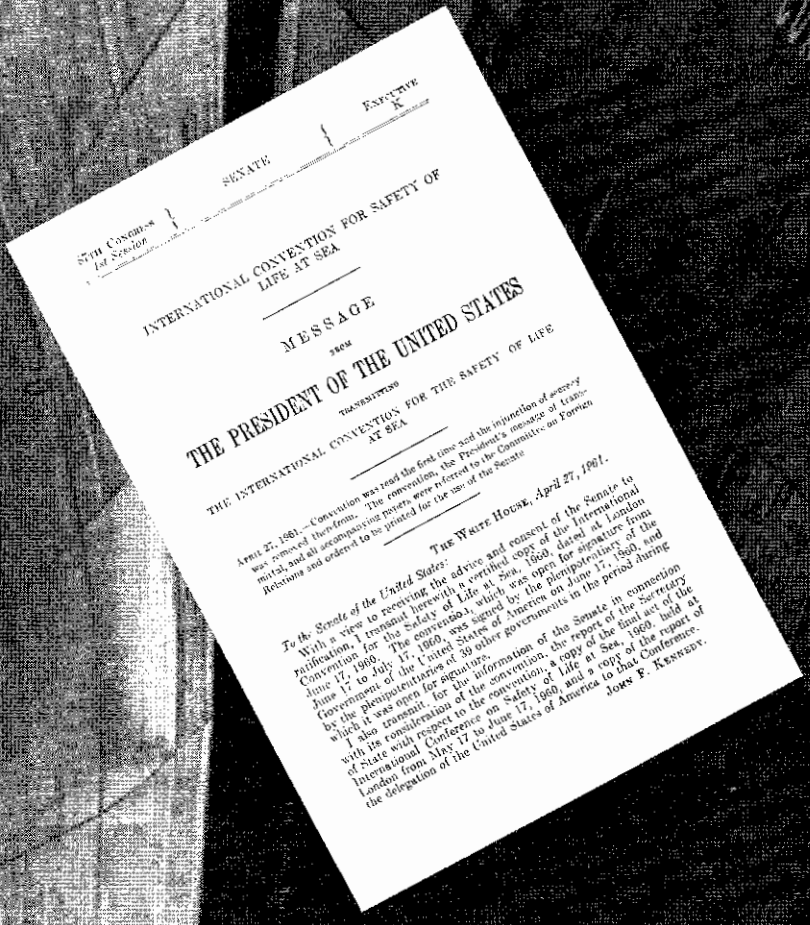
PROCEEDINGS

OF THE MERCHANT MARINE COUNCIL



87TH CONGRESS, 1st Session — SENATE — EXECUTIVE K

INTERNATIONAL CONVENTION FOR SAFETY OF LIFE AT SEA

MESSAGE

FROM

THE PRESIDENT OF THE UNITED STATES

TRANSMITTING

THE INTERNATIONAL CONVENTION FOR THE SAFETY OF LIFE AT SEA

APRIL 27, 1961.—Convention was read the first time and the injunction of secrecy was removed therefrom. The convention, the President's message of transmittal, and all accompanying papers were referred to the Committee on Foreign Relations and ordered to be printed for the use of the Senate

THE WHITE HOUSE, *April 27, 1961.*

To the Senate of the United States:

With a view to receiving the advice and consent of the Senate to ratification, I transmit herewith a certified copy of the International Convention for the Safety of Life at Sea, 1960, dated at London June 17, 1960. The convention, which was open for signature from June 17 to July 17, 1960, was signed by the plenipotentiaries of the Government of the United States of America on June 17, 1960, and by the plenipotentiaries of 39 other governments in the period during which it was open for signature.

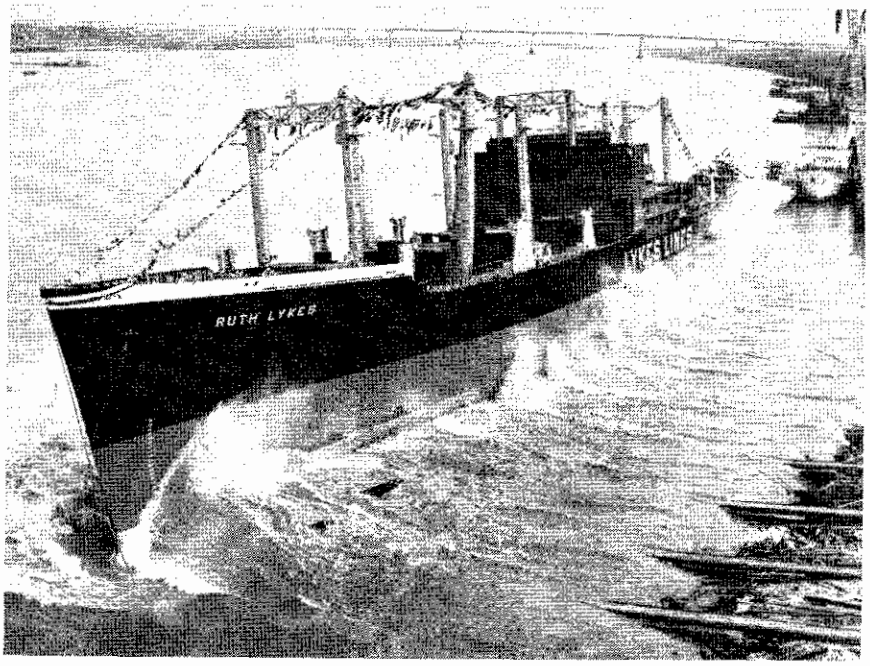
I also transmit, for the information of the Senate in connection with the consideration of the convention, a report of the Secretary of State with respect to the convention, a copy of the final act of the International Conference on Safety of Life at Sea, 1960, held at London from May 17 to June 17, 1960, and a copy of the report of the delegation of the United States of America to that Conference.

JOHN F. KENNEDY.

UNITED STATES COAST GUARD

Vol. 22, No. 5 • May 1965

CG–129



THE SS *RUTH LYKES*, THIRD OF 12 AUTOMATED VESSELS FOR THE LYKES FLEET, IS LAUNCHED AT AVONDALE SHIPYARDS, NEW ORLEANS, LA.

IN THIS ISSUE . . .

Coast Guard implementation of the 1960 Safety of Life at Sea Convention comes in for review and analysis by a Merchant Marine Technical Staff officer beginning page 103.

The 15th Anniversary of the Maritime Administration is commemorated with a special informative feature beginning page 110.

The summary of March 22 public hearings is to be found on page 118.

THIS COPY FOR NOT LESS THAN 20 READERS—PASS IT ALONG

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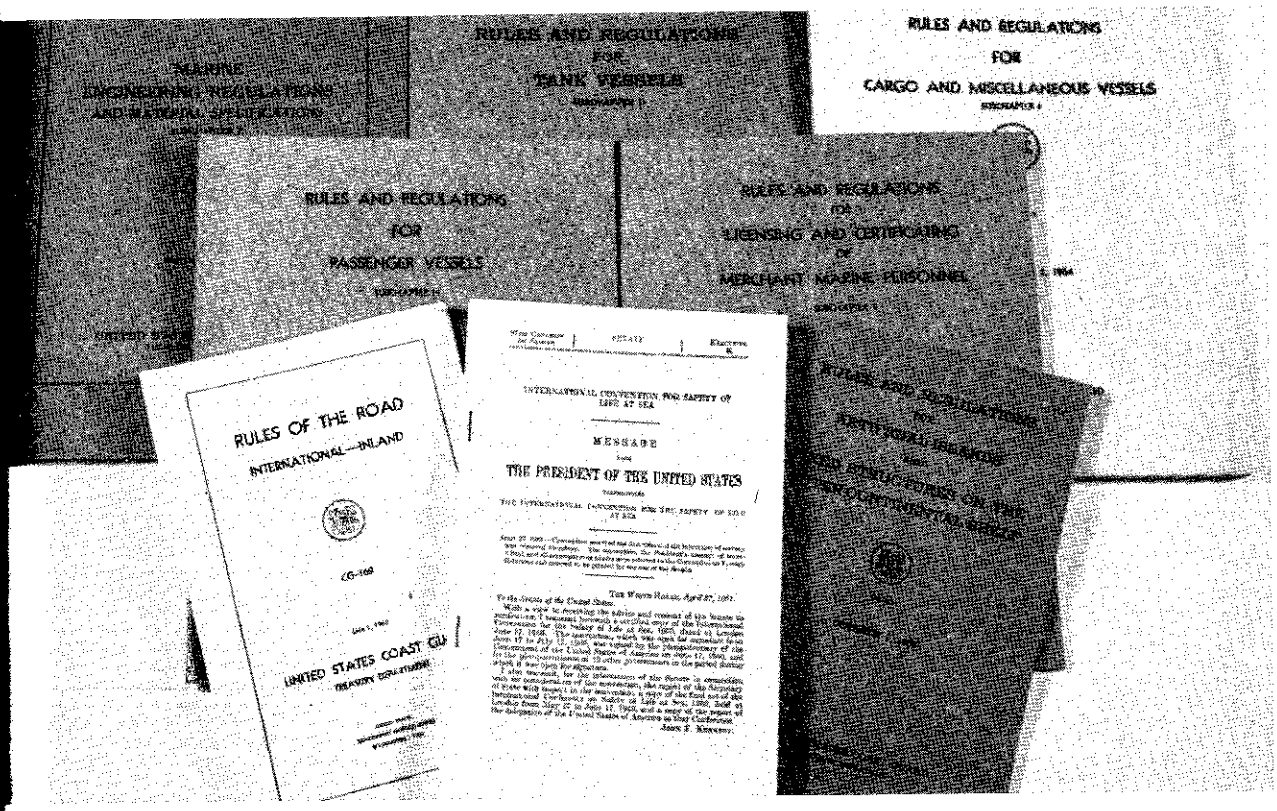
PROCEEDING

OF THE

MERCHANT MARINE COUNC

Published monthly at Coast Guard He quarters, Washington, D.C., 20226, u the auspices of the Merchant Marine Co cil, in the interest of safety at sea. S cial permission for republication, either whole or in part, with the exception copyrighted articles or pictures, is not quired provided credit is given to Proceedings of the Merchant Marine Co cil. Use of funds for printing this pu cation has been approved by the Bur of the Budget November 20, 1962.

