weeks in length.

Both programs were highly successful and it is expected that there will be more such programs in the future. These two programs also proved that such widely divergent groups as Government, military, and varied civilian unions could develop a high degree of cooperation. ⚓

Proposals Announced

Bridge-to-Bridge Radio Developments

THE ARTICLE titled "Anti-Collision Measures Promoted by the Coast Guard" by Capt. William C. Foster, USCG, which appeared in the April 1965 issue of the *Proceedings*, mentioned that a Coast Guard-FCC joint committee had submitted proposals concerning bridge-to-bridge radio to the Commandant and to the FCC Commissioners. These proposals have been approved, and were released during July.

The proposals would, if approved by the majority of the interests concerned, be submitted for the Treasury Department's legislative program and would require certain regulations to be included in title 33 of the Code of Federal Regulations. These regulations would make the operation of a single channel VHF/FM radiotelephone compulsory on the bridge of every affected vessel in U.S. waters. The joint committee believes that a mandatory bridge-to-bridge radio system covering all areas is necessary as a backup to the required whistle signals of intent presently used on our waters. Many costly and tragic collisions have occurred in our waters after pilots have become mistaken about the intentions of their counterparts on approaching vessels. It is hoped that a compulsory radio system generally limited to the exchange of navigational information would tend to avoid such occurrences.

Printed below is the concept of the proposal, as it was released for circulation to the marine industry in July. The proposed bridge-to-bridge radio would, if approved, have to comply with the technical requirements established by the FCC in 47 CFR, part 83. The FCC is now considering a change in its rules that would exempt vessels on U.S. waters carrying low-powered VHF/FM sets from requirements for specific additional frequencies. This proposed change, if adopted, would mean that any vessel which is not otherwise required to carry a radio would be permitted to carry only a low-powered version of the single channel radio encompassed within the proposal below.

PROPOSAL FOR COMPULSORY BRIDGE-TO-BRIDGE RADIO

It is anticipated that a proposal for legislation requiring bridge-to-bridge radio aboard vessels on the navigable waters of the United States would incorporate the following provisions:—

A definition section would state that the term "Secretary" means the Secretary of the department in which the Coast Guard is operating, that the term "towing vessel" means any vessel engaged in towing another vessel astern, alongside, or by pushing ahead, and that the term "passenger vessel" means any vessel carrying persons for hire.

An applicability section would mention power-driven vessels of 300 gross tons or over, towing vessels of 26 feet or over in length and power-driven passenger vessels of 65 feet or over in length.

There would be a section requiring the above listed classes of vessels, unless exempted by the Secretary, when underway on the navigable waters of the United States inside the line dividing the high seas from inland waters, except the Great Lakes, to carry radiotelephone equipment capable of operating on the frequency or freqencies within the band 156 to 174 Mc/s in the International Maritime Mobile Service, authorized by the Federal Communications Commission exclusively for the exchange of navigational information primarily between the bridges of ships or as an at-the-scene aid in any maritime emergency.

A section would authorize the Secretary to exempt any vessel from the above-mentioned requirement whenever the use of bridge-to-bridge radio would not contribute to the safety of navigation on the vessel's usual route.

The usage of the radiotelephone would be stated as the resolution of maneuvering situations between approaching vessels, or enabling persons navigating vessels to inform one another of their intentions.

Vessels required to carry the radio would be required to maintain a listening watch on the frequency authorized by the Federal Communications Commission primarily for navigational safety. The Secretary, with the concurrence of the Federal Communications Commission, would be empowered to establish regulations for the listening watch.

A provision would enable the Federal Communications Commission to establish such technical regulations as may be necessary.

The standard penalty clauses would be incorporated so that the foregoing could be enforced against persons and vessels involved.

The Secretary would be required to enforce the general provisions mentioned above and all regulations he would promulgate.

Proposed regulations for Bridge-to-Bridge Radio, contingent upon the enactment of enabling legislation.

33 CFR—Chapter I

Subchapter O—Navigational Safety Radio

Part 148—Bridge-To-Bridge Radio for Navigable Waters of the United States

Sec.

148.01—Geographical scope
148.02—Application to vessels
148.03—Listening watch
148.04—Usage
148.06—Exemptions

148.01—The regulations in this part apply to all navigable waters of the United States inside the line dividing the high seas from inland waters, except the Great Lakes and their connecting and tributary waters.

148.02—Every power-driven vessel of 300 gross tons or over, every towing vessel of 26 feet or over in length, and every power-driven vessel of 65 feet or over in length carrying persons for hire shall, while underway, have on board a portable or installed radiotelephone transmitter and receiver capable of operating on the frequency of 156.65 Mc/s. This frequency is authorized by the Federal Communications Commission primarily for use between ships for the exchange of navigational information (including radar information) concerning the passage of ships, or as an at-the-scene aid in any maritime emergency.

148.03—A continuous listening watch of the authorized navigational information frequency shall be maintained at all times while underway on the waters prescribed in section 148.01 of this Part. The listening watch shall be assigned to a person who is fluent in the use of the English language. The duties of the person maintaining the listening watch need not be restricted to duties in connection with the radiotelephone, but may include other duties assigned by the master; however, such other duties shall not interfere with the effectiveness of the listening watch.

148.04—The radiotelephone equipment shall be available for immediate use by the master or pilot navigating a vessel to talk directly to the master or pilot of an approaching vessel as necessary to effect safe passage.

(Continued on page 214)

From Halifax Rescue:

The Canadian SAR Sector

By the R.C.A.F.

SAR Seminar papers from Canada, Germany, and IMCO as well as one by a Coast Guard Officer are condensed this month. This series is presented by the Proceedings *to spark interest in seeking solutions to the problems of multinational Search and Rescue. They do not, however, necessarily represent the official views of the Coast Guard.*

THE ROYAL CANADIAN AIR FORCE is responsible in Canada for coordinating all SAR operations involving aircraft or marine craft in distress, and for implementing Canada's agreements with the International Civil Aviation Organization for SAR standards and services. The Air Officer Commanding, RCAF Maritime Air Command, is responsible for the organization, administration and function of rescue services in the Canadian sector of the North Atlantic basin. This responsibility is exercised through the Rescue Coordination Center at Halifax, Nova Scotia.

Area

The Canadian area of SAR responsibility in the North Atlantic includes the coastal waters adjacent to the Canadian Coast, and the Gander Oceanic Flight Information Region. By agreement with the USCG, responsibility for the SAR Coordination of surface incidents in the Gander Oceanic FIR has been assumed by the USCG. It is expected that this agreement will be terminated in the near future, and the full SAR responsibility in the area for both air and surface incidents will be assumed by Canadian agencies.

SAR Facilities

The available SAR facilities may be divided into two groups, those suitable for short-range missions within about 200 miles of the coast, and those suitable for long-range oceanic missions. The short-range group includes aircraft of the amphibious SA–16 type, helicopters, and a large number of vessels of the type which normally operate in coastal waters. These include such ships as 95-foot Rescue Cutters, Icebreakers and Buoy Servicing vessels.

Aircraft

Normally Canadian long-range Maritime Patrol aircraft are used to meet Oceanic SAR requirements. These aircraft, the Argus, are four-engine landplanes with an endurance in excess of 20 hours, a cruise speed of about 180 kts, and a wide variety of radio and radar equipment including VHF, UHF and transponder homing devices. There is usually an Argus on patrol in or near the Gander Oceanic FIR, and one or more are always maintained on a short notice standby basis.

The Argus carry a droppable Sea Rescue Kit, which consists of two 20-man dinghies and several supply containers. The crews are briefed on SAR procedures, and carry the USCG publication "Aircraft Emergencies Over Water".

Ships

From an Oceanic viewpoint, primary SAR dependence must be placed on Ocean Station Vessels and those vessels whose positions are known via the AMVER system. Canadian Naval vessels are available for SAR duty, and very often there are one or more of these operating in the Gander Oceanic Area. The larger Canadian Government ships, such as the Icebreakers, normally operate only in Coastal waters but are suitable for dispatch on Oceanic SAR missions.

SAR Communications

From the viewpoint of the Oceanic Operator, communication with the Halifax RCC is normal. For aircraft operators, SAR communications may be passed via any Air Radio facility, normally Gander or New York OAC. The Halifax RCC has a direct hotline to Gander and Goose Bay Air Traffic Control Center, and access to the New York Center via COMEASTAREA or Moncton Center. Aircraft messages passed to Oceanic Station Vessels are relayed to the Halifax RCC via USCG networks.

From a marine viewpoint, SAR messages may be passed to any Canadian Marine Radio Station, or to any USCG radio. The Halifax RCC is linked via Telex with most of the applicable Canadian Marine Radios, while messages via USCG radios are passed through COMEASTAREA.

Halifax RCC has hotline telephone connections with COMEASTAREA, Coast Guard District One at Boston, and through bridges, with SAR and other agencies along the U.S. coast. By means of the NORAD telephone system Halifax RCC is able to contact all RCAF RCC's and the Joint RCC at Keflavik. Halifax RCC, through service teletype and commercial Telex, has contact with all RCAF RCC's, USCG RCC's, the Joint RCC Keflavik, and British RCC's.

When an aircraft or ship is in distress or missing Halifax RCC takes the following action, as appropriate:

(a) Carries out complete communication checks;

(b) Initiates "All Ships Broadcast";

(c) Requests AMVER, if necessary;

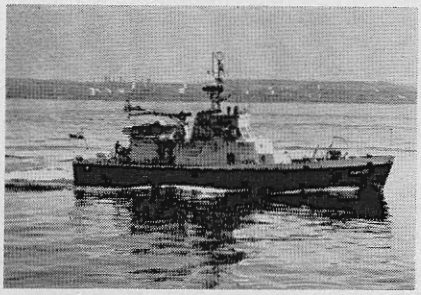
(d) Alerts necessary SAR units;

(e) Coordinates all SAR Operations;

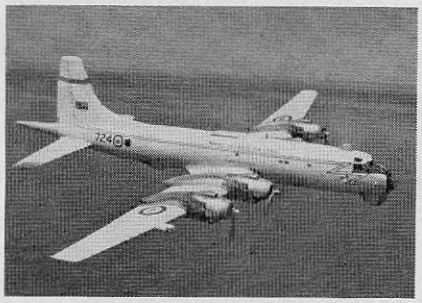
(f) Decides on search action or plan;

(g) Dispatches SAR aircraft or ships; and

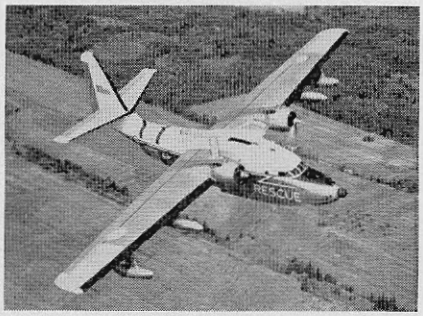
(h) Takes followup action as required. ⚓



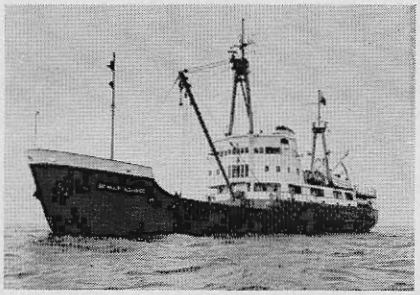
95′ Canadian Coast Guard Cutter.