LT A. J. Arnett, USCG, *Editor*
T. A. DeNardo, *Assistant Editor*



COAST GUARD AND '60 SOLAS

A Review

By

CDR Robert I. Price, USCG

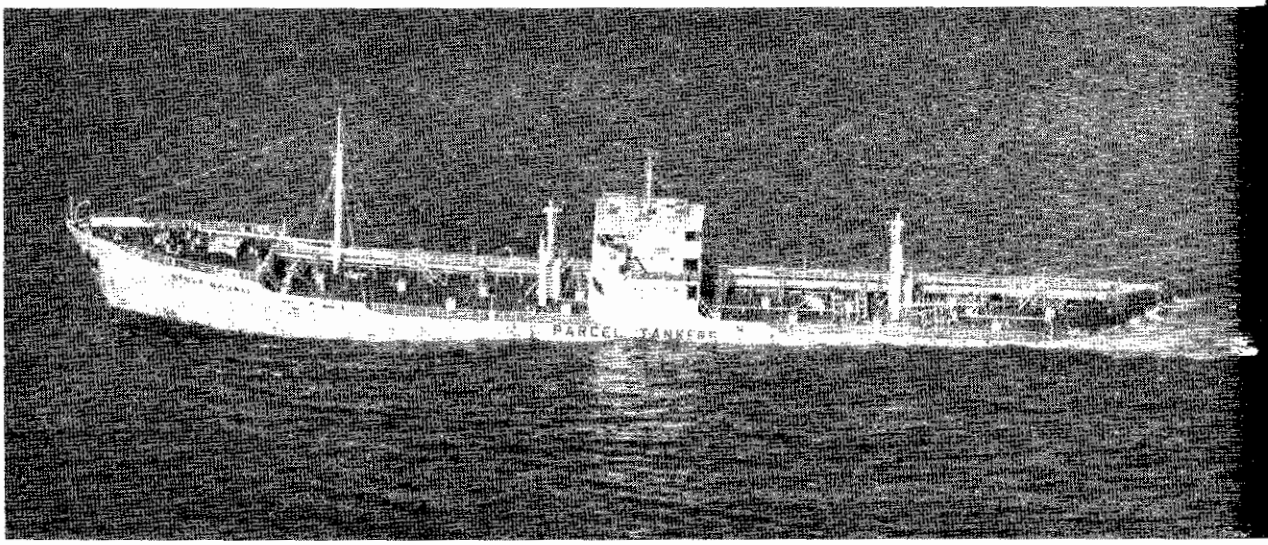
On May 26, 1965, the 1960 Safety of Life at Sea Convention becomes effective.

In February, appearing before a joint gathering of the Society of Naval Architects & Marine Engineers and the Society of Marine Port Engineers, CDR Robert I. Price, a member of the Coast Guard Merchant Marine Technical Staff, interpreted the Convention's affect in terms of Coast Guard implementation. His address, meant to be informative rather than instructive, is adapted here.

CDR Price is a 1945 graduate of the U.S. Coast Guard Academy. He has served in both deck and engineer billets afloat; his last such duty as commanding officer of the CGC Nemesis. He is a 1953 naval engineer graduate of the Massachusetts Institute of Technology, a former ship repair superintendent at the Coast Guard Yard, and a technical secretary to the U.S. Delegation to SOLAS '60. He became Chief, Hull Arrangements Branch, Merchant Marine Technical Division, at Coast Guard Headquarters in 1962.

THIS PAST THANKSGIVING DAY, off the coast of New Jersey, some 1,100 persons had something for which to give thanks. Their ship was in a serious collision; they were spared. What of the possibilities had the cargo of the stricken tanker been gasoline instead of a nonvolatile vegetable oil? Or suppose, one-quarter rpm more or less, one fishtail of the course, any small influence to alter the time-space relationship—and the striking ship might have been struck. What confused alarms, what casualties might there have been in that clash by night? A tremendous catastrophe was missed by the margin of seconds. As it was, 19 men and a ship were plunged unwarned to their deaths.

Can it really be 9 years since that other night close to our shores when the liners *Andrea Doria* and *Stockholm* collided? That incident off Nantucket in 1956, also involving many passengers, perhaps left a greater impression because it was the passenger ship then that was struck, and because the dying ship lingered until nearly noon of the following day, permitting a full photographic record



The Norwegian tankship MV *Stolt Dagali* cut in half Thanksgiving Day.

of an epic capsizing before she went to the bottom.

For all that naval architects and marine engineers may do, Nature and human fallibility somehow still conspire against us. Such incidents can and do happen. Nevertheless it is a common objective of marine professionals everywhere that all practicable measures be taken to minimize the likelihood and the effects of shipboard casualties.

The reason for raising the specter of casualties is to make the point that had the passenger ship been struck last November and 1,100 lives put in jeopardy, there would be now great public demand that something be done.

Something is being done. The 9 years elapsed between the two incidents mentioned have perhaps witnessed a greater concerted effort toward improving the survival capabilities of ships worldwide than any other period in the history of marine design. Here we endeavor to review the events of those intervening years as they pertain to the international effort to improve the safety of life at sea, and to discuss translation of that effort into action here and abroad.

THE 1960 CONFERENCE

The *Andrea Doria* sinking gave impetus to preparations for the fourth and possibly the last of the great Conferences on Safety of Life at Sea, which was held in London in May 1960.

The U.S. preparations for the 1960 Conference were possibly the most thorough of those for any technical or other meeting in which this country has engaged. For nearly 3 years, from 1957–60, working committees of persons drawn from every facet of the American maritime scene—management, labor, and government, met regularly—proposing, evaluating, and developing the details of the U.S. position. The services of several young naval architects were provided at industry expense as staff to carry out the intensive studies required by the Construction Committee. From this devoted effort came fresh approaches to many aspects of marine construction, design, and operation.

The U.S. Conference Delegation was chosen from persons who had done the preparatory work. The U.S. Delegation objective in 1960 was to update the Convention safety requirements for passengers, crew, and cargo to the level which had been shown to be practicable by the American merchant fleet.

The product of an intensive 5-week technical meeting is the Safety of Life at Sea Convention (SOLAS '60) which, having been duly ratified by the necessary number of maritime nations, will come into full effect on 26 May 1965.

This new Convention is a further step in the evolution of a modern international ship safety construction code that started after the *Titanic* disaster. Looking back, one can see how far we have come. In those early days the requirements were only for safety of the passengers, the crew being regarded as persons paid to hazard their lives at sea. Any concern for cargo ships in the Conferences of 1914 and 1929 was focused upon the service such ships might be called upon to provide a passenger vessel in distress. However, the 1948 Conference enlarged the scope of the safety code to include cargo ship requirements for fire detection and
tinction, lifeboats, and for carr
of grain and dangerous goods.

The 1960 Convention, gene
speaking, takes account of tech
developments since 1948 such as
dar, refines and improves the exis
requirements for passenger s
adds further requirements for c
ships, and expands the scope of i
est by including the hazards a
may bring to the population of a
i.e., nuclear ships.

As to the document itself,
framework of the 1960 Conve
resembles the 1948 Convention w
it will succeed, consisting of a
agreement among nations followe
chapters of technical regulat
The new convention has two
such chapters, one having to do
"Nuclear Vessels," and the o
created through the separation o
subjects of "Grain" and "Bulk Ca

EFFECT OF SOLAS '60 ON COAST GUARD REGULATIO

Some of what the 1960 Conve
will require is already in effec
American merchant ships through
Coast Guard's regulations. T
are two reasons for this situation.

First, many requirements of
1960 SOLAS Convention either a
with or do not come up to exis
U.S. practice. International st
ards still fall somewhat short of
requirements. Many of the
Delegation proposals were beyon
sessment in the large conference
ting of 1960. What had taken 3 y
of deliberation within the U.S. c
mittees could not gain internat
acceptance without consider
study. The Convention must th

be viewed as the highest level which it was possible to obtain national acceptance in 1960. Of the signatories, the Convention ably will have least effect on the ed States and its marine regula-s.

The second reason why May 1965 not bring in a great many changes hat, anticipating the adoption of Convention, implementation of the AS Convention actually began in spring of 1961 when certain re-ements covering subjects which Coast Guard had had under study to the Conference were placed the Public Hearing Agenda.

ANGES ALREADY MADE

Many important SOLAS derived ges to Coast Guard regulations been in effect since 1 January . For example, already included Marine Engineering Regulations such new provisions as the fol-ng:

The use of heat sensitive mate-s are now prohibited for piping ems passing through watertight heads and other critical areas.

Hand pumps are no longer ac-able for bilge service.

Bilge pumps are now prohibited ard of the collision bulkhead.

Regulations applicable to nu-r-propelled ships have been drawn remote shutdown of the fuel pres-systems has been added as a fire ventive measure.

Electrical Regulations. Although of the increases in the scope of Convention is that there are now sive electrical regulations for ships, this change has very little upon Coast Guard regulations h have long required good electrical practice for *all* ships. The following are some changes which have been made to assure that Coast Guard regulations conform to SOLAS:

In passenger vessels, switchboards and generators are required to be located within the same Main Vertical Zone.

The regulation on steering gear circuits was revised to permit the use of transfer arrangements in lieu of the requirement for a transfer panel.

Illumination of the liferaft stations is now required.

Performance in emergency conditions is specified for the Emergency Generator. The Emergency Generator is prohibited forward of the collision bulkhead.

Bulk Grain Cargoes. The 1948 SOLAS Grain Regulations were only concerned with the details of the stowage of the cargo to prevent shifting. The new Convention (and the Coast Guard Grain Regulations) permits certain relaxations in the stowage requirements in return for compliance with specified minimum values of stability.

However, this substitution of stability for stowage arrangements seems to be predicated on experience with a particular class of vessels and there is not a logical transition of requirements to vessels of other proportions. Additionally, certain of the assumptions as to the behavior of grain do not seem to be sufficiently well founded. This subject is presently under study by a Working Group of IMCO.

Passenger Vessel Regulations. Changes in this area of Coast Guard concern are extensive. Among recent changes are:

Nitrocellulose motion picture film is prohibited for shipboard use owing to the risk of fire.

Spaces containing the emergency source of power are included among the spaces defined as "safety areas" for purposes of structural fire protection.

Tonnage openings in Class "A" fire bulkheads are required to be closed with steel plates.

Editorial changes to clarify definitions for the watertight subdivision calculations have been made.

The permeability formula in determining subdivision for machinery spaces was revised to an average of 85 percent, without regard to the type of propulsion plant.

In vessels on short international voyages, the Commandant may now allow persons to be carried in excess of lifeboat capacity if the vessel meets special standards of subdivision (generally two compartment).

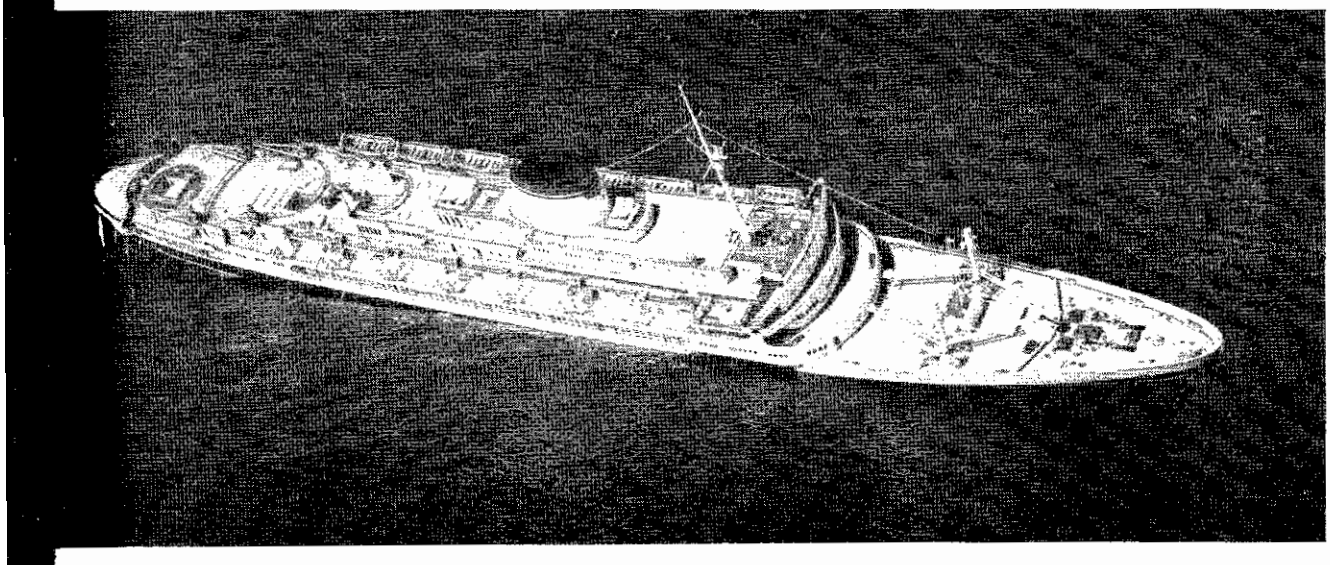
A number of editorial changes to the regulations on the location, installation, and operation of watertight doors, to clarify the rules and to make them consistent with the conditions of flooding in the damage stability assumptions have also been made. As examples, doors must be capable of being closed with the ship listed 15° in either direction. A definition of simultaneous operation for the automatic closing of the doors has been added; i.e., within 60 seconds.

A time limit is stated for equalization of assumed unsymmetrical flooding; i.e., 15 minutes.

A positive residual GM of 2 inches is required in the final flooding stage of the assumed damage stability calculations.

Oily ballast is now regarded as an undesirable means of satisfying stability requirements. Where it must be used to comply with stability re-

SS *Andrea Doria* lists near death on July 26, 1956.



quirements, such ballast must be carried into port where it is to be discharged either into sludge barges or shore facilities, or else through effective oily ballast separators.

Information required in the stability instructions for the Master is more clearly set out.

The plans required to be posted for the guidance of shipboard personnel are to include a number of necessary damage control features.

Damage control appliances, i.e., valves and other closing devices, are required to be suitably marked to indicate the open or closed condition.

specified to comply with Coast Guard-developed specifications.

Vessels with this type of interior construction are not a new development. As a matter of interest, American cargo ships built under subsidy have had some degree of fire-resistant construction. Norske Veritas has had fire protection rules applicable to cargo vessels as an option of classification since 1956. Vessels complying with the Norwegian requirements carry the additional class symbol "F," and have the benefit of a lower insurance rate. In three instances of fires in such ships, it is reported that


The New York Times.

TITANIC SINKS FOUR HOURS AFTER HITTING ICEBERG; 866 RESCUED BY CARPATHIA, PROBABLY 1250 PERISH; ISMAY SAFE, MRS. ASTOR MAYBE, NOTED NAMES MISSING

International machinery for marine safety developed following *Titanic* loss.

Cargo Vessel Regulations. Structural fire protection regulations have been added for vessels of over 4,000 gross tons. These regulations are not as comprehensive as those for passenger vessels. Essentially, they stipulate that approved incombustible materials are to be used in the accommodations spaces; that self-closing doors shall be installed in way of the stairs through accommodations spaces to eliminate the "flue" effect; that certain critical spaces, i.e., galleys, paint lockers, storerooms, and emergency generator rooms are to have Class "A" boundaries; and that concealed spaces such as above ceilings may contain no combustibles.

These measures to provide fire protection through construction in cargo ships are an important step in favor of safety. They are directed toward eliminating the risk of "progressive fire," and can be accomplished largely through attention to certain details. Most particularly, the insulation, partition bulkheads, and ceilings must be

fire has been closely confined and readily extinguished with but minor damage.

Steam smothering is eliminated as a permissible system for new construction or new installations, having been found to have many disadvantages as a fire-extinguishing or smothering medium. Moreover, there are other more effective extinguishing media available.

PORT HAZARDS

The Public Hearing Agenda of 1962 included an item based on a philosophical point of the SOLAS Convention but which does not apply to the American merchant fleet at all. It is a regulation requiring submission of certain plans of foreign-flag vessels if they are to load or unload in U.S. ports unusual cargoes which may present a considerable hazard if accidentally released in the highly populated port areas. This concerns chemical cargo vessels, a great many

of which are now under construct abroad. There have been plan s missions from U.K., Netherlands, pan, Sweden, France, and Germ in compliance with this regulat This examination is seemingly c trary to the Convention, which tends that a valid SOLAS certifi is, in effect, a passport by which a s ordinarily goes without inspection a foreign government. However, accidental release of some of th cargoes can, under the right co tions, have a very great lethal ef This problem is new, and is not c ered by the Convention because ch ical and cryogenic cargoes were appearing at the time of the Con ence. Until these hazards are p vided for by international ag ment—applying the reasoning of Convention with respect to the p hazard of nuclear vessels—we reg chemical carriers as in a category quiring our safety assessment.

CHANGES TO COME

The Agenda for the public hear in the spring of 1964 included to la degree the remainder of the chan required to bring the Coast G regulations into conformance the 1960 SOLAS Convention. T action anticipated final ratificatio the Convention within the year. F lowing the hearing, the propo changes were left open for furt comment by industry and the pu until December 1964. At that t the accumulated comments were viewed by the Merchant Mar Council. The finally approved te are pending publication in the F eral Register.[1]

Some of the impending chan are:

Subchapter H—Passenger Vessel Regulations

(a) The specifications of t for "A" and "B" Class fire protect bulkheads have been revised to clude a limit on the allowed tempe ture rise at the joints in the pan

(b) *Standard of subdivision.* understand the changes of regulati on subdivision, it must be appreci that although Coast Guard reg tions on subdivision employ Criterion of Service Numeral (C Factor of Subdivision (F) system the SOLAS Convention, both the

[1] (The President must issue a proclam stating United States adherence to the C vention before it may be legally effecti the United States. In addition, the P dent will assign the administration of t tions thereunder by Executive order. W these actions are completed, the U.S. C Guard will publish the final revised Na tion and Vessel Inspection Regula which implement this Convention.—Ed

mula and the curves which define limits of the plot of Factor of division versus Length are different. (SOLAS calculations of C_s end on the proportions of the machinery and passenger volumes, while Coast Guard-calculated C_s takes count of number of passengers and gth.) U.S. passenger vessels have ariably had as a result a greater ree of subdivision than called for SOLAS '48. The new Convention serves the SOLAS C_s formulae and plot of F vs. L, but "doctors" the tem to require a factor of subdivi- of 0.5 or less in vessels of over feet in length if the value of C_s greater than certain specified ues corresponding to length. In ect, larger ships must comply at er values of C_s. With this special ation from the established pat- it is difficult to say that there is some conceivable new vessel rangement for which SOLAS '60 ld be controlling as to subdivision. ile it is believed that even with revision in SOLAS '60, Coast ard requirements are still the sig- cant ones, there is no mathemati- relationship which permits direct parison. To assure that the ms of SOLAS '60 are met, it is con- ently necessary to include this ion of the SOLAS requirements the Coast Guard regulations.

(c) More double-bottom protec- will be required of new ships. example, double bottoms were merly required in the forebody of ps longer than 200 feet. This tection will now be required in ps longer than 165 feet.

(d) Only one door may be in- ed between the machinery spaces the shaft alleys where there are shaft alleys, and only two doors there are more than two shaft eys. This requires that shaft alleys interconnected for access.

(e) Regulations on the allowed ation of watertight doors are ified.

(f) For symmetrical flooding, the gth of assumed damage in the nage stability requirements is re- ed for vessels having to meet a tor of Subdivision of 0.33 or less, m (30+0.06L) to (20+0.04L), but h the depth of damage of B/5 in- ad of B/10. The vertical extent of umed damage is changed in all es from the top of the double bot- m to the margin line to be from the seline up without limit.

(g) For unsymmetrical flooding, extent of assumed side damage in ps required to meet a Factor of bdivision of 0.33 or less, is changed the length (10+0.03L) with a per- ted heeling angle after flooding of over 15°. Former value was —0.06L) with angle of heel of 20°.

All Subchapters Applicable to Vessels

(a) The definition of an international voyage is to be revised to exclude ships which operate solely in the Great Lakes and the St. Lawrence as far east as Anticosti Island.

(b) There are many revisions of the lifesaving equipment regulations, some of which stem from the recognition by SOLAS of the inflatable liferaft. Since requirements and permitted substitutions vary by size and type of vessel and waters of operation, it is difficult to condense these changes. However, the new regulations require liferafts to be carried in addition to the lifeboats in both new and existing ships on international voyages. Passenger ships, except those with a Factor of Subdivision of 0.33 or less, must have liferafts for at least 25 percent of the persons aboard. Cargo vessels of more than 1,600 gross tons are required to have liferafts for at least 50 percent.

(c) Lifeboats for more than 100 persons must be motor propelled. There will be three classes of motor lifeboats instead of the two classes provided by the 1948 Convention. Motor lifeboats may only have compression-ignition engines.

(d) Rigid liferafts may not be used on vessels on an international voyage as required equipment, unless when outfitted such rafts do not exceed a weight limitation of 400 pounds.

(e) Existing vessels may not increase the number of persons carried by substituting liferafts for existing lifeboats.

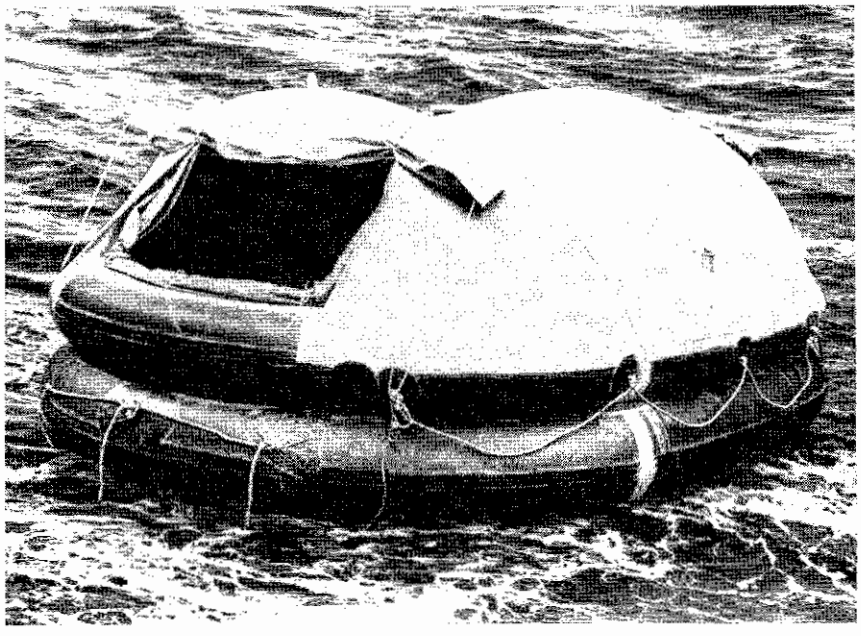
(f) Lifeboats may not be carried nested.