The long range SAR RCAF Argus.



The Albastross—With Canadian markings.



A Canadian Coast Guard Buoy Tender and light icebreaker.

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RCAF Recommends on

Improving SAR Operations in Atlantic Basin

A LARGE NUMBER of agencies and nations participate in SAR operations in the North Atlantic area. While we all probably have the same basic objectives, the Basin is divided into national areas of responsibility, and most of the SAR incidents require action by only one nation. Accordingly, we have each developed our own individual and national SAR procedures and facilities, and insufficient efforts have been made to develop these on an internationally coordinated basis. Thus, when occasions do arise when we must work together on a major SAR incident, we find that we do not have adequate intercommunications facilities, nor do we have standard terminologies or procedures. This is a serious deficiency, and one which shows up particularly at the operating level—at the desk of the RCC Controller.

Example of the Problem

A good example of some of our deficiencies in the field of international SAR coordination occurred in 1963, when a Piper Apache aircraft ditched near Ocean Station "Bravo." This was in the Canadian area of SAR responsibility, and the Canadian RCC immediately dispatched SAR aircraft to the scene. The distress call had also been relayed to Greenland, and a Royal Danish Navy SAR aircraft was dispatched from Narsarssuak by the Danish authorities. This aircraft probably would have been the first to reach the distress scene. However, while enroute, it received a message saying that it was not needed, and it therefore returned to base.

The Canadian RCC had no knowledge of the fact that the Danish SAR aircraft had been launched, nor was it ever ascertained exactly who recalled this aircraft, which would have been a most welcome addition to the SAR forces involved. From an RCC viewpoint, we did not have sufficient information on the availability of the Danish facilities, nor did we have suitable facilities to communicate with the Danish authorities. These authorities did not know what we were doing, and we did not know what they were doing. There was no common understanding or agreed procedures to permit effective and efficient joint action in the event of intercommunication failure.

This incident points out the need for reliable and rapid communications facilities between SAR coordination agencies, and the need for standard operation practices.

Communications

The greatest single problem, and the greatest barrier to effective SAR operations on an international basis, is the lack of reliable and direct communications between the respective coordinating agencies. Some pertinent aspects to this problem are:

That the respective national agencies have not got together to decide and to state the exact lines of communication which are required for international SAR coordination. We have our own national lines of communication, but insufficient effort has been made to tie these lines together on an international basis.

We tend to use our own "Service" circuits too often, even though more direct commercial circuits are available. This is probably because of service regulations where the cost factor sometimes beclouds the efficiency factor. An example of the time difference involved is that a Telex commercial message from USCG Argentia to RCC Halifax has virtually no transit delay. A recent message, however, on Service circuits, was routed from USCG Argentia—USN Argentia Relay—USCG Washington Relay—RCN Halifax Relay—RCAF Halifax Relay—RCC Halifax. The transit time was 13 hours 19 minutes.

We do not publish sufficient information about our national SAR circuits which might be useful, on occasion, to adjoining SAR agencies.

Common SAR Plan

Closely associated with the need for improved communications, is the need for a common plan for international SAR operations. This plan should outline our SAR doctrine, specify the areas of responsibility, specify general coordinating and operating procedures, and detail the communication channels available for use. The plan should be relatively simple, yet sufficiently complete to ensure an understanding by all concerned as to who will do what in any SAR situation.

Standardization

The preparation of a common SAR plan for the North Atlantic Basin will automatically entail increased standardization of terminology, abbreviations, reports, and procedures. This is quite a broad area, but one in which great improvements can be made. The importance of this standardization is no doubt very apparent to all who have tried to decipher a SAR report without the benefit of the appropriate national key. ⚓

IMCO Calls for

Expansion of AMVER-like Information

POSITION-REPORTING arrangements for search and rescue purposes contribute substantially to safety at sea and, therefore, are of concern to all Maritime interests. The International Conference on Safety of Life at Sea (1960) adopted Recommendation 47 recommending that Contracting Governments should encourage all ships to report their positions when traveling in areas where arrangements are made to collect this position for search and rescue purposes.

The Maritime Safety Committee, at its sixth session (January 1963), considered this subject and decided to ask Member Governments operating such systems to submit details to IMCO for circulation and to recommend Member Governments to encourage the participation of their ships in such systems wherever they exist.

Following the decision of the Maritime Safety Committee, the Secretariat has received information from governments operating position-reporting systems and has circulated the information to Member States of the Organization. The Secretariat is currently engaged in the preparation of a booklet containing charts of the areas covered by each system, together with the necessary operational information as supplied by the governments concerned. The booklet will be sent to the governments concerned for comments and approval before being published.

It is thought that the Organization could help in disseminating information concerning the operation of such systems. The Maritime Safety Committee, which is the technical body of the Organization, could also serve as a forum for considering problems where international cooperation is needed for the successful operation of position-reporting systems for search and rescue purposes, for encouraging participation by ships in such systems, for extending the area of existing systems or setting up new arrangements and for disseminating information. ⚓

Speeding SAR Messages

North Atlantic Communications

Lt. John Secor, USCG (Ret)

THE DELETION OF MESSAGE precedence "EMERGENCY" over U.S. military circuits, which in the past was used for important Search and Rescue telecommunication message traffic, has resulted in message delays. The present authorized precedence for this type message is "IMMEDIATE" with a delivery time standard of between 30 and 60 minutes. In some instances many hours are required to contact remote sites. This delay in delivery is unacceptable in cases where lives and property are at stake.

Automatic routing/switching teletypewriter circuits have created a problem in that direct station to station contact is impossible. The ability to converse directly with those who have knowledge of a distress situation and/or to those in a position to take action cannot be overemphasized. Full-time private "Hotline," or teletype, circuits to overseas organizations that could assist in Search and Rescue is a solution, but impractical in view of cost versus use basis.

In an effort to solve some of these problems, TELEX has been installed and in use at Coast Guard Rescue Coordination Center, New York, since March 1962. Installations were also made at Argentia, Newfoundland, where the Coast Guard has an aviation rescue unit and radio station; and Coast Guard Base San Juan, P.R. Air Rescue Service, USAF Headquarters, Orlando, Fla.; Rescue Coordination Centers, Halifax, N.S.; Edinburg, Scotland; Plymouth, England; and virtually all major commercial radio stations have this equipment installed.

TELEX is an industrial term generally applied to commercial teleprinter service having direct-dial capability to subscribers. Arrangements for multi-calls, i.e., conferencing three or more stations via TELEX, were made by Commander, Eastern Area, and Western Union International. This feature allows simultaneous transmission of information from Rescue Coordination Center, New York, to cognizant organizations located overseas. Experience in several large-scale Search and Rescue operations involving a complex organization of combined U.S. Coast Guard, U.S. Navy, U.S. Air Force and forces of other nations has proven that the normal government landline facilities, though reliable, were incapable of rapid delivery of messages at certain times due to traffic load and propagation conditions. In many instances this resulted in unacceptable delivery times to key addressees. There has been a significant improvement in communication where direct TELEX connection has been established. This is based on actual experience during several major cases and by extensive teletype test messages conducted by Commander, Eastern Area, U.S. Coast Guard, to the same key addressees that had previously reported communication difficulties, utilizing existing Government landline circuits.

One of the most frequent uses of TELEX by Rescue Coordination Center, New York, other than transmitting AMVER SURPICS (AMVER Surface Pictures) to overseas Rescue Coordination Centers is when portions of distress or urgent radio messages have been intercepted by U.S. Ocean Station Vessels or Government and commercial radio stations. In several instances where the position or other information from the transmitting vessel could not be accurately ascertained, clarification has been quickly achieved by placing TELEX calls to European Shore Radio Stations to determine if the missing portion of the signals has been received. Situations such as these have been resolved in a very short time by the exchange of information between station operators.

An increase in Search and Rescue activities is expected in the North Atlantic. This statement is based on the yearly increase of cases involving small aircraft and yachts operated by nonprofessionals taking passage or flights to the Azores, Bermuda, or the Caribbean area. In order to conduct communication and harbor checks for overdue aircraft and yachts, an effective communication system must be established throughout these areas. A person or organization, e.g., local police, harbormaster, marina, or Local Pilot Association could be established as the contact-point and requested to conduct these checks on some of the smaller islands. If normal civil or military circuits are slow or nonexistent, utilization of a TELEX communication system (net) for the rapid exchange of important message traffic at a relatively low cost is worth investigating. ⚓

Germany Increases

Safety of Radiotelephone Equipped Ships

By the Federal Republic of Germany

CHAPTER IV (regulations 3 and 4) of the International Convention for the Safety of Life at Sea, 1960—as well as the Convention, 1948—leave it undecided whether cargo ships of less than 1,600 tons gross tonnage have to be equipped with a radiotelegraph or a radiotelephone station.

Resulting from the practice, nearly 99 percent of cargo ships of less than 1,600 tons are equipped with radiotelephone stations only, because this equipment is not only more economic but does away also with the need for a radiotelegraph operator.

Radiotelephone ships being navigated across the oceans are often unable for days to come in any contact with coastal stations or shipborne radio stations, because:

(1) the distances of the coastal stations are much longer than the normal range of radiotelephone transmitters of ships,

(2) only a few radiotelephone ships are crossing the oceans at the same time and moreover no fixed radio watch hours have been prescribed for these ships, and

(3) radiotelegraph ships as a rule are listening only on 500 kc/s and can be contacted only by means of this radiotelegraph frequency.

Therefore, in case of distress in the middle of the oceans, the probability is apparent, that the distress call of a radiotelephone ship on the international distress frequency for radiotelephony 2182 kc/s will not be heard.

The portable radio apparatus for survival craft (power output 2–6 watts) required by Regulation 13 of Chapter III is able only to release a distress alarm (on 500 kc/s) in close proximity (20 to 30 nm).

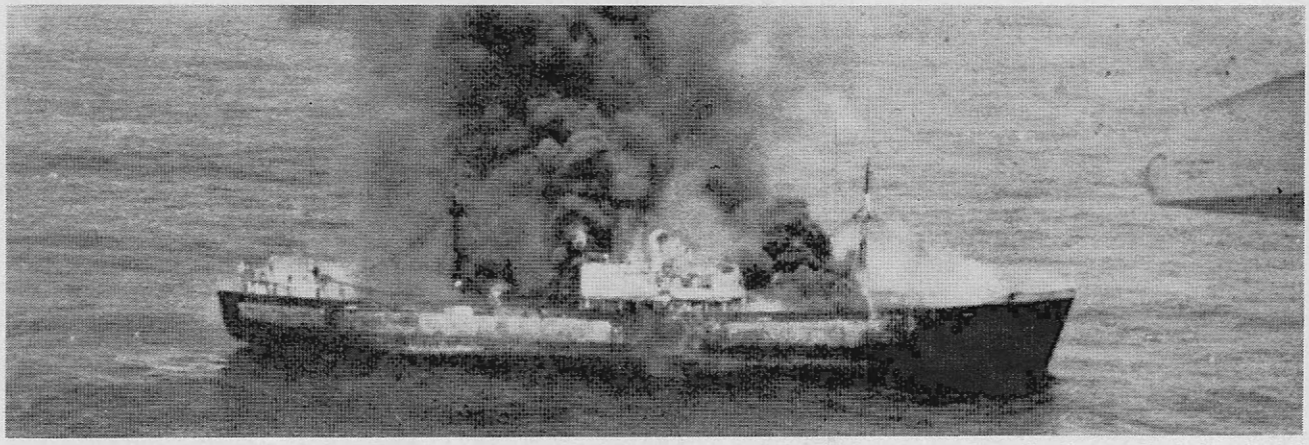
The emission of a distress message on HF by the portable radio equipment (8364 kc/s) will not ensure a distress message to be received and an immediate assistance to be started.

In order to improve the safety of radiotelephone ships less than 1,600 tons being navigated on transoceanic voyages, the following regulation has been introduced for German ships:

(*Continued on page 214*)

Lessons from Casualties

Similar Ships' Fires With Dissimilar Results; Good Damage Control Cited in One, Poor in the Other



THE TWO CASUALTIES that follow are drawn from very similar cases with respect to the type and location of fire. Unfortunately, for one, there the similarity ends, for the decisions on the part of those in command and the methods used differ radically—as did the respective outcomes. In one instance the vessel was forced to leave port and go to two additional ports before the proper equipment and personnel could be found to extinguish the fire. This fire burned for 6 days, yet the ship was saved. The other case involves a ship that suffered a similar casualty. Within less than 3 days this fire was under sufficient control so cargo discharging could be commenced, yet the damage was so extensive, the vessel was scrapped.

CASE NO. 1

GOOD JUDGMENT AND EFFECTIVE DAMAGE CONTROL

A recent case of a fire aboard a merchant ship in a foreign port points up the fact that adequately maintained equipment, when properly and judiciously used, means life rather than death to a ship. The fire aboard this particular vessel burned for 6 days during which time it was necessary to move her to two additional ports in an attempt to obtain suitable equipment to fully extinguish the fire.

During the late morning of the first day, the vessel was lying in a foreign port discharging grain from the deep tanks in number two hatch. At this time smoke was noticed coming out of the hatch from baled cotton stowed on the upper starboard 'tween deck. The general alarm was immediately rung. Fire pumps were placed on the line, and shoreside authorities were notified.

The crew turned to immediately and commenced manning the ship's firefighting equipment. Hoses were led to No. 2 hatch, and water was played into the hold. The density and volume of smoke increased rapidly, and it soon became apparent that the fire could not be extinguished through the use of firehoses alone. The master ordered the hatch battened down so that the ship's CO_2 system could be utilized.

While engaged in putting the pontoons in place, a messman observed someone fall headfirst into the hatch. The smoke was so dense that although he was only a few feet away he could not identify the person who fell. At the time, the messman was standing at the forward corner of the hatch on the port side assisting in guiding the next to last pontoon into place by pulling on one of the tag lines. The boatswain who was operating the winch from the winch platform directly forward of the hatch saw only a blur of movement. He was not able to discern what or who it was.

The remaining pontoon was not placed over the hold and a quick check of the crew was made. It was determined that a seaman was missing. The chief mate donned an O.B.A. and entered the hatch at the forward end via a ladder. The smoke was so dense he was unable to see his hands on the ladder as he descended.

He proceeded to search the deep tanks on his hands and knees feeling for the seaman. As a result of the length of his stay in the hold, he was in a nearly unconscious condition upon emergence. His efforts to locate the missing seaman proved negative.

By this time the local firefighters, medical corpsmen from a nearby military base, and a local doctor, all of whom were called as soon as the fire broke out, arrived. Foam and CO_2 were requested from shoreside facilities. Neither could be provided. There were no hoses long enough to reach from the shore to the pontoon wharf to which the vessel was docked; thus, any shoreside supply of foam could not be used. The only bottles of CO_2 available would not fit the vessel's system nor were there any accessible adapters which could be used.

The fire had intensified since its dis-

covery nearly 2 hours earlier. The doctor and a corpsman both gave their professional opinion that the missing seaman could not possibly be alive; consequently, the master ordered the hatch to be battened down. This was done, and all intake and exhaust vents were closed and covered with wet blankets to prevent any possible seepage of CO_2. No. 1 and No. 3 hatches were also battened down.

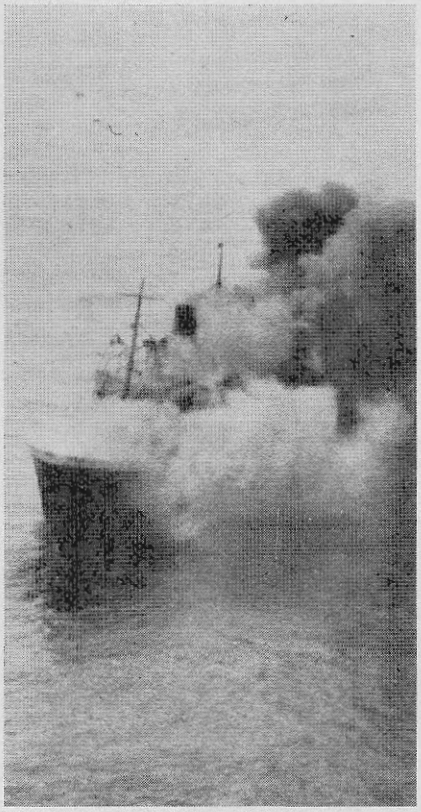
When the greatest possible closure had been effected, 1,100 pounds of CO_2 were released in the lower 'tween deck number two hatch. A half hour later 1,100 more pounds were released in the upper 'tween deck, and 1 hour later an additional 600 pounds were released. Water was also continuously played over the deck in the vicinity of number two hatch in order to keep the temperature as low as possible.

By the middle of the afternoon, the fire had not diminished. Considering the situation and lack of equipment for fighting the fire, the master decided to take his ship to a port with better firefighting facilities. The vessel departed, and all lifeboats were made ready for launching. Upon leaving port, prescribed amounts of CO_2 were released at regular intervals in the upper 'tween deck as recommended for the particular ship design. After being at sea for several hours, the crew was successful in lowering the deck temperature, and there was no evidence of the fire spreading to either number one or number three hold.

The ship arrived at the second port late in the afternoon of the second day of the fire. The fire was still contained by the periodic discharge of CO_2 and a cooling of the surrounding deck area with water. After a number of discussions with local civilian and military authorities, it was determined that, although there was a supply of foam available, there were no qualified personnel at the port to fight a fire of that nature. Consequently, upon completely replenishing the vessel's supply of CO_2, the master decided to sail to a third port for assistance. The vessel departed during the morning of the third day.

Late that night the vessel approached her third port with no change in the fire or the condition of the areas within which it was contained. The vessel was required by port authorities to anchor for the night, and two fireboats were sent alongside to assist throughout the night in a futile attempt to extinguish the fire.

By the morning of the fourth day, a large quantity of foam had been brought aboard, and extra hoses with fog nozzles had been rigged. Holes were cut in the weather deck directly



over the hottest spots and foam was pumped into the upper 'tween deck through the holes. Within an hour the intensity of the fire appeared to be greatly reduced. A pontoon was lifted from the hatch and shortly thereafter the missing seaman's body was sighted lying on the apron of the upper 'tween deck on the port side. The chief mate and chief engineer used O.B.A.'s and removed the body from the hold. In a short time, the fire had flared up, and it was again necessary to batten down the hatch. More CO_2 was released and the vessel proceeded into port. The fire was contained for the remainder of the day and night.

On the fifth day, numerous representatives of agencies and companies, including a special mining rescue squad, went aboard to discuss methods of extinguishing the fire. Additional quantities of foam, CO_2, and equipment were put on board.

By early afternoon of the sixth and final day all the necessary equipment was aboard, and the final bout with the fire commenced. Large quantities of foam were pumped into the upper starboard 'tween deck area. Within an hour the fire had diminished to a point where the hatch could be opened. This was done, and the chief mate, chief engineer, and special mining rescue squad entered the hold. The 'tween deck hatch was uncovered, and they began to unload the cotton. After extinguishing a number of flare-ups with foam, the fire was completely extinguished.

There is no way of telling how great a disaster was avoided by the excellent damage control work on this vessel. The vessel's equipment functioned well and continued to function after 6 days of continuous use, indicating excellent maintenance and state of preparation. There was only one minor malfunction: the release on the chief engineer's O.B.A. failed to function necessitating the release of air around the sides of the mask. Since damage causing this type of malfunction can be caused when stowing, when the mask is being demonstrated, or at any other time a mask is being handled, it is always a good safety measure to check the mask before entering a danger area where the mask is a necessity. In addition to the performance of the equipment used, the practices of those fighting the fire were of a high standard. The highest possible degree of closure was attained and maintained. Wet blankets were used as an additional aid in all cases where a possible seepage of CO_2 might exist.