(g) A number of changes are made in the items required to be provided in the kits installed in lifesaving appliances.

(h) Regulations will cover the testing of liferaft launchings.

(i) Details are provided on the sizing of fire pumps and fire mains in new ships.

(j) In both new *and existing* ships, an international shore connection is required. This device provides a simple solution to the problem of different types of firehose couplings in different ports and among ships. This universal connecter is a very simple adapter, achieved by having a specified flanged face on one side, and at the other, the coupling in use by the ship or port.



SOLAS '60 permits some inflatable liferaft usage.

(k) Pilot ladders for all new vessels which normally take a pilot must be constructed in accordance with Subpart 160.017 of Subchapter Q (Specifications). In existing vessels, new and replacement ladders must be so constructed, but serviceable existing equipment may be continued in use.

(l) In vessels on an international voyage, the port of registry must be added to all lifeboats, lifefloats, buoyant apparatus, and ring buoys.

Subchapters D and I

(a) A vessel or class of vessel may be excused from the requirement of a stability test if, after a review involving a comparison with existing similar vessels, it can be definitely concluded that due to the vessel's proportions

and arrangements more than sufficient GM will be available in all probable loading conditions. This is particularly directed to tank vessels and bulk ore carriers.

(b) A Cargo Ship Construction Certificate will be required of all cargo and tank vessels subject to the SOLAS Convention. It is planned to issue these certificates on a 2-year basis.

OTHER CHANGES

The SOLAS-derived changes to Coast Guard regulations given here should not be taken as a complete list. Furthermore, attention has been focused upon those regulations pertaining to construction and outfitting. There are also SOLAS changes regarding shipboard radiotelegraph and radiotelephone installations. These appear in regulations issued by the Federal Communications Commission.[2]

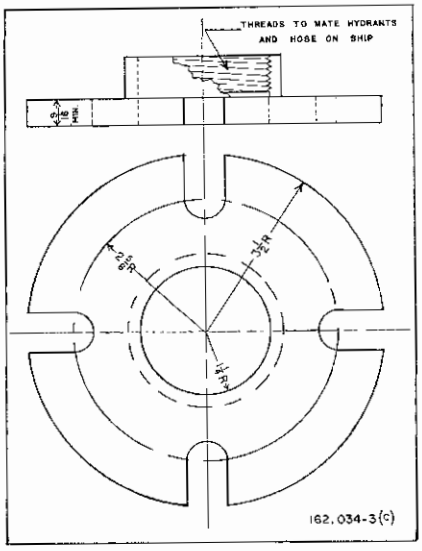
Additionally, the SOLAS Conference made changes to the Regulations for Preventing Collisions at Sea. Among them is a requirement that in a restricted channel, small pleasure craft are not to hamper the safe passage of larger vessels. There are also changes regarding lights, shapes, and signals. As for radar, the Conference considered and rejected a great many proposals, and concluded that radar is a tool of navigation and not a crutch. In an annex, "Recommendations on the Use of Radar Information," the Convention gives guidance, but there is no radar regulation to relieve the Master of that exercise of judgment and commonsense demanded by the Rules of the Road. The Convention also sets out in Recommendation 45 performance standards for the design of shipboard radar.

IMCO

The reason the 1960 Conference may be the last of its kind is that there now exists a means of keeping international maritime safety standards up to date. The 1960 Convention is a living document, nurtured by the Intergovernmental Maritime Consultative Organization (IMCO), a specialized agency of the United Nations for maritime matters, which came into being in 1959.

Under the auspices of IMCO, a number of subcommittees and working groups have been created to conduct studies as recommended by the 1960 SOLAS Convention. There are 56 general Recommendations appended to the 1960 Convention (and

[2] See Summary of 1965 Public Hearing carried elsewhere in this issue for an up-to-date status report of remaining SOLAS '60 items.



Shipboard universal firehose flange connection.

11 more with regard to Nuclear Ships). Contrary to what was done with the 1948 Recommendations (there were 23 Recommendations and very little was ever done about them), a number of the 1960 Recommendations are already under review.

IMCO Working Groups and Subcommittees have been formed to deal with—

1. Intact Stability of Ships
2. Watertight Subdivision and Damage Stability of Passenger and Cargo Ships
3. Stability of Fishing Vessels
4. Fire Protection
5. Bulk Cargoes
6. Oil Pollution
7. Tonnage Measurement
8. Safety—Sea & Air
9. Carriage of Dangerous Goods by Sea
10. International Code of Signals
11. Facilitation of Travel and Transport

The Groups must report progress after each session and the central Maritime Safety Committee determines annually the continued life and work program for each. As with most other organizations, IMCO must adhere to its budget, a practical limitation which prevents the proliferation of committees.

The competent IMCO Secretariat is the cement of this international structure, providing the translators and translated papers, gathering data, and assembling documents.

The studies and the analyses are done voluntarily by the representatives of the various nations which participate in these working groups. If, for example, it is decided in a program of work toward standardizing criteria that it is necessary to have a comparison of the requirements of various nations, the representative some country will usually offer to late and report, and all others the upon agree to furnish their respec regulations to IMCO for distribut

This is international cooperat among members of the profession naval architecture and marine en neering—a kind of postgraduate se nar. Thus far, working groups h for the most part, been engaged the accumulation and analysis background information, a necess first step. But the members have a been learning to work together in atmosphere of mutual respect. T element of personal contact is e tremely important. The U.S. Dele tion of 1960 found negotiating w other nations no easy matter beca of lack of prior contact at the work level.

These IMCO working groups providing the means by which some the U.S. proposals prepared for 1960 Conference are gradually ga ing acceptance.

WORK UNDERWAY

The following are some of studies underway within the vari IMCO working groups.

One of the 1960 Recommendati having highest priority is No. 6, wh has to do with the subdivision sta ards for passenger ships. This added at the insistence of the U Delegation to assure that the U subdivision proposal would eventua receive full consideration. In Subdivision Working Group there now a general agreement with U.S. view that the Criterion of Se ice Numeral concept has outlived usefulness and should be replace The 1960 position of the United Sta on this subject called for a syst which would compare passenger sh on the basis of the extent of dama occurring anywhere in the leng that they were capable of survivi The logic of subdivision requireme which are related to the probabil of accomplishing the objective of s division; i.e., the survival of dama is difficult to refute. A probabilis approach to subdivision very eas demonstrates the great improveme in survival potential of designing two-compartment standard wit widely spaced bulkheading.

Another of the U.S. proposals 1960 on the subject of subdivis called for designing cargo ships o 330 feet to meet at least a one-co partment standard. This has b been a requirement of the Mariti Administration in subsidy ships. 1959 studies of the Construction Co mittee staff concluded that class cation society recommendations f

The placement of bulkheads came very close to producing a one-compartment ship except in the case of the shelterdeck vessel. Recommendation 3 calls for further study through IMCO of cargo ship subdivision.

The subterfuge of tonnage openings in the 'tween-deck defeated improved subdivision, as well as compromising fire resistance. Happily, the way has been paved for progress in the subdivision of cargo ships. The IMCO Working Group on Tonnage, carrying out the study called for by SOLAS Recommendation 17, has generally agreed that the shelterdeck tonnage openings are an affront to safety, and that at the limitation of draft is a sufficient penalty for the deduction from tonnage of the 'tween-deck spaces.

That there are still major passenger vessels afloat with little fire resistance was demonstrated about a year ago when the *Lakonia* caught fire with a shipload of passengers on cruise. At the instigation of the United States, one of the items included in the discussions of the recently convened IMCO Fire Protection Working Group is to determine what measures might be taken to improve fire resistance in older vessels which do not come up to the requirements of the SOLAS '48 Convention.

Naval architects have long been in agreement on how to determine the elements of stability, but there is not a consensus as to the criteria to assure sufficient stability. The IMCO Intact Stability Working Group is dealing with this problem, in response to Recommendation 7.

A draft of an International Maritime Dangerous Goods Code, which will list all such substances and recommend their classification, description, labeling, packing, and stowage for marine transport, has been developed by the IMCO Working Group on Dangerous Goods. This action is pursuant to Recommendation 56.

Still another of the U.S. 1960 proposals had to do with ballasting. After considerable study it had been concluded that the many practical difficulties involved when a ship relies on oily ballast for the preservation of stability all act to compel the ship operator to sacrifice stability. With the increased interest in eliminating pollution of the seas, the U.S. proposal to eliminate the use of oily ballast in new construction was a timely one. However, the Convention does not go to this length, but avoids the issue by stressing the need for oil-and-water separators, or other alternative means.

The objection to reliance upon separators is a very practical one. The residual oils in marine use have a specific gravity which so nearly approaches water that gravity separation—settling or centrifuging—is not sufficiently effective to allow the discharging of the effluent into a harbor. It is possible to wring a little water out of a lot of oil, but getting a little oil out of a lot of water *quickly* is a problem of first magnitude. The status of oily water separators is one of the important items discussed at the first session of the Oil Pollution Working Group which met in London in February.

U.S. PREPARATIONS

Naturally, the U.S. representative has to pull his weight in any of IMCO Working Groups in which we take part. To be certain that he bites off only what we can chew, there also exist a number of U.S. SOLAS Working Groups, which function in parallel to the IMCO arrangements. Members of these teams, drawn from both industry and government, meet periodically to consider the progress of the related IMCO group and to develop background data and position.

Certain studies are now underway as a consequence of U.S. participation in these IMCO working groups.

Three of these studies are of particular interest:

The first is being financed jointly by the Coast Guard and the Maritime Administration and is being performed at Stevens Institute of Technology. It is an effort to determine by testing with a 9-foot model in various sea conditions, various attitudes, and various conditions of flooding the probability of vessel loss as related to freeboard and stability in the damaged condition.

CDR ROBERT I. PRICE

A second study, agreed upon last November with the cooperation of the American Bureau of Shipping and the National Cargo Bureau, is an investigation into the extent that voids exist under the 'tween decks in ordinary cargo ships carrying grain. Despite the SOLAS grain regulations intended to assure the safe transport of that treacherous cargo, there have been in the last year three dramatic instances—one only a month ago—of the fact that we cannot be certain that the regulations are adequate particularly as to a fundamental assumption that there are no void spaces within the holds. There is a need to know the extent that voids may exist after trimming, the extent that voids may form as the grain settles, and the effectiveness of the feeder arrangements in filling the voids. To get to the heart of the matter, it is proposed to drill a group of small holes in the 'tween decks in three holds of a ship, through which to be able to locate the grain surface after filling, and during the voyage at regular intervals. The same person will take all readings, including the ullages in the feeders and hatches at the end of loading, and at the end of the voyage.