The death of the seaman was determined to be a result of his fall; death was not a direct result of the fire. Death resulting from falling into hatches is only too prevalent under normal working conditions, and this case further indicates that one must always practice safety when moving about in the vicinity of hatches, especially under adverse conditions—in this case dense smoke.

CASE NO. 2

BAD JUDGMENT AND LACK OF EFFECTIVE DAMAGE CONTROL

A recent fire aboard a ship in a foreign port is indicative of the tremendous losses suffered when bad judgment is exercised, and a lack of effective damage control exists. In this case, the cost of repairs was so prohibitive, the vessel was scrapped.

This particular ship arrived in a foreign port to discharge a cargo of cotton. On the morning of the fire, a work gang boarded the vessel to commence welding padeyes on deck for bracing and shoring in the vicinity of Nos. 2 and 3 hatches. Later in the day, repairs were commenced on two small cracks, one in each forward corner of No. 3 hatch at the main deck. In order to facilitate this repair some burning was done to remove an access ladder at the forward end of the hatch. A fire watch was maintained at this time by two employees of the company doing the welding. The two men were sta-

tioned in the upper 'tween deck square. A fire permit had been obtained before the work was begun. The upper and lower 'tween decks both held household goods, and the cotton was stowed in the lower hold of No. 3 hatch.

After working throughout the day without incident, the work party left the ship. The forward pontoons of Nos. 2 and 3 hatches had been removed and were not replaced at this time. Shortly after nightfall a light snow began to fall, and the crew went on deck to replace the pontoons.

When the first crewman went on deck, he noticed smoke coming from No. 3 hatch. A fire was discovered in the cargo space. The crewman went to the bridge and sounded the alarm. Upon receiving word of the fire, the captain ordered the hatch closed and called the local fire department. The pontoons were replaced, and the hatch was covered with tarpaulins and wedged all around. This was accomplished without delay since the pontoon was already rigged for lifting, and the tarpaulins had been merely pulled back from the forward end of the hatch. The first assistant engineer discharged 800 pounds of CO_2 into No. 3 cargo space. Water from the firehose was directed on top of the hatch to prevent the tarpaulin from igniting. Shortly thereafter a fireboat arrived followed by the shoreside fire department.

After a short wait, a decision was made by the local fire department to open the hatch and attempt to extinguish the fire with foam and water because of the potential danger of the fire spreading to the grain dock. One pontoon was removed from the forward end of the hatch. Thick smoke was coming from the hatch opening; however, no flames were immediately observed. A foam apparatus was lowered, and the upper 'tween deck was sprayed with foam. Two more pontoons were removed and the firemen began descending to the upper 'tween deck.

The fire soon became more intense. Water was then directed onto the fire from the fireboat, from the ship, and from shore. In addition water was gravitated through the bilge system to No. 2 and No. 3 holds to assist in extinguishing the fire and to protect the fuel oil in the double bottom tanks. As the flooding commenced, the vessel began to acquire a gradual port list. In order to better facilitate the firefighting, several holes were cut in the main deck. Discharge of water into the space continued as the fire raged out of control.

Several hours later, the vessel suddenly heeled to starboard and took a 15° list. The captain ordered all flooding stopped as the list was increasing, and the fire was, at that time, somewhat under control. At about midnight the heat from the cargo fire ignited the paint on the forward bulkhead of the engineroom. The chief engineer notified the captain that there was dense smoke in the engineroom and danger of the fuel oil in the settling tanks igniting. Soon after midnight, the captain ordered the plant secured and the crew

out of the engineroom. A few hours later the vessel attained a maximum list of 18° to starboard.

The fire continued to diminish in intensity during the night and, by morning, was apparently under control. Arrangements were made to dry out the motors and other equipment which had been immersed in water during the firefighting operations. Tugs were employed to assist in pumping out the cargo spaces; and by evening, the vessel's list was diminishing. On the following day the list had decreased to 6°, and the vessel was towed to a different pier to discharge the still smoldering cargo.

Next month's issue of the Proceedings will be devoted to marine fire safety and marine fire extinguishing.

Water was continuously played over the cargo as it was being discharged, and the pumping operation was maintained.

Seven days after the outbreak of the fire, the cargo had been discharged and the vessel was towed to a yard for survey. Damage was severe. Deck plating, shell plating, bulkheads, deck beams, hatch girders, shell frames and other internals in number three cargo spaces were variously fractured or buckled. All wooden materials were nearly a total loss. The cargo was either completely destroyed or severely damaged by fire and water. The survey was made, and specifications were prepared for repairs but the cost was so prohibitive that the vessel was scrapped.

The captain's initial decision to close the hatch and use CO_2 to extinguish the fire was plausible and probably the correct move. However, the suggestion of the local authorities to open the hatch in hopes of quickly extinguishing the fire was probably unsound and should not have been accepted. The time element involved indicates that no attempt was made to determine the extent or intensity of the fire nor the possible alternatives and methods of fighting the fire. At the time the hatch was covered, dense smoke was coming from the hatch, but there were no visible flames. The proper solution should probably have been to move the ship to a safer location while attaining the greatest possible closure, using additional CO_2, and cooling the surrounding areas as much as possible. Instead, by opening the hatch and later cutting holes in the deck, the fire was given a source of air and draft which helped intensify the fire and render the CO_2 ineffectual. The engineroom bulkhead should have been cooled, and the greatest possible attempt should have been made to keep the plant operable. By shutting down the plant, the vessel's own firefighting and pumping capabilities were eliminated.

Stability was disregarded until the ship had taken on a 15° list. While it was probably necessary to flood the compartments to some extent in order to protect the fuel oil in the double bottom tanks, a more limited amount of water would probably have served the same purpose.

EFFECTIVE DAMAGE CONTROL PAYS AND SAFE PRACTICES AND CAUTION SHOULD ALWAYS BE EXERCISED ESPECIALLY UNDER ADVERSE CONDITIONS. EVALUATION OF THE PROBLEM AND GOOD DAMAGE CONTROL PRACTICES ARE NECESSARY BEFORE ATTACKING THE PROBLEM. ⚓

COMMANDANT'S ACTION

SS *Bunker Hill* Explosion, Sinking, Findings Approved

In the early morning hours of 6 March 1964 the tankship SS Bunker Hill, *navigating Puget Sound, was racked by an explosion and broke in two. In less than an hour the vessel sank with loss of life.*

After due consideration of the findings, conclusions, and recommendations of the Marine Board of Investigation convened to investigate the mishap, the Commandant has announced his action. It follows verbatim below.

TREASURY DEPARTMENT
UNITED STATES COAST GUARD

5 May 1965

Commandant's Action on Marine Board of Investigation; explosion of the SS *Bunker Hill* in Rosario Straits near Anacortes, Wash., on 6 March 1964

1. The record of the Marine Board of Investigation convened to investigate subject casualty, together with the findings of fact, conclusions and recommendations, has been reviewed.

2. At approximately 0402 P.s.t., on 6 March 1964, while the SS *Bunker Hill* was en route from Tacoma, Wash., to Anacortes, Wash., and in approximate position 48 degrees 23 minutes North, 122 degrees 45 minutes West, an explosion occurred in the No. 9 cargo tanks causing the vessel to break in two. In less than an hour, the vessel had sunk. Of the 31 persons on board, the master and 4 crewmembers who were in the midship house are missing and presumed to have been lost.

3. The SS *Bunker Hill* was a T–2 type tankship of 10,590 gross tons, 504 feet long, built in 1942 and certificated to carry Grade A inflammable and combustible liquids. The horsepower of the main propulsion machinery had been increased from 6,000 h.p. to 7,000 h.p. by an electrical modification to the main propulsion motor. To control corrosion in the cargo tanks, a combination of sacrificial magnesium anodes and a chemical wash system had been installed. The use of the chemical wash system had been discontinued; however, the special piping which had been installed had not been removed. It was described as being in a deteriorated condition and evidence was received that pieces of the deteriorated pipe had fallen in the tanks. Evidence was also received that the magnesium anodes were deteriorated and that the steel bolts which fastened their brackets to the supporting structure were wasted. Crewmembers testified that on occasion both anodes and brackets had been found in the bottom of the tanks and that others were loose and hanging by only one wasted bolt. The No. 7 cargo tanks across were fitted with magnesium anodes; the No. 8 cargo tanks across were fitted with the abandoned chemical wash system; the No. 9 port and starboard wing tanks were fitted with the chemical wash system while the No. 9 center had both magnesium anodes and the chemical wash system.

4. The following complement of licensed officers and crew was required by the Coast Guard certificate of inspection:

Master	1
Chief Mate	1
Second Mate	1
Third Mate	1
Radio Officer	1
Chief Engineer	1
First Assistant Engineer	1
Second Assistant Engineer	1
Third Assistant Engineer	1
Able Seamen	6
Ordinary Seamen	3
Firemen/Watertenders	3
Oilers	3
Subtotal	24
Other persons could be carried as crewmembers	20
Persons could be carried in addition to the crew	4
Total	48

When the vessel departed Tacoma, Wash., it was manned as follows:

Licensed personnel	
Master	1
Chief Mate	1
Junior Third Mate	1
Chief Engineer	1
Assistant Engineer	1
(Night Engineer Hammer)	
Subtotal	5
Unlicensed personnel	
Able Bodied Seamen	7
Ordinary Seamen	3
Oilers	2
Firemen/Watertenders	3
Other persons	11
Subtotal	26
Total	31

5. The last cargo carried by the *Bunker Hill* was:

Tank No.	Port	Center	Starboard
Deep tanks.	Diesel oil	No tank	Diesel oil.
No. 1	do	do	Do.
No. 2	do	Gasoline	Do.
No. 3	Kerosene	Kerosene	Kerosene.
No. 4	Gasoline	Gasoline	Gasoline.
No. 5	do	do	Do.
No. 6	Heavy fuel oil.	Heavy fuel oil.	Heavy fuel oil.
No. 7	Gasoline	Gasoline	Gasoline.
No. 8	do	do	Do.
No. 9	do	do	Do.

6. Having discharged the last of the cargo, the *Bunker Hill* departed Tacoma, Wash., at about 2330 P.s.t., 5 March 1964, for Anacortes, Wash., a distance of about 86 miles and a run of about 6½ hours. The draft was 2 feet, 6 inches forward and 19 feet, 6 inches aft. The No. 6 center tank was ballasted.

7. On the bridge, the master and junior third mate were in charge of the navigation of the vessel and would remain on watch until it arrived at Anacortes. The night engineer who had assumed the engineroom watch at 1700 on 5 March 1964 was in charge of the engineroom and was to remain on watch until 0800 on 6 March 1964. He had stood a similar 15-hour watch the night before. The only regularly assigned licensed engineer on board was the chief engineer who was in his room and available in the event of an emergency.

8. On deck, the chief pumpman and two seamen under the direct supervision of the chief mate were cleaning certain cargo tanks and associated piping. It was not intended to gas-free the tanks but only to prevent contamination of the next cargo. The No. 1 tanks were stripped into the bilges of the forward pumproom and the residue pumped overboard. Cargo tanks 2 across, 3 across and 9 across were each given an approximate 10-minute cold water wash by inserting a 2½-inch hose through the ullage opening. The water and residual cargo was pumped overboard through the after pumproom sea chest. Several of the on-deck cargo lines were drained directly onto the deck, and the product in them permitted to run overboard. When this work was completed at approximately 0300, the chief mate released the two seamen, and he and the chief pumpman remained to complete the operation. The final cleaning of the tanks was accomplished by using a gas exhauster to draw liquid and vapor from the tank by its cargo suction line and discharge line. The two men working together applied the gas exhauster for about 5 minutes to each of the nine tanks which had been water-washed. When this was completed, the chief mate secured the gas exhauster and the chief pumpman the valves and stripping pumps in the after pumproom. While the chief pumpman was preparing the after pumproom to receive the next cargo, the chief mate entered the after pumproom to seal the sea valves and left, presumably to go to his room. The chief pumpman completed his work and left the after pumproom at about 0350.

9. A few minutes before 4 o'clock, the unlicensed deck and engineroom watch standers were relieved. On deck, all work had ceased and the relieved lookout and helmsman had returned to the after deckhouse. Evidence was received that some of the ullage covers were opened and one flame screen had not been inserted. The vessel was proceeding at about 15 knots on a northerly course in Rosario Straits expecting to arrive at Anacortes at about 0600. Due to the vessel's light load condition and the speed it was making in calm water, it experienced severe vibration. All operating equipment and machinery was functioning normally.

10. At about 0402, a violent explosion occurred in the way of the No. 9 cargo tanks. The vessel broke in two along a diagonal line between the after end of the No. 9 port wing tank and the forward end of the No. 9 starboard wing tank. The forward portion of the vessel veered to port and immediately started settling by the after end. As soon as the first violent explosion was over, the lookout who was on the bow went into the rope locker below and obtained a life preserver. By the time he started back up the ladder to the foc'sle head the after portion of the bow section had settled in the water sufficiently that the deck was at an angle of about 45° to the horizontal. As the lookout completed putting on his life preserver, a second violent explosion occurred in the No. 4 center tank, and fire engulfed him. He testified that he does not know how he got off the burning vessel but remembers surfacing in water covered with burning oil. He was able to swim out of the fire area and was rescued by a helicopter approximately 45 minutes later.

11. Following the explosion, the night engineer on watch in the engineroom slowed the main propulsion turbine and left the engineroom. He stated that because the emergency lighting had come on, the 440 volt, 400 KW generator circuit breaker must have tripped, stopping most of the electric motors including the main and auxiliary circulating pumps. The night engineer was followed out of the engineroom by the fireman/watertender who, prior to leaving the engineroom, had secured the blowers and fuel pumps to the boilers. The oiler telephoned the chief engineer and remained in the engineroom until the chief engineer arrived. At this point, water was entering the engineroom through the bulkhead which separates it from the after pumproom. The chief engineer ordered the oiler out of the engineroom, and after a quick inspection to assure that there was no one left in the engineroom and that the machinery was in a safe condition, left the engineroom.

12. On the after portion of the vessel, crewmembers attempted to launch the starboard lifeboat. In the darkness someone inadvertently released the inboard gripes first. The increasing starboard list created a hazardous situation for anyone attempting to release the outboard gripes, and the port lifeboat was lowered. While being lowered, the boat was flooded, reportedly by water coming out of the overboard discharge from the main condenser. Thus, the boat was in a swamped condition when it left the side of the ship. Seven crewmembers remained on the after portion of the vessel, and the remainder abandoned the ship either by entering directly into the water or by means of the lifeboat.

13. The explosion of the *Bunker Hill* was observed by Navy men in the Naval Air Station control tower at Ault Field, Whidbey Island about 5 miles away. Rescue operations were immediately initiated, and within 45 minutes all survivors were rescued. Four men were picked up by a Coast Guard helicopter and the remaining 22 men by a Navy crash boat.

REMARKS

1. Concurring in the Board's conclusions, it appears that the explosion occurred in way of the No. 9 tanks; that the source of ignition was due to a magnesium anode or a piece of the chemical wash pipe falling in the tank; and that the application of the gas exhauster lowered the petroleum vapor-air concentration to the critical range for explosion. The Board's recommendation that magnesium anodes be removed from tank vessels is also concurred in. The regulations for tank vessels have been amended to prohibit the installation or use of sacrificial anodes of a type capable of producing an incendive spark as the result of falling in tanks used for the carriage of inflammable or combustible liquids.

2. Further concurring with the Board, there is evidence that the *Bunker Hill* violated the oil pollution acts. However, the record does not support the conclusion that violations of the oil pollution acts are widespread on tankships and that scant heed is being paid to the provisions of these acts. There are, no doubt, incidents such as this where violations occur. In order to reduce the number of such incidents the program for the enforcement of the oil pollution acts has been under study for sometime. The Coast Guard is continuing its study of the many problems involved in the subject of oil pollution in the United States and in international waters and will continue to consult with the Oil Pollution Panel to the Merchant Marine Council and with the American Petroleum Institute in this regard.

3. The Board's conclusion that the main and auxiliary circulating pumps were not operating after the initial explosion tripped out the 440 volt AC power, and that despite this, water from the overboard discharge flowed into the port lifeboat when it was launched, requires considerable qualification. The main condenser overboard discharge is located more than two feet above the main condenser. Since the vessel took an almost immediate starboard list, it must be concluded that the only possible way for water to flow out of the main condenser overboard discharge in sufficient quantity to flood the lifeboat was for the main circulating pump to have been operating. The possibility exists that the water which flooded the boat drained from the six-inch overboard discharge of the main propulsion generator air coolers and other auxiliaries. There is also a remote possibility that it may have drained from the high sea suction. With this type of vessel in the full load or fully ballasted condition without any appreciable list, the main condenser overboard discharge should be just below the surface of the water. When the vessel is in a lighter load or ballast condition, it is possible for the main condenser overboard discharge to enter the forward end of No. 4 or the after port lifeboat when the lifeboat is alongside after having been lowered to the surface of the water. Present Coast Guard regulations for new construction do not permit such a situation; however, existing vessels built during World War II were not prohibited from having overboard discharges in way of lifeboat locations. Normally, it is assumed that under abandon ship conditions, with the main condenser discharge above the water surface or with the vessel being listed to starboard, the main and auxiliary circulating pumps would be shut off to prevent discharging water into No. 4 lifeboat. There is insufficient evidence in the record to show exactly what did happen during the lowering of No. 4 lifeboat. In view of the above, a change in the regulations at this time to require alteration of the overboard discharge arrangements of existing vessels is not felt to be justified. No problem is deemed to exist except under abandon ship conditions wherein the main circulating pump has been left running instead of having been secured. The forward boats are customarily used at sea for other boat operations such as transfer of personnel and rescue purposes.

4. The Board's conclusion that the *Bunker Hill* was inadequately manned with licensed officers, both deck and engineering, for an 86-mile voyage from Tacoma to Anacortes is concurred in. This cannot be equated with shifting a vessel from pier to pier in a harbor. The statute, 46 U.S.C. 222, states that no vessel shall be navigated unless she shall have in her service and on board such complement of licensed officers and crew as may in the judgment of the Coast Guard be necessary for her safe navigation. The applicable regulation, 46 CFR 31.15–1(a), places the responsibility for the determination of such minimum safe manning upon the Officer in Charge, Marine Inspection, who inspects the vessel. The prescribed crew shall be entered in the Certificate of Inspection but may be changed from time to time by endorsement on such certificate by the Officer in Charge, Marine Inspection, by reason of change of conditions or employment. In this case, since the vessel was frequently employed on short voyages between ports in the Puget Sound area, the master, owner or agent could have requested an amendment to the certificate to allow a somewhat reduced complement for an operation of this nature. When a vessel certificated for an ocean route is operating on a short, domestic inland voyage, it seems reasonable that the same standard of manning should not be required. Additional study of this matter will be made, looking toward a practical solution to this apparent inequity.

5. The Board commented on the practice of the fireman/watertender and the oiler relieving each other for supper when at sea and recommended that this practice not be condoned. Sufficient personnel are required by the Certificate of Inspection to be on board to provide an adequate watch for usual at-sea steaming conditions. The specific assignment and utilization of such personnel is within the responsibilities of the chief engineer and the licensed engineer watch officer. Dependent upon conditions at the time, the watch officer may permit watch personnel to depart the immediate engineroom while still controlling him by placing time limitations on his absence and by controlling the areas to which he may go. Thus, when conditions in the engineroom are normal it appears reasonable that he permit the normal watch one at a time to depart for the evening meal. When conditions are such in the engineroom that all watch personnel must be on duty, the chief engineer would have to arrange a relief method to permit the watch to eat, using other watch personnel or day workers to effect the relief.

6. The Board's conclusion that the radio officer should have been on board and standing watches for all port-to-port transits in Puget Sound has been considered. Although the radio officer is required by the certificate of inspection, he is in fact required "second-hand"; his actual presence being required by the Federal Communications Commission. As prescribed by 47 U.S.C. 351, the Federal Communications Commission requires a radio officer on a vessel of this type when it is being navigated in the open sea outside a harbor or port. In the instant case the boundary line between inland waters and international waters as described in 33 CFR 82.120 constitutes the line of demarcation.

7. The Board's recommendation that the regulations be amended to provide for stowage of the portable radiotelegraph apparatus in the after deckhouse on tank vessels is in accordance with Regulation 13, Chapter 3 of SOLAS 1960. The rules and regulations for tank vessels (CG–123) are being amended to comply with the Convention which will become effective on 26 May 1965.