A third study underway is part of an effort to cope with the question of the stability to be required of small cargo ships and fishing vessels. The Navy's Bureau of Ships has generously agreed to process through its computer program the offset data of some 50 small vessels. It is hoped from this accumulation of data that some practical relationship can be found between GM and freeboard, which can be applied as criteria to improve the safety of the smaller ships.

CONCLUSION

As has been shown, there is much more to the implementing of the 1960 SOLAS Convention than simply revising the Coast Guard regulations.

Disaster has drawn the maritime nations together to reappraise international marine safety standards. The standards were not only improved in 1960 but through the Conference Recommendations a program of study for further advances was set out.

Carrying out the Conference mandate under the coordination of IMCO has brought an unprecedented era of cooperation among ship safety administrations and has bound naval architects and marine engineers closer in the promotion of safety of life at sea.

"Sweet are the uses of adversity . . ." ⚓

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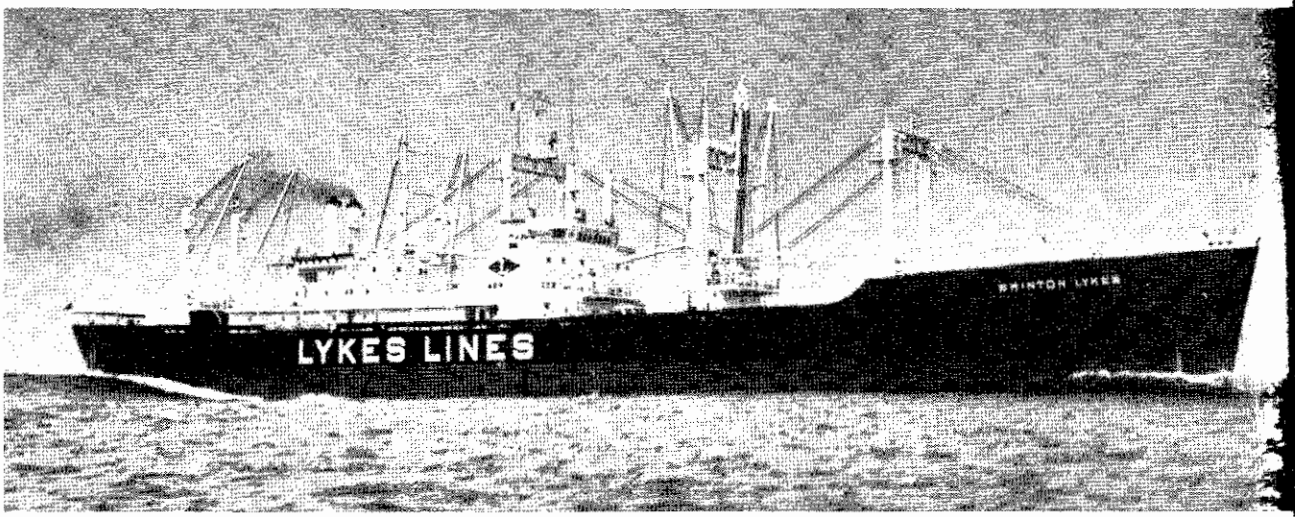
15 YEARS OF SERVICE

The Maritime Administration Its Functions; Its History



A Bethlehem-built C3–S–37b for Lykes Brothers Steamship Co.

The Maritime Administration is 15 years old this month. In commemoration of that anniversary, the Proceedings *is pleased to feature a report especially written for the occasion.*

Coast Guard and Maritime Administration inspectors are quite often drawn into a near-team-relationship during the progress of much new construction. The MARAD inspector assures compliance with subsidy and national defense requirements; the Coast Guard marine inspector with marine safety laws and regulations.

That which follows amounts to a primer on, and a thumbnail history of, "Maritime": i.e., "MARAD"; i.e., "Mar Adm"; i.e., "MA"; i.e., the Maritime Administration.

We salute the Administration on its 15th year of service to American shipping.

THE MARITIME ADMINISTRATION of the U.S. Department of Commerce is the agency principally concerned with carrying out the laws aiding and promoting the U.S. Merchant Marine.

SUBSIDY FUNCTIONS

Under the various laws which it administers, principally the Merchant Marine Act, 1936, as amended, the Maritime Administration is responsible for many activities. The Merchant Marine Act, 1936, provides for payment by the Government of operating- and construction-differential subsidies to make up the difference between U.S. costs of building and operating ships and the estimated costs of foreign competitors. Most of the subsidy paid is based upon the differential between U.S. and foreign shipyard labor costs and wage costs of U.S. and foreign seamen. In return for the Government aid received, U.S. operators must provide regular adequate service on routes determined by the Administration to be essential to U.S. foreign trade and defense.

The Maritime Administration studies the foreign trade of the nation and determines which trade routes are essential. It investigates applicants for Government aid on such routes, considering their experience, financial qualifications, and proposed operation, determines whether the proposed service is in accordance with established requirements and whether any other U.S. operator would be unduly prejudiced by it, and makes the final determination, subject to review by the Secretary of Commerce, as to which companies shall receive operating subsidy.

The subsidized operator must agre to replace obsolete ships with ne up-to-date ships found to be suitab for the trade route to be served an for use as naval and military auxil iaries in an emergency. The Admin istration may pay up to 55 percent o the domestic cost of such ships, s that the operator pays no more tha the estimated cost of building a simi lar ship in a representative foreig shipyard, and the Administration ma pay for any national defense feature which are found to be in excess o commercial requirements. Construc tion subsidy may be paid for any shi to be used in U.S. foreign trad whether or not the operator receive an operating subsidy. The Govern ment may also guarantee ship con struction loans or mortgages obtaine from private sources.

Government-owned war-built shi may be exchanged for nonsubsidize privately owned war-built ships of le economic type, to help upgrade an improve the ships in domestic and for eign service.

The agency carries out a cargo pro motion program designed to bring i the attention of shippers, bank insurance companies, freight forward ers, and similar groups, the adva tages to them and to U.S. trade o using U.S.-flag ships.

FENSE DUTIES

In addition to determining the ard of subsidies and administering sidy contracts, the Maritime Administration maintains a National fense Reserve Fleet of about 1,700 ps. most of them built during rld War II, which are preserved at locations throughout the Nation a state of semireadiness for emergy use.

Transfers of U.S. ships to foreign must be approved by the Mari- Administration, which may approval if the transfer is in rdance with the policies estabed from time to time. Such poli- limit the types of ships which may transferred and generally require the ships not be needed by the ted States or that they will be de available to the United States an emergency.

THER MARAD FUNCTIONS

The Maritime Administration opes the U.S. Merchant Marine demy at Kings Point, Long Island, .Y., where young men are trained to me merchant marine officers. e school curriculum covers a 4-year rse leading to a B.S. degree and a d mate's or third engineer's lise. The Maritime Administration supervises the Government nts and student aid given to the State merchant marine schools in ine, New York, Massachusetts, lifornia, and Texas.

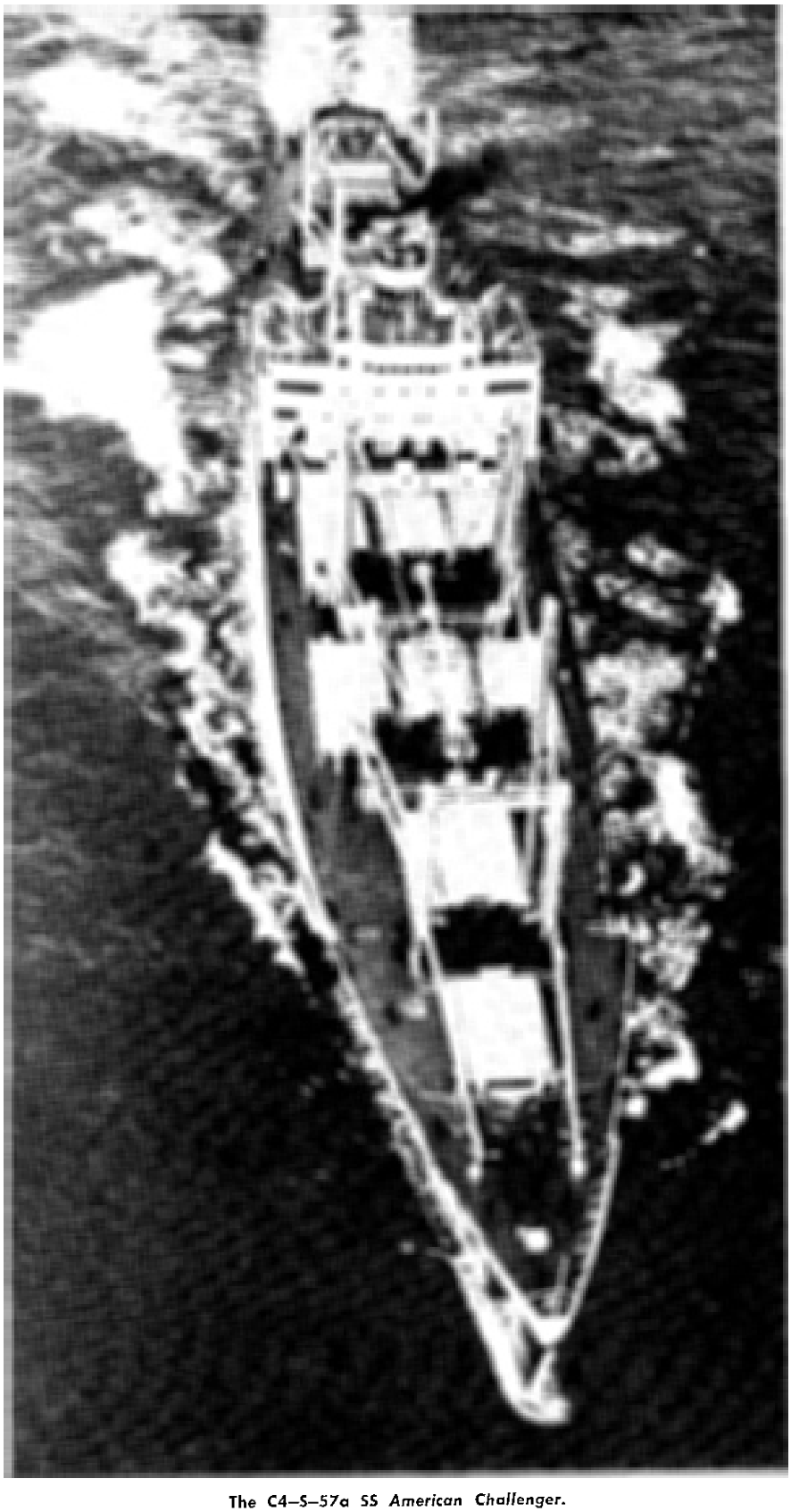
The Maritime Administration also es advice and assistance in port nning and is responsible for coinating programs of the ports for ntinued operation in an emergency.