8. The Board's recommendation that a regulation be promulgated to require that life preservers be available to personnel who perform duties in locations where it would be difficult in an emergency for them to return to their quarters to procure a life preserver is concurred in. Since the bridge and engineroom watches are already provided for in the regulations, the matter of providing the lookout with a life preserver will be referred to the Merchant Marine Council for consideration.

9. The Board's comments concerning the organization and training of the crew in emergency procedures is not entirely concurred in. When consideration is given to all the circumstances involved, it appears remarkable that there was no greater loss of life. Because the Maritime Administration has been involved in the past with the training of merchant marine personnel, a copy of the Board's report will be forwarded to the Administrator for such action as he considers to be appropriate. The Coast Guard will review existing requirements for merchant vessels to hold emergency drills and will consider appropriate revisions to raise the standards of competence of merchant marine personnel in such drills.

10. The Board's recommendation that the instrumentation of tank vessels be radically improved so that the vapor conditions inside cargo tanks can be quickly determined and continuously monitored is approved to the extent that explosimeters (combustible gas indicators) are now required on all manned U.S.-flag tank vessels.

11. Subject to the foregoing remarks, the record of the Marine Board of Investigation is approved.

W. D. SHIELDS,
Vice Admiral, U.S. Coast Guard,
Acting Commandant.

MARITIME SIDELIGHTS

NOW A REALITY: COAST GUARD EXTENDS AMVER TO PACIFIC

The Coast Guard's Automated Merchant Vessel Reporting program (AMVER) has been extended to the Pacific Ocean area. AMVER, a voluntary, position-reporting program for ships at sea, has been in effect since July 1, 1958. The announcement of the extension was made at a luncheon in San Francisco July 12, 1965 attended by the Honorable James A. Reed, Assistant Secretary of the Treasury, Adm. E. J. Roland, Commandant, U.S. Coast Guard, Rear Adm. C. C. Knapp, Commander Western Area, U.S. Coast Guard, and leading members of the west coast shipping industry.

Previously, AMVER coverage included the most heavily traveled areas of the North Atlantic, South Atlantic, Gulf of Mexico, the Caribbean, and the North Sea. Now the system will include the many thousands of ships which ply the Pacific.

Headquarters for the Pacific phase of the AMVER operation will be in San Francisco. However, its major nerve center will continue to be in New York City.

Functioning of AMVER depends on a string of U.S. Coast Guard and Navy radio stations around the world which receive periodic reports from ships at sea giving their locations, course and other data of interest to AMVER. Now, radio stations in the Pacific Ocean area have been added to the AMVER network.

It is a relatively simple procedure for ships in the Pacific to participate in the AMVER program. For example, a ship departing San Francisco bound for Hawaii will send a message to one of the west coast stations, giving the ship's name, call sign, position, date and time, sailing route, speed, destination, and the estimated time of arrival.

The information will be relayed by teletype to the AMVER center in New York and entered into the electronic computer for plotting. If, somewhere in the Pacific, a crewman is seriously injured and requires medical attention, the ship radios one of the radio stations in the Pacific and asks for help. This request is transmitted to a Rescue Coordinator who then asks the AMVER Center at New York for a Surface Picture, listing ships carrying medical personnel in the area of emergency. Within a few minutes, AMVER's computer would have the list ready for transmittal to the rescue coordinator who would relay the information to the ship requiring help.

Upon receiving the Surface Picture or SURPIC, as it is called, the ship's captain would be able to determine which of the ships in his vicinity is in the best position to help. He may then call the ship with a doctor on board and discuss the case with him. Sometimes such medical advice is all that is needed. However, where the situation is more urgent, the ships can arrange a rendezvous and the patient is transferred to the ship with medical facilities.

In essence, AMVER is an adaptation of modern electronic and communications techniques to the requirements for search and rescue. To date, more than 8,000 vessels of nearly all nations have participated voluntarily in the program, and the number is rising steadily. ⚓

TOP HIGH SCHOOL STUDENTS TASTE ACADEMY LIFE

From 30 June to 3 July, 151 young men from high schools around the country visited the Coast Guard Academy. The occasion was the annual Academy Activity Week, sponsored jointly by the Coast Guard Auxiliary and the Coast Guard League. The boys, selected from among high-ranking students in the 10th and 11th grades, were sent to the Academy so they could experience something of the cadet's life and become better acquainted with the Coast Guard. The expenses of 139 were paid by Auxiliarists from their home towns, and those of the remaining 12 by the League. The students this year ate and slept at the Academy, following much of the routine of a fourth-classman. Local Auxiliarists and members of the League have become increasingly interested in the program. ⚓

SURFACE-EFFECT SHIP STUDIED BY MARAD

An extension of research work on the feasibility of surface-effect ships, and their possible use as part of the U.S. merchant marine has been approved by the Maritime Administration, U.S. Department of Commerce. The surface-effect ship is a craft which rides on a cushion of air trapped beneath the hull, enabling it to skim over land or water.

Two tasks are to be accomplished under terms of the approved extension. The first is a study of the economic potential of the captured air bubble (CAB) surface-effect ship. The captured air bubble modification of the basic surface-effect concept operates by trapping the air beneath the vessel, resulting in greater efficiency. In this phase, the probable economic environment in which CAB ships will have to compete with other forms of transport in the next 10 to 12 years will be explored.

As part of the first task, comparisons will be made between the CAB craft, advanced automated displacement ships, and large cargo planes as to rate relationships, service characteristics, and volume limitations and opportunities.

The second task will include a study of the CAB system as a whole, as well as the principal individual components such as the main powerplants, transmissions, fans, and the ship system structure and material. Other work to be done as part of the second phase of the extension will be an analysis of experimental work required, a study of techniques or developments peculiar to CAB ships or necessary for success, and a determination of cost effectiveness of CAB ships compared to costs of competing modes of transport.

The Maritime Administration's research on surface-effect ships dates to December 1961, and includes development and testing of a two-man model. ⚓

TANKER CREWMEN RECEIVE TOP SAFETY AWARD

The highest official honor for industrial seagoing tankers has been awarded to the captain and crew of the *Esso Miami* of Humble Oil & Refining Co.

Capt. William N. Sims, master of the tanker, accepted the award, which was presented to the captain and crew of the *Esso Miami* for their part in fighting a fierce shipboard blaze at Philadelphia late last year. The presentation was made by Rear Adm. Louis M. Thayer, commander of the Seventh Coast Guard District, on behalf of the Marine Section of the National Safety Council and the American Merchant Marine Institute, sponsors of the award.

The award to the *Esso Miami* was based on events of last December 15, when the tanker was anchored in Mantua Creek, Philadelphia, discharging gasoline into a barge alongside. Fire broke out on the barge, followed by an explosion which rocked the tanker and enveloped her starboard side in flames. Despite the serious nature of the blaze and the great danger to all hands, there was no panic. Preestablished safety procedures were carried out. At the general alarm, the crewmen manned fire stations and fought through smoke and intense heat in the engineroom to start the fire pumps and foam system.

The master and chief engineer agreed that the ship should be got underway and turned, to change the angle of the wind, which was sweeping the fire across the vessel. This was successfully accomplished. Within 90 minutes, the fire was extinguished and the ship and crew had been saved. ⚓

NEW SHIP DESIGNS POLICY PROPOSED

Establishment of new policies on new ship designs and changes under contract on ships built with construction-differential subsidy are being considered by the Maritime Subsidy Board and the Maritime Administration.

The Board is continuing its study of standardized ship designs and the desirability of thereby optimizing the number of ships which can be constructed with shipyard subsidy funds, by putting relative emphasis in the replacement program upon the construction of the most economical ships. ⚓

SINCLAIR SUPERFLAME HONORED FOR RESCUE

A dramatic feat of rescue at sea by an American-flag tanker of the Sinclair Refining Co. has been honored with the awarding of the Ship Safety Achievement Citation of Merit to Capt. John H. Rose, Master of the *Sinclair Superflame* by Rear. Adm. I. J. Stephens, Commander of the U.S. Coast Guard's Third District and Eastern Area. Admiral Stephens made the presentation on behalf of the award's joint sponsors, the Marine Section of the National Safety Council and the American Merchant Marine Institute.

The *Sinclair Superflame* earned her citation on February 28–29, 1964, in the course of a stormy coastwise voyage from Houston, Tex., to Charleston, S.C. About 350 miles west of the tip of Florida, early in the evening of the 28th, her lookout spotted a light flashing to the northward. Course was altered, and the 61-foot *Helen Lee* of Tampa was found in distress. Her master requested immediate removal of himself and his crew.

Although the loaded 450-foot tanker was taking green seas across her well deck, driven by a force 6 wind, Capt. Rose maneuvered her alongside the fishing boat and succeeded in transferring its entire crew, without injury. After standing by the derelict *Helen Lee* until she capsized, he proceeded with the rescued men to Charleston, the weather being too rough to permit their being put ashore at Key West.

Host to the ceremonies on board the *Sinclair Superflame* was Wendell N. Damonte, Sinclair's Vice President and Director of Marine Operations, and a member of the Board of Directors of the American Merchant Marine Institute. The Marine Section, National Safety Council, was represented by its General Chairman, Capt. George E. Buxton of the New York Shipping Assn. ⚓

SINCLAIR SUPERFLAME CAPTAIN RECEIVES RESCUE AWARD

From left to right:

Captain John F. Thompson, USCG, Officer in Charge Marine Inspection, Philadelphia;
Captain George E. Buxton, Representing the Marine Section of the National Safety Council;
Captain John H. Rose, Master of the SS *Sinclair Superflame;*
Mr. Wendell N. Damonte, Vice President and Director of Marine Operations Sinclair Oil Corp.;
Rear Admiral I. J. Stephens, USCG, Commander 3rd Coast Guard District and Coast Guard's Eastern Area;
Mr. C. Bradford Mitchell, Director of Information Bureau far American Merchant Marine Institute.

MARAD ANNOUNCES U.S. FLEET FIGURES

There were 910 vessels of 1,000 gross tons or more in the active oceangoing U.S. merchant fleet on June 1, 1965, more than the number active on May 1, according to the Merchant Marine Data Sheet released by the Maritime Administration, U.S. Department of Commerce.

There were 21 Government and 889 private ships in active service. ⚓

CG ICEBREAKERS ESCORT FIRST SUPPLY SHIP INTO THULE

The Coast Guard Icebreaker, *Westwind,* in company with her sister ship, *Eastwind,* recently escorted the first supply ship of Supply Northeast Command, (SUNEC) 1965 into Thule Greenland.

When the USNS *Sergeant Morris E. Crain* docked at the U.S. Air Force Base in Thule, she became the first cargo ship in that harbor since last September. The *Westwind,* under the command of Capt. F. A. Goettel, USCG, and the *Eastwind,* under the command of Capt. B. R. Henry, USCG, met the *Crain* in northern Baffin Bay the night of July 3 and provided close escort through 325 miles of ice-filled arctic waters until the three ships arrived at Thule.

Thule Air Force Base, which is located only 800 miles from the north pole, demands an entire fleet of Military Sea Transportation Service resupply ships each year. All of these ships must reach Thule during the short summer season and each ship must be escorted through mass fields of polar ice by one of the Coast Guard or Navy icebreakers which is regularly assigned to this duty. Escorting the thin-skinned cargo ships and tankers through the ice is a task which requires the most exacting seamanship and ship handling skill, both in the escorting and in the escorted vessels.

The *Crain* brought to Thule much needed supplies and the good wishes of the entire Military Sea Transportation Service. ⚓

AMVER COM CHECK WITH EARLY BIRD

The U.S. Coast Guard this summer combined the facilities of an electronic computer and a space satellite (Early Bird) to run a communications test that may foretell the future of search and rescue message transmission.

At 10 a.m. on June 10 the Coast Guard AMVER (Automated Merchant Vessel Report) Center set its computer to work predicting the locations of ships in the area of a simulated emergency in the Atlantic about 300 miles off the English Channel. Seven ships were found to be within a 100 mile radius of the simulated distress position. The ships' names, positions, courses, speeds, and other important data was immediately sent via the Early Bird Satellite to the Rescue Coordination Center in Plymouth, England, who, if the emergency were real, would be the coordinator of the rescue efforts. ⚓

N.Y. RESCUE PHONE NUMBER CHANGED

For faster service the U.S. Coast Guard's new direct dial emergency phone number in New York City for search and rescue assistance has been changed to 264–5621.

Persons calling for help outside the city merely precede the new number by dialing the New York area code 212.

Inauguration of the new number marks the inclusion of the Coast Guard with many other Federal agencies in New York in the General Services Administration's Centrex System. Centrex is geared to bypass switchboard operators and go direct to the party being called with a resultant saving of time and money.

By calling the 264–5621 number, persons requiring emergency marine assistance for themselves or for others, will be in immediate contact with the Third Coast Guard District Rescue Coordination Center. ⚓

SEA LANES STUDY SET IN NEW YORK

The U.S. Coast Guard has formed a committee in New York to study the establishment of sea lanes offshore in the approaches to New York. Consideration will be given to traffic patterns east and west along the coast of Long Island and also along the coast of New Jersey going north and south to and from New York.

The 1960 Safety of Life At Sea Convention, which became effective on May 26, 1965, establishes the obligation on the part of signatory nations to insure safe routes to be followed in converging vessel traffic areas in the North Atlantic Ocean.

Adm. Edwin J. Roland, USCG, the Commandant of the Coast Guard, stated in a speech to the Marine Society of New York on January 11, 1965, "The Coast Guard, with its statutory responsibility for safety of life and property at sea, plans to pursue this matter in an effort to make vessel traffic safe at the approaches to our major ports."

Rear Adm. Irvin J. Stephens, USCG, the Commander, Third Coast Guard District, New York, convened the committee to study the problems with respect to sea lanes and appointed Commodore John W. Anderson, of Tenafly, N.J., who was formerly the master of the passenger liner *United States,* as chairman. Active committee members include representatives of the Coast Guard, Corps of Engineers, Coast and Geodetic Survey, American Merchant Marine Institute, United New York, New Jersey, Sandy Hook Pilots Association and other marine interests. ⚓

MARAD SETS OIL POLLUTION STUDY

A research contract has been awarded by the Maritime Administration to undertake a program into a means of rapid and automatic determination of oil pollution in water. This investigation is being carried out in order to provide ship operators a means of meeting the requirements of the International Convention on Prevention of Pollution of the Seas by Oil, which forbids the discharge in certain areas of persistent oil and oily residues.

When the United States ratified this convention in 1962 by passing Public Law 87–167, the Maritime Administration initiated a research effort to develop means of satisfying the discharge prohibition.

The first area of interest was the development of an effective marine oily water separator which would allow our ships to discharge oil-free bilge and ballast water. This effort has advanced from the laboratory phase to the present construction and test evaluation of a full-scale land-based prototype. This unit will be the basis for engineering specifications which will eventually be made available to the marine industry.

The current effort in the fight to clear the seas and coastlines of oil pollution is to provide the ship operator with a means of monitoring overboard discharge of ballast water which may contain oil. This instrumentation system will also provide the regulatory agencies a means for implementing the enforcement of antipollution laws.

The research is to be completed within one year at a cost of $44,100. The end product of this effort will be a prototype unit that will be fully tested and evaluated, and the production specifications for the competitive manufacture and supply of an effective system to monitor and police contamination of the world's water by oil discharge from ships. ⚓

UNITED STATES LINES WINS SANITATION AWARD FOR THE NINTH YEAR

For the ninth successive year, the United States Lines has won the Public Health Service Special Citation for the excellent sanitation of the Superliner *United States* and the company's cargoliner fleet during 1964.

The award certifies that the company's fleet has received a sanitation rating of 95 or better on official Public Health inspections involving 166 separate items of sanitary construction, maintenance, and operation. ⚓

nautical queries

DECK

Q. What factors must be considered in determining the length of cargo winch falls?

A. The distance from winch to heel block, the length of the boom, the distance from the gin block to the lower hold with the boom in its highest or furthest outboard position are basic factors to consider. Other factors to be considered are: is the fall to be used doubled up; or for "breaking out" cargo from the remotest section of the lower hold. The fall should be sufficiently long that in the position where it is paid out as far as necessary for cargo operations, a few turns will remain on the drum.

Q. What logbook is required by law to be kept on every vessel making voyages from a port in the United States to any foreign port, or, being of the burden of 75 tons or upward, from a port on the Atlantic to a port on the Pacific, or vice versa?

A. Every vessel making voyages from a port in the United States to any foreign port, or, being of the burden of 75 tons or upward, from a port on the Atlantic to a port on the Pacific, or vice versa, shall have an official logbook.

Q. Describe the four methods which may be employed to prevent rat infestation of a vessel.

A. The control of rats to prevent the development of gross infestation is based on four general measures:

(1) Keeping them from getting aboard.

(2) Ratproof construction, maintained in good condition.

(3) Keeping all food protected and avoiding accumulation of food scraps, thus "starving out" the rodents.

(4) Killing them by trapping, poisoning, or through expert fumigation by authorized agencies.

Q. Why is it that though a vessel may be equipped with a gyrocompass, an accurate check is kept on the deviation of the magnetic compass?

A. The gyrocompass is a mechanical apparatus, subject to mechanical and electrical breakdowns, and dependent upon a constant source of electrical power. Therefore there always exists the possibility of needing the magnetic compass.

ENGINE

Q. Explain how you would shut down an auxiliary turbine if you found a badly overheated bearing.

A. If a turbine has to be shut down due to an overheated bearing it should be slowed down but kept turning over at a low speed until the bearing and journal have cooled sufficiently. Otherwise the bearing metal will freeze to the shaft and make repairs much more difficult.

Q. What is the procedure, with respect to a geared turbine vessel, when coming to a stop and the orders are to stand by for an indefinite period, being ready to get under way within 15 minutes.

A. 1. Open the recirculating valve from the deaerating feed tank to the condenser. It may also be necessary to open the recirculating valve from the main air ejector to the condenser.

2. Secure the first stage of the air ejector and maintain vacuum as obtained from the second stage.

3. Maintain lubricating oil at the required temperature.

4. Crack turbine and throttle drains.

5. Slow down main circulating pump to supply a flow of water just sufficient to maintain desired vacuum.

6. Engage turning engine and keep turbine rotor turning continuously.

The above can be accomplished in any sequence.

Q. Explain how a single labyrinth gland may be refitted after it has become worn.

A. The single labyrinth packing gland consists of one or more metallic rings which are loosely supported by a shoulder in the packing chamber. Each ring is composed of three or more equal segments which are held together by a garter spring. One of the segments is provided with a stop to prevent the ring from rotating. When first assembled each ring is so machined that the tips of the saw tooth projections hug the shaft. When worn the lands may be expanded in height and drawn out to a feather edge by the use of appropriate hand chisels. The drawing out of the lands should be continued until they come within .005 in. of touching the shaft.

AMENDMENTS TO REGULATIONS

TITLE 33 CHANGES

BOUNDARIES FOR CERTAIN MARINE INSPECTION ZONES AND CAPTAIN OF THE PORT AREAS CHANGED

Boundaries of the following Marine Inspection Zones have been effected by amendments to 33 CFR part 3 published in the Federal Register of July 10, 1965: Portsmouth, Va.; Baltimore, Md.; Wilmington, N.C.; Seattle, Wash.; and Portland, Oreg.

Boundaries of the following Captain of the Port Areas were also effected by that Federal Register: Cairo, Ill.; Cincinnati, Ohio; Dubuque, Iowa; Huntington, W. Va.; Louisville, Ky.; Memphis and Nashville, Tenn.; Pittsburgh, Pa.; St. Louis, Mo.; Corpus Christi, Galveston, Houston, Sabine, and Port Isabel, Tex.; Mobile, Ala.; and, New Orleans, La.

TITLE 46 CHANGES

BALSA WOOD AND CORK LIFE PRESERVERS APPROVALS WITHDRAWN

Approvals for all Balsa Wood and Cork Life Preservers were terminated as of 1 July 1965. The withdrawal was announced in the Federal Register of July 10, 1965.

Cork and balsa wood life preservers manufactured in accordance with Specifications in 46 CFR Subpart 160.003 or 160.004 (Subchapter Q—Specifications) do not support the head nor provide the desired turning moment of the wearers under various conditions which may be encountered, as required by the standards for life preservers. Additionally, these types of life preservers do not meet satisfactorily the provisions in the International Convention for the Safety of Life at Sea, Chapter III, Regulation 22(c) (iv) and (v), which read: "It (life preserver) shall provide support to the head so that the face of an unconscious person is held above the water with the body inclined backwards from its vertical position. It shall be capable of turning the body, on entering the water, to a safe floating position with the body inclined backwards from its vertical position."