The agency cooperates in internaal programs and meetings in such tters of mutual concern as prevenn of pollution of the seas by oil scharge from ships, the liability for mage from nuclear-powered ships, e simplification of shipping docuents, standard container sizes, and proved safety and navigation regations.

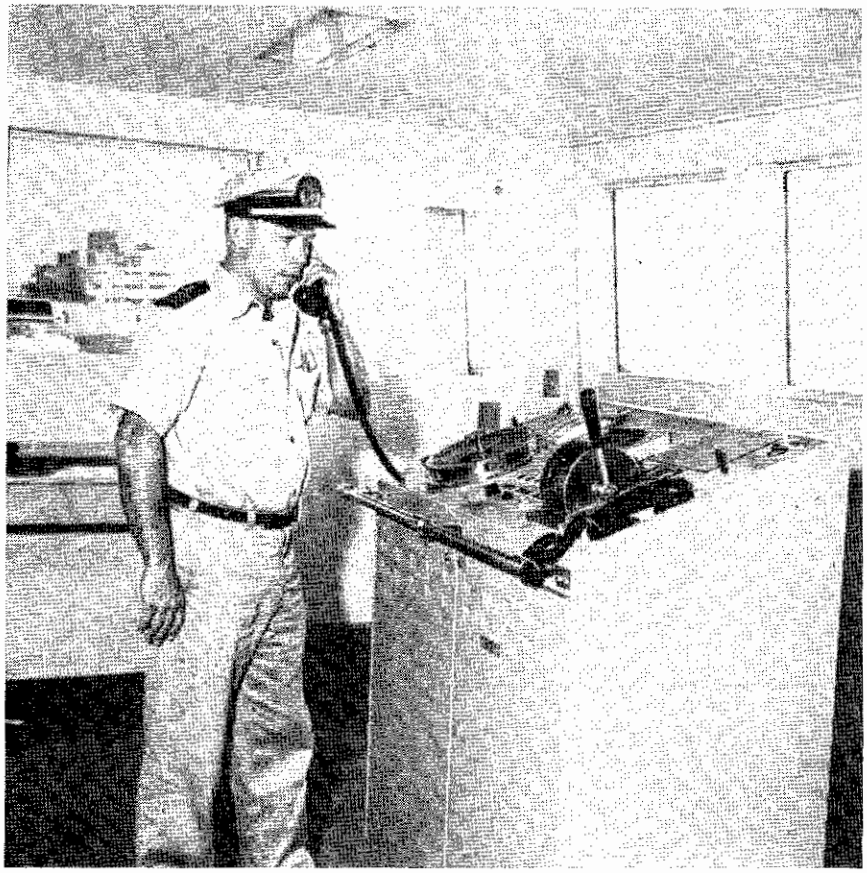
The Maritime Administration unertakes research on new ship types d the improvement of existing ps.

HIP OPERATIONS

Shortly after the Maritime Adminration was established on May 24, 50. Communist aggression flared in rea and touched off a concerted on by the United Nations to deend South Korea, in which the ted States took a leading role. Almost overnight logistic requirements



The C4–S–57a SS *American Challenger.*



Bridge control console of the SS *Mormacargo*.

of supplying thousands of U.N. fighting men imposed heavy demands and responsibilities on the U.S. merchant marine and upon the newly created Maritime Administration. Within a year, the active fleet increased from 1,248 on June 30, 1950, to 1,723 on June 30, 1951, and by December 31, 1951, had reached 2,009. All the additional ships came from the National Defense Reserve Fleet, which totaled 2,277 ships on July 1, 1950. Within the 18-month period, 778 Government-owned ships were withdrawn, repaired, refitted, and put into service at the rate of more than 3 every 2 days.

The first call came from the Military Sea Transportation Service (MSTS), the agency which provides sea transport for the Armed Forces. The privately owned ships available for charter to augment tonnage under the direct supervision of MSTS was soon absorbed, and MSTS asked the Maritime Administration to take out of reserve the ships still needed. Private operators took 161 Victory ships under bareboat charter, which were in turn chartered to MSTS. Some ships were withdrawn, repaired, refitted, and placed on loading berth within 5 to 7 days. In addition to military demands, greatly increased demands for shipping for aid to friendly countries led to reactivation of additional ships from reserve.

Additional administrative machinery was needed to supervise operation of the greatly expanded fleet. The National Shipping Authority (NSA), was therefore established on March 13, 1951, patterned somewhat along the lines of the War Shipping Administration of World War II, but made an integral unit of the Maritime Administration. NSA policy was to operate Government-owned ships only when privately owned tonnage was not available to lift cargoes required in the national interest.

All the Government ships were operated by private companies with civilian crews, under general agency agreements with the Government. From March 13 through December 31, 1951, NSA reactivated from the reserve fleet a total of 443 ships. Some of those originally placed under bareboat charter were transferred to general agency, making a total of 471 by the end of the year. The cost of repairing and placing reserve fleet ships in service was nearly $60 million, but much of this was offset b freight earnings from operation o the ships. Undoubtedly hundreds o thousands of dollars' worth of repai had been saved because of the pres ervation measures taken when th ships were placed in reserve.

In January 1951 a voluntary tanke plan was inaugurated which achieve excellent cooperation from the tanke industry. All requirements of th MSTS for tanker capacity were me promptly. A total of 383 U.S. tanker 99.7 percent of available America tanker capacity, was enrolled by th end of the year. In addition, Ameri can owners and charterers of 60 for eign-flag tankers voluntarily pledge these ships for contribution to th program. Charter rates to MST were lower than normal commerci rates.

By June 1952, the peak of shippi demand occasioned by the Korea crisis was over. The number of shi under general agency dropped to 13 all for military use, and those o charter decreased to 91. Exclusi of the vast military cargoes move Government-owned general agen ships carried nearly 12,700,000 to to 17 different countries.

Simultaneously with the drop in de mand for U.S. shipping, there was great increase in foreign-flag tonnag U.S. merchant ships began to encoun ter difficulty in obtaining sufficie cargoes, and some privately own ships were idle or laid up because o insufficient cargo. Governmen owned ships under general agen agreements declined further to 108 November 30, 1952, but increase somewhat to 141 by June 30, 1953, a for military use. Government-own ships on charter decreased to 49 b June 30.

Following the Korean armistice i July 1953, the decline continued, an permission was given to transfer som U.S. Liberty-type tankers to foreig registry under the flags of Liber Panama, or Honduras, but with re strictions that would make the available to the United States in a emergency. In 1955 Public Law 6 was passed by Congress to provi that at least 50 percent of Gover ment-financed cargoes should mo in U.S. privately owned commerci vessels to the extent they were avai able at fair and reasonable rates.

In the fall of 1956, however, the was another sharp upswing when th Suez Canal was closed to traffic b Egypt, increasing the length of ha for many ships and pushing upwa once more the demand for shippi Again 223 Government-owned shi in the reserve fleet were broken out this time for charter to American flag operators, to permit transport

tion in U.S.-flag ships of a substantial portion of the expanded aid programs of the Department of Agriculture, International Cooperation Administration, and Export-Import Bank. The Navy Department also took 29 tankers from the merchant marine reserve because of the sudden tanker shortage. Notable features of the increased traffic were accelerated movements of coal for commercial account and large exports of grain, principally under the foreign-aid program. Freight rates, which had soared after the Canal's closing, were held down to reasonable levels by the use of the Government-owned ships.

When the Suez Canal was reopened in April 1957, demand again fell off. New fast foreign-flag ships, their building spurred by the Canal closing, came into service to compete for available cargoes. Once again there was a surplus of dry cargo tonnage, with reduced charter rates and sales values of both U.S.- and foreign-flag ships. Bareboat charter of Government ships dropped to 11 by the end of June 1958. A decline in U.S. exports, particularly coal, and unprofitable freight rates led to an unprecedented number of ships being laid up. This depression in the market has continued without any great improvement to date.

SHIPBUILDING

Shipbuilding was at a low ebb at the beginning of 1950. American steamships operators had purchased large numbers of war-built ships under provisions of the Merchant Ship Sales Act of 1946. On June 30, 1950, there were 10 tankers under construction financed by private capital, and 6 passenger or passenger-cargo ships being built with construction-differential subsidy help. Three of these ships were subsequently delivered into commercial service—the *SS United States*, the *Independence*, and the *Constitution*. The other three were taken over by the Navy Department for completion as troopships.

A new type of cargo ship was designed and built by the Government—the *Schuyler Otis Bland*, which incorporated improved cargo-handling gear and greater speed than ships then in service. This ship was operated under charter by several private companies, but was eventually laid up, and did not become the prototype of a new design as originally intended.

Instead, with the threat of war in Korea, a group of scientists studying problems of security of sea transportation for the Navy Department advised that there was a pressing need for a new type of dry cargo vessel, large and fast enough to provide a reasonable guarantee that vital cargoes could be delivered into advanced war areas with a maximum of surety. On January 1, 1951, $350 million was appropriated by the Congress for construction of ships of a new class that met these specifications—the Mariner ships. Seven shipyards received contracts for five each. By the end of 1951, 16 keels had been laid, and all were completed by the end of 1955. These ships were designed for a speed of 20 knots and cargo capacity of about 13,000 tons. They were operated under general agency agreements by private operators to carry military cargoes, and performed so well that after they were offered for sale for commercial service in 1954, 29 were bought by private operators, including 3 which were purchased before completion by a private operator for conversion to commercial service. Five were taken by the Navy for military auxiliaries, and one was a casualty of Korean service.

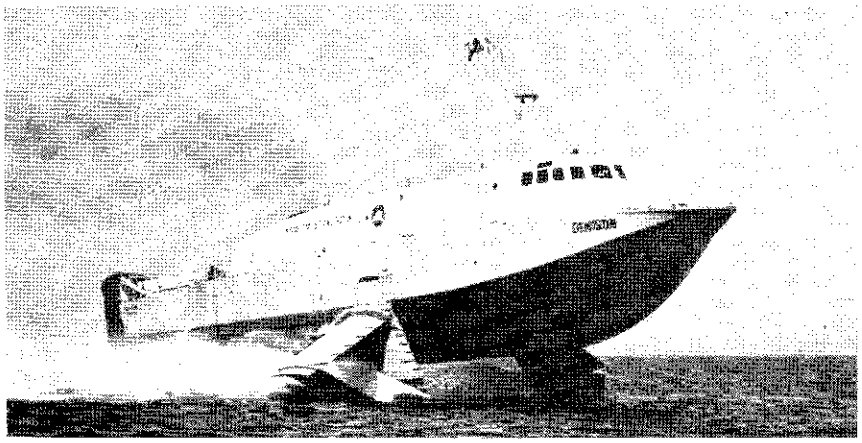
In 1952 approval was granted for construction in U.S. shipyards of 30 large tankers for friendly foreign nations, with the condition that the ships would be available to the United States in event of an emergency.