The Merchant Marine Council at a public hearing held March 22, 1965, considered this proposal to withdraw the approvals of cork and balsa wood life preservers in accordance with an announcement published in the Federal Register of January 27, 1965 (30 F.R. 837), and the Merchant Marine Council Public Hearing Agenda (CG-249, Item Xa, p. 94 and 95). The

Council determined that the cork and balsa wood life preservers manufactured in accordance with specifications in 46 CFR Subpart 160.003 or 160.004 failed to meet the standards for all life preservers, and recommended that the approvals be withdrawn as of July 1, 1965, and that such life preservers bearing basic approval No. 160.003 or 160.004 shall not be considered as approved equipment meeting the requirements of the International Convention for the Safety of Life at Sea, 1960, for those passenger, cargo, and tank vessels constructed on or after May 26, 1965, which are engaged on international voyages and subject to all of the requirements of that Convention. The Council's determination and recommendation regarding cork and balsa wood life preservers have been adopted.

In accordance with the procedures in 46 CFR 2.75–40 and 2.75–50, the manufacturers of cork and balsa wood life preservers were notified that the approvals of cork and balsa wood life preservers and the certificates of approval for such life preservers held by them are suspended and withdrawn as of July 1, 1965, and requested the surrender of outstanding certificates of approval.

The approvals of cork and balsa wood life preservers bearing basic approval No. 160.003 or 160.004 and the certificates of approvals therefor, which were granted in accordance with the specification regulations in 46 CFR Subpart 160.003 or 160.004 (Subchapter Q—Specifications), are withdrawn as of July 1, 1965. All cork and balsa wood life preservers manufactured and approved pursuant to effective requirements prior to July 1, 1965, may be placed in service or continued in use so long as such life preservers are serviceable and in good condition to the satisfaction of the Officer in Charge, Marine Inspection: *Provided, however,* That such life preservers bearing basic approval No. 160.003 or 160.004 shall not be considered as approved equipment meeting the requirements for those passenger, cargo, and tank vessels constructed on or after May 26, 1965, which are engaged on international voyages and subject to all of the requirements of the International Convention for the Safety of Life at Sea, 1960.

* * * * *

AMENDMENT EXPANDS AUXILIARY FUNCTIONS

In carrying out the general purpose of the requirements governing regattas and marine parades, which is to insure safety of life in the regatta or marine parade area, it is necessary to have a patrol capable of performing assistance work, effecting rescues if necessary, and directing the movement of spectator craft and other craft in the vicinity of such a regatta or marine parade. An amendment to 33 CFR 100.40(c) authorizing the District Commander to permit Coast Guard Auxiliary vessels, operating under official Coast Guard orders for the purpose of patrolling a specific event, to have the necessary authority to direct the movement of vessels in the area specified by the special local regulations issued for the event has been promulgated in the Federal Register of July 3, 1965. This function is in addition to having such vessels perform assistance work and effecting rescues if necessary which is presently authorized. In performing this patrol service, the Auxiliarists are not authorized to board, cite, or arrest.

CG 169
RULES OF THE ROAD PAMPHLET AVAILABLE

The revised CG 169, *Rules of the Road-International-Inland* carrying the 1960 rules which became effective on September 1, 1965, are now available at local marine inspection offices or by writing Commandant (CHS) U.S. Coast Guard Headquarters, Washington, D.C., 20226.

STORES AND SUPPLIES

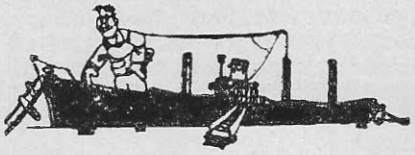
Articles of ships' stores and supplies certificated from July 1, to July 31, 1965, inclusive, for use on board vessels in accordance with the provisions of part 147 of the regulations governing "Explosives or Other Dangerous Articles on Board Vessels" are as follows:

CERTIFIED

Fuel Activator Chemical Corp., 874 Broadway, New York, N.Y., 10003, Certificate No. 619, dated July 7, 1965, FUEL OIL ACTIVATOR.

Dubow Chemical Corp., 15–04 121st St., College Point, N.Y., 11356, Certificate No. 620, dated July 9, 1965, DUBOW OIL SPILL REMOVER S761.

The Dow Chemical Co., Midland, Mich., 48640, Certificate No. 621, dated July 23, 1965, DOWCLENE WR.



BRIDGE
continued

148.06—The following classes of vessels are exempt from the statutory bridge-to-bridge radio requirements and from those found in sections 148.01 through 148.04 of this Part:

a. Power-driven vessels of less than 300 gross tons, which do not normally engage in towing, while towing any vessel of less than 65 feet in length.

Interested persons wishing to comment on the above concept for compulsory bridge-to-bridge radio are requested to forward all such comments to Commandant (MVI–4), U.S. Coast Guard, Washington, D.C., 20226, by November 1, 1965. ⚓

RADIOTELEPHONE
continued

These ships have to be equipped, in addition to the radiotelephone installation, with an emergency radiotelegraph transmitter (70–80 watts) being able to transmit the distress call automatically on the international frequency for radiotelegraphy.

The radiotelegraph automatic keying device to be fitted shall be capable of keying the following signals when switched into circuit:

(a) the radiotelegraph alarm signal,

(b) the radiotelegraph distress signal SOS,

(c) the call sign of the ship,

(d) the sign "LSN 2182",

(e) a long dash for direction-finding purposes.

The device shall be suitable for operation by an unskilled person.

Radiotelegraph ships listening in to the above-mentioned signals are now aware that further traffic with the ship in distress will follow only on the international frequency for radiotelephony (2182 kc/s).

At present 22 German radiotelephone ships are equipped additionally with such radiotelegraphy emergency transmitters.

Furthermore these German radiotelephone ships on transoceanic voyages are obliged to take part in the Position Reporting Systems for purposes of search and rescue (Recommendation 47 of SOLAS 1960) and to keep onboard the world map of coastal stations (including Ocean Station Vessels) for the radiotelephone maritime mobile service (a copy of this world map has been delivered in July 1964 to I.M.C.O.). ⚓

MERCHANT MARINE SAFETY PUBLICATIONS

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

The Federal Register may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402. Subscription rate is $1.50 per month or $15 per year, payable in advance. Individual copies may be purchased so long as they are available. The charge for individual copies of the Federal Register varies in proportion to the size of the issue but will be 15 cents unless otherwise noted in the table of changes below. Regulations for Dangerous Cargoes, 46 CFR 146 and 147 (Subchapter N), dated January 1, 1965 are now available from the Superintendent of Documents, price $2.75.

CG No.	TITLE OF PUBLICATION
101	Specimen Examination for Merchant Marine Deck Officers (7–1–63).
108	Rules and Regulations for Military Explosives and Hazardous Munitions (8–1–62).
115	Marine Engineering Regulations and Material Specifications (9–1–64). F.R. 2–13–65.
123	Rules and Regulations for Tank Vessels (4–1–64). F.R. 5–16–64, 6–5–64, 3–9–65.
129	Proceedings of the Merchant Marine Council (Monthly).
169	Rules of the Road—International—Inland (9–1–65).
172	Rules of the Road—Great Lakes (6–1–62). F.R. 8–31–62, 5–11–63, 5–23–63, 5–29–63, 10–2–63, 10–15–63, 4–30–64, 11–5–64, 5–8–65, 7–3–65.
174	A Manual for the Safe Handling of Inflammable and Combustible Liquids (3–2–64).
175	Manual for Lifeboatmen, Able Seamen, and Qualified Members of Engine Department (3–1–65).
176	Load Line Regulations (7–1–63). F.R. 4–14–64, 10–27–64.
182	Specimen Examinotions for Merchant Marine Engineer Licenses (7–1–63).
184	Rules of the Road—Western Rivers (6–1–62). F.R. 1–18–63, 5–23–63, 5–29–63, 9–25–63, 10–2–63, 10–15–63, 11–5–64, 5–8–65, 7–3–65.
190	Equipment Lists (8–3–64). F.R. 10–21–64, 10–27–64, 3–2–65, 3–26–65, 4–24–65, 5–26–65, 7–10–65.
191	Rules and Regulations for Licensing and Certificating of Merchant Marine Personnel (2–1–65). F.R. 2–13–65.
200	Marine Investigation Regulations and Suspension and Revocation Proceedings (10–1–63). F.R. 11–5–64, 5–18–65.
220	Specimen Examination Questions for Licenses as Master, Mate, and Pilot of Central Western Rivers Vessels (4–1–57).
227	Laws Governing Marine Inspection (6–1–62).
239	Security of Vessels and Waterfront Facilities (7–1–64). F.R. 6–3–65, 7–10–65.
249	Merchant Marine Council Public Hearing Agenda (Annually).
256	Rules and Regulations for Passenger Vessels (4–1–64). F.R. 6–5–64.
257	Rules and Regulations for Cargo and Miscellaneous Vessels (9–1–64). F.R. 2–13–65, 3–9–65.
258	Rules and Regulations for Uninspected Vessels (1–2–64), F.R. 6–5–64, 6–6–64, 9–1–64, 5–12–65.
259	Electrical Engineering Regulations (7–1–64). F.R. 2–13–65.
266	Rules and Regulations for Bulk Grain Cargoes (7–1–64).
268	Rules and Regulations for Manning of Vessels (2–1–63). F.R. 2–13–65.
269	Rules and Regulations for Nautical Schools (5–1–63). F.R. 10–2–63, 6–5–64.
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.
293	Miscellaneous Electrical Equipment List (6–1–64).
320	Rules and Regulations for Artificial Islands and Fixed Structures on the Outer Continental Shelf (10–1–59). F.R. 10–25–60, 11–3–61, 4–10–62, 4–24–63, 10–27–64.
323	Rules and Regulations for Small Passenger Vessels (Under 100 Gross Tons) (2–3–64) F.R. 6–5–64.
329	Fire Fighting Manual for Tank Vessels (4–1–58).

CHANGES PUBLISHED DURING JULY 1965

The following have been modified by Federal Registers:

CG–169, CG–172, and CG–184 Federal Register July 3, 1965.

CG–190 and CG–239 Federal Register July 10, 1965.