With approaching completion of the Mariners and the foreign-owned tankers, the prospects for shipbuilding were dim. In 1954 a major effort was made to inaugurate a ship construction program that would be the largest in peacetime history, with the major share to be privately financed. This included the building of tankers under a trade-in arrangement, and the building of several passenger ships with construction-differential aid.

Experiments were also undertaken to determine the feasibility of increasing the defense potential of laid-up Liberty ships by installing improved propulsion machinery for increased speed and by modifying the hull and cargo gear for increased efficiency. Four Libertys were so modified and were operated experimentally for some time, but no large-scale program of modernization was undertaken. An emergency ship repair program for the best of the ships in the reserve fleets was undertaken, both to help hard-pressed ship repair yards and to assure that a nucleus of reserve ships would be in ready condition in case of national emergency.

Congress gave impetus to private financing of new construction by providing 100 percent Government in-

Reactor control of the N/S *Savannah*.



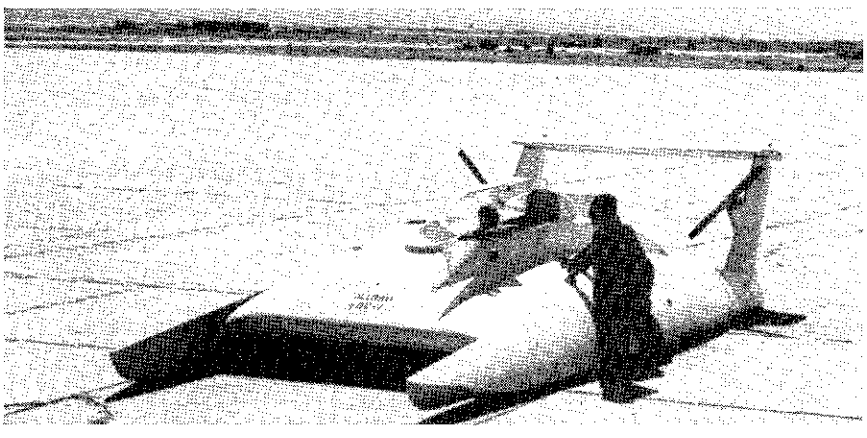
MARAD's oceangoing hydrofoil HS Denison.

surance of mortgages and construction loans obtained from private commercial institutions for shipbuilding. At this time also, Maritime joined with the Atomic Energy Commission to study the possibility of using nuclear power in the propulsion of merchant ships. Design studies were made of various types of ships which might use nuclear power—a tanker, several types of dry cargo and passenger-cargo ships, and an auxiliary naval ship.

By June 1956 the largest peacetime shipbuilding program in U.S. history was well underway, with a total of 68 ships under construction, conversion, reconditioning, or on order. A new type of tanker was designed and built by Maritime and was taken over by the Navy on completion. By June 1957 there were 119 ships under construction, conversion, or on order in U.S. yards, and contracts had been executed or were being worked out with subsidized operators for replacement of nearly 300 ships over a 15–20 year period at an estimated cost of $4 billion.

By the end of June 1958, however, the number of ships under construction had decreased as a result of cancellations and postponement or suspension of contracts because of the decline in traffic volume and oversupply of world tonnage. The long-range plans of the subsidized operators progressed steadily, but for the unsubsidized ships, there was no way of instituting a long-range program, since no subsidy aid could be given to these operators. However, on July 5, 1960, Congress enacted the Vessel Exchange Act, which provided that nonsubsidized war-built ships might be exchanged for Government-owned war-built ships of better type. Congress also increased the limit of construction-differential subsidy that might be paid to 55 percent of domestic cost, to make up for the steadily increasing differential between U.S. and foreign shipbuilding prices.

The long-range replacement programs of the subsidized operators was extended somewhat to provide a more stable program, to eliminate periods of "feast and famine" by assuring a steady amount of work from year to year, and to stabilize budgeting of construction funds. This was designed also to make the program easier for the companies to finance and to permit a greater opportunity to apply the fruits of maritime research to new ships. Efforts were made to reduce ship construction costs by multiple ship awards, simplification of design and improved procurement practices by the use of standardized types whenever possible, and by the introduction of value engineering techniques to reduce unnecessary shipbuilding costs.



MARAD's experimental surface-effect ship.

RESEARCH AND DEVELOPMENT

In 1958 a research and development program was undertaken by the Maritime Administration to coordinate and lend impetus to a permanent industry-Government program for the U.S. merchant marine. The objective was to supervise and direct industry and Government scientific study of merchant marine problems with a view to their practical solution, to determine priority and timetables of scientific applications and experimentation designed to place the U.S. merchant marine in the forefront of world shipping, and to direct and conduct research and otherwise experiment in ways to improve the transportation of persons and things by water.

On April 25, 1955, the President announced that a nuclear-powered passenger-cargo ship would be built by the United States to demonstrate to the world the peaceful use of the atom. This project was assigned jointly to the Maritime Administration and the Atomic Energy Commission, with Maritime responsible for building the hull, and the AEC for the reactor. In April 1957 contracts were awarded for development of the reactor and for the design of the ship. A contract for construction of the ship was awarded on December 10, 1957, to New York Shipbuilding Corp., and the keel was laid on May 22, 1958. Named the "NS *Savannah*," in honor of the SS *Savannah*, the first steamship to cross the Atlantic, the world's first nuclear-powered merchant ship was delivered in the spring of 1962.

After several months of testing, the ship made her maiden voyage from her home port of Savannah, Ga., on August 28, 1962, and then visited cities along the Pacific coast, Hawaii, and the Canal Zone, until March 1963. After overhauling at her servicing port of Galveston, Tex., she was scheduled to resume her visits, but instead was delayed for a year by a labor dispute. In May 1964, under a new general agent, she resumed her visits to U.S. gulf and Atlantic coast ports and to 15 foreign ports in Europe. On March 10, 1965, she returned to Galveston for checkup, with her future undetermined, although

her general agent has proposed operating her in commercial service.

During her visits in the United States and abroad, the NS *Savannah* was visited by nearly 1½ million people, including kings, queens, and heads of state, and was received everywhere with admiration and enthusiasm.

Studies were undertaken of the feasibility of a submarine tanker employing nuclear power, and the possibility of a subsurface commercial ship. These were found to be technically feasible but commercially uneconomic.

The application of high-speed hydrofoil principles to oceangoing craft was also the subject of a Maritime research project. A contract was awarded on January 12, 1960, for development of an oceangoing hydrofoil, and construction of the ship, the ES *Denison*, was completed in June 1962. This was a cooperative program, with industry contributing about two-thirds of the total $9 million cost of the craft. A test program was undertaken, with the ship traveling over 5,000 miles. Commercial operation, which had originally been intended, was postponed in favor of extended trials to test and improve components. After 14 months of tests and demonstration visits to ports along the Atlantic coast, the *Denison* was chartered to her builder for continued experimental operation.

As part of the effort to improve cargo handling, a concerted effort was made to simplify passenger and cargo documents required of vessels in international trade. With the cooperation of shipping lines and maritime associations and Government agencies, this effort culminated in 1964 in the development of a standard ocean bill of lading and related shipping documents, all compatible with each other. General adoption of such standardized forms is expected to speed up preparation and handling of cargo documents.

Maritime's research and development program was enlarged in 1960. The programs to be undertaken included development of improved and advanced hull designs, propulsion systems, auxiliary machinery and equipment. They were designed to promote the use of the principles of automation to the extent practical, the automated handling of unitized cargo, and improvement in management and navigation of vessels. Laboratory research, equipment development, and field testing were to precede prototype construction.

In 1960–61 research contracts were awarded for a radar data computer, and course computer and steering system to improve ship navigation and safety.

NATIONAL MARITIME DAY, 1965

By the President of the United States of America
A Proclamation

International commerce and the ships which make it possible have contributed immeasurably to America's greatness. The sea and ships are an integral part of this country's past, present, and future.

In war and peace merchant ships and merchant seamen have served us well. The forms of ships may change—from the tiny sailing ship *Mayflower*, to the nuclear ship *Savannah* and the automated liners of tomorrow—but their purpose remains the same: to carry people and goods between nations in peaceful commerce or, if need be, to carry the men and equipment needed to protect our interests and our friends overseas.

We must be ever mindful of the state of our merchant fleet. A balanced, economical, and efficient merchant fleet, manned by well-trained and skilled seamen, is a vital national resource. The importance of American merchant seapower is underscored by our burgeoning trade, and the increasing demands for ocean transportation that result. The creation and maintenance of a strong and competitive fleet to meet these demands is a complex task requiring the best efforts of government, management, and labor.

I take particular pleasure in noting that this year marks the fifteenth anniversary of the establishment of the Maritime Administration in the Department of Commerce. That agency has the responsibility for insuring that the United States possesses a merchant marine adequate to meet our economic and military requirements for an American-flag merchant marine. It has served us well.

That the American people might be constantly reminded of the importance of the merchant marine in our national life, the Congress in 1933 designated May 22 of each year as National Maritime Day and requested the President to issue a proclamation annually calling for the observance of that day. On that day in 1819 the SS *Savannah* set forth for the first transoceanic voyage of any steamship.

Maritime Day should serve to remind all Americans that the maintenance of our merchant marine cannot be left to the Government alone, and that our fleet must ultimately be supported by Americans who ship their cargo on American ships.

NOW, THEREFORE, I, LYNDON B. JOHNSON, President of the United States of America, do hereby urge the people of the United States to honor our American Merchant Marine on Saturday, May 22, 1965, by displaying the flag of the United States at their homes and other suitable places, and I request that all ships sailing under the American flag dress ship on that day in tribute to the American Merchant Marine.

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

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

LYNDON B. JOHNSON

By the President:
DEAN RUSK,
Secretary of State.

A contract was awarded also for the design of a ship embodying the surface-effect principle, which supports a hull above the surface of the water on a cushion of air. A man-carrying model of a surface-effect oceangoing ship was completed and tested in 1964.

An operational analysis of a worldwide maritime transportation system was undertaken, and a mathematical simulation was developed. This is designed to assist shipping companies to determine the effect of various decisions on their operating profits and efficiency without actually having to undertake expensive and time-consuming experiments.

In addition to the development, testing, operation, and crew training in connection with the nuclear ship *Savannah*, Maritime has undertaken to study improved nuclear propulsion systems and to examine promising routes and services for their potentialities for service by nuclear-powered ships.

Mechanization of many ship components has been developed. An integrated bridge control unit was designed and evaluated in service. An automatic boiler control system, operating without firemen, was successfully installed in a Great Lakes bulk carrier. Mechanized control of the engineroom, and bridge control of main engines were developed to the point that all new construction is now incorporating these features, with consequent expected reduction in operating expense. ⚓

1960 AND 1948 INTERNATIONAL RULES COMPARED: REVISIONS OF RULES 17 THROUGH 20 EXPLAINED

This seventh article of a series continues the comparison of the 1948 International Rules of the Road presently in use with the revised 1960 International Rules which will become effective on 1 September 1965.

In the following presentation, the 1960 rule appears in standard roman type immediately followed by the superseded 1948 rule. A résumé of primary changes follows the rule presentation.

PART D.—STEERING AND SAILING RULES

PRELIMINARY

1. *In obeying and construing these Rules, any action taken should be positive, in ample time, and with due regard to the observance of good seamanship.*

2. *Risk of collision can, when circumstances permit, be ascertained by carefully watching the compass bearing of an approaching vessel. If the bearing does not appreciably change, such risk should be deemed to exist.*

3. *Mariners should bear in mind that seaplanes in the act of landing or taking off, or operating under adverse weather conditions, may be unable to change their intended action at the last moment.*

(Same as Part C of 1948 Rules)

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

(New. Item 4 has no 1948 Counterpart)

RULE 17

1960 INTERNATIONAL RULES

(a) When two sailing vessels are approaching one another, so as to involve risk of collision, one of them shall keep out of the way of the other as follows:

(i) When each has the wind on a different side, the vessel which has the wind on the portside shall keep out of the way of the other.

(ii) When both have the wind on the same side, the vessel which is to windward shall keep out of the way of the vessel which is to leeward.

(b) For the purposes of this Rule the windward side shall be deemed to be the side opposite to that on which the mainsail is carried or, in the case of a square-rigged vessel, the side opposite to that on which the largest fore-and-aft sail is carried.

Changed. 1948 Rule Read:

SAILING VESSELS

Rule 17 When two sailing vessels are approaching one another, so as to involve risk of collision, one of them shall keep out of the way of the other, as follows:

(a) A vessel which is running free shall keep out of the way of a vessel which is close-hauled.

(b) A vessel which is close-hauled on the port tack shall keep out of the way of a vessel which is close-hauled on the starboard tack.

(c) When both are running free, with the wind on different sides, the vessel which has the wind on the portside shall keep out of the way of the other.

(d) When both are running free, with the wind on the same side, the vessel which is to windward shall keep out of the way of the vessel which is to leeward.

(e) A vessel which has the wind aft shall keep out of the way of the other vessel.

PRIMARY CHANGES

1. Paragraph 4 has been added to the "Preliminary" of the Steering and Sailing Rules. By definition of Rule 1(ix), vessels are "deemed to be in sight of one another only when one can be observed visually from the other." Therefore, detecting another vessel by radar, *by itself*, does not constitute being "in sight of one another."

2. Rule 17 has been rewritten in simplified terms without any significant change.

RULE 18

1960 INTERNATIONAL RULES

(a) When two power-driven vessels are meeting end on, or nearly end on, so as to involve risk of collision, each shall alter her course to starboard, so that each may pass on the portside of the other. This Rule only applies to cases where vessels are meeting end on, or nearly end on, in such a manner as to involve risk of collision, and does not apply to two vessels which must, if both keep on their respective course, pass clear of each other. The only cases to which it does apply are when each of two vessels is end on, or nearly end on, to the other; in other words, to cases in which, by day, each vessel sees the masts of the other in a line, or nearly in a line, with her own; and by night, to cases in which each vessel is in such a position as to see both the side lights of the other. It does not apply, by day, to cases in which a vessel sees another ahead crossing her own course; or, by night, to cases where the red light of one vessel is opposed to the red light of the other or where the green light of one vessel is opposed to the green light of the other or where a red light without a green light or a green light without a red light is seen ahead, or where both green and red lights are seen anywhere but ahead. (Same as 1948 Rule.)

(b) For the purposes of this Rule and Rules 19 to 29, inclusive, except Rule 20(c) and Rule 28, a seaplane on the water shall be deemed to be a vessel, and the expression "power-driven vessel" shall be construed accordingly.

Changed. 1948 Rule Read:

(b) For the purposes of this Rule and Rules 19 to 29, inclusive, except Rule 20(b), a seaplane on the water shall be deemed to be a vessel, and the expression "power-driven vessel" shall be construed accordingly.

PRIMARY CHANGES

1. The 1960 Rule has been modified to clearly exempt seaplanes on the water from sounding the whistle signals of Rule 28.

RULE 19

1960 INTERNATIONAL RULES

When two power-driven vessels are crossing, so as to involve risk of collision, the vessel which has the other on her own starboard side shall keep out of the way of the other.

(Same as 1948 Rule)

RULE 20

1960 INTERNATIONAL RULES

(a) When a power-driven vessel and a sailing vessel are proceeding in such directions as to involve risk of collision, except as provided for in Rules 24 and 26, the power-driven vessel shall keep out of the way of the sailing vessel.

(Same as 1948 Rule)

(b) This Rule shall not give to a sailing vessel the right to hamper, in a narrow channel, the safe passage of a power-driven vessel which can navigate only inside such channel.

(New. No 1948 Counterpart)

(c) A seaplane on the water shall, in general, keep well clear of all vessels and avoid impeding their navigation. In circumstances, however, where risk of collision exists, she shall comply with these Rules.

(Same as 20(b) of 1948 Rules)

PRIMARY CHANGES

1. Rule 20(b) has been added. It simply recognizes and clarifies the

practical situation of right-of-way between a deep-draft vessel operating in an area of limited maneuverability and a sailing vessel which, irrespective of its means of propulsion, is probably far more able to safely keep clear. This new material is closely related to that of Rule 25(c) whereby a power-driven vessel of less than 65 feet in length shall not hamper a vessel which can navigate only inside a narrow channel. It appears that both additions are aimed toward the vast number of recreational boatsmen who might be misled into dangerously assuming right-of-way because of a lack of appreciation of the limited maneuverability of deep-draft vessels.

STORES AND SUPPLIES

Articles of ships' stores and supplies certificated from March 1 to March 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

Dubow Chemical Corp., 15-04 121st St., College Point, N.Y. Certificate No. 615, dated March 19, 1965, DUBOW ELECTRICAL SOLVENT #751.

AFFIDAVITS

The following affidavits were accepted during the period from February 15, 1965, to March 15, 1965:

Strong, Carlisle & Hammond Division,[1] Cleveland, Ohio.

Wisconsin Aluminum Foundry Co., Inc., Manitowoc, Wis., 54221, CASTINGS.

West Philadelphia Bronze Co., Inc., 20 North 41st Street, Philadelphia, Pa., CASTINGS.

Triumph Metal Casting Co., Inc., P.O. Box 346, Phoenixville, Pa., CASTINGS.

Joseph M. Loeffler, Machine & Brass Works, U.S. Hwy. No. 1 and Robbins Ave., Penndel, Pa., VALVES.

Bridesburg Foundry Co., Front and Grape Streets, Fullerton, Pa., 18052, CASTINGS.

Tru-Welds Co., P.O. Box 19397, Houston, Tex., 77024, FORGINGS.

Carpenter Steel Co., Alloy Tube Division, Union, N.J., 07083, STAINLESS STEEL PIPE & TUBING.

The Buckeye Forging Co., P.O. Box 1785, Cleveland, Ohio, 44105, FITTINGS.

Nopak Division, Galland-Henning Manufacturing Co., Milwaukee, Wis., 53246, VALVES.

[1] Discontinue listing.

nautical queries

DECK

Q. Describe the construction of a U.S. Coast Guard-approved Kapok life preserver.

A. The U.S. Coast Guard-approved life preserver consists of a vest-cut envelope containing pockets in which are enclosed pads of buoyant material, the life preserver being fitted with tapes and webbing to provide complete reversibility, proper adjustment for close fit to the bodies of various size wearers, and proper flotation characteristics to hold the wearer in an upright backward position with head and face out of water.

Q. How many of each of the following distress signals must be carried in lifeboats aboard ocean cargo vessels?

(a) Floating orange smoke signals
(b) Red hand flare signals
(c) Red parachute flare signals

A. (a) 2
(b) 12
(c) 12

The service limit of distress signals is limited to 3 years from date of manufacture.

Q. How would you test the air tanks of a lifeboat for tightness?

A. The air tanks of a lifeboat may be tested for tightness by removing the cap for the test plug on each tank and applying 1 pound or less air pressure. Leaks may be determined by the failure of the tank to maintain the pressure. If the source of the leak is not apparent, soapy water brushed over the tank will assist in determining the origin.

Tanks may also be tested on a warm day when the temperature will have caused the air in the tank to expand. Air will be blown out the test plug when the cap is removed till it equalizes with the atmospheric pressure.

Q. How are each of the following types of fire extinguishers checked and tested at a vessel's annual inspection?

(a) Soda acid
(b) Foam
(c) Carbon Dioxide

A. (a) Discharge. Clean inside and hose thoroughly. Recharge.

(b) Discharge. Clean inside and hose thoroughly Recharge.

(c) Weigh Cylinder. Recharge if weight loss exceeds 10 percent of weight of charge. Inspect hose and nozzle to be sure they are clear.

ENGINE

Q. Determine the pressure in an engine cylinder if the force acting upon the piston is 75,000 lbs. and the diameter of the piston is 14 inches.

A. $75{,}000 \div 14 \times 0.7854 = 487.2$ p.s.i.

Q. What temperature controls are required to be fitted on superheaters which are designed for normal operating temperatures in excess of 850° F.?

A. Superheaters designed for normal operating temperatures in excess of 850° F., at the superheater outlet, shall be fitted with controls to insure that the maximum temperature does not rise more than 15° above the design conditions. Visual or audible alarms shall be provided.

Q. What may be the penalty of the law on anyone found guilty of using some means or device whereby the boiler may be subjected to a greater pressure than the amount allowed by the certificate of inspection isued by the Coast Guard?

A. Any person who employs any means or device whereby the boiler may be subjected to a greater pressure than the amount allowed by the certificate of the Coast Guard, shall be guilty of a misdemeanor, and fined $200, and may also be imprisoned not exceeding 5 years.

Q. What are the requirements for the emergency lighting system to be installed on new cargo vessels of over 1,600 gross tons? What circuits are usually connected to the emergency set?

A. For all vessels of 1,600 gross tons and over, the emergency source should consist of storage batteries or diesel generating set having sufficient capacity for continuous operation over a period of at least 12 hours when supplying the navigating light circuits, telegraphs, binnacles, and the emergency lighting for machinery spaces, steering gear room, radio room, passageways, exits from crew's quarters and other spaces and equipment necessary for the operation of the vessel in an emergency. The emergency system should comprise independent circuits from the emergency panel, and be normally energized from the main power source.

Q. How shall repairs be made on boilers in which the heads of rivets or staybolts have become deteriorated?

A. Deteriorated rivets or staybolts shall be replaced.

Public Hearing Held March 22

THE COMMANDANT, U.S. Coast Guard, announced the general acceptance of the recommendations of the Merchant Marine Council regarding proposals revising the Navigation and Vessel Inspection Regulations. The Merchant Marine Council held its annual session on 22–24 March 1965.

The proposals to revise the Navigation and Vessel Inspection Regulations were set forth in two volumes of the Merchant Marine Council Public Hearing Agenda, CG 249, and a supplemental sheet designated Volume III, as well as in the oral and written comments submitted in conjunction with the Public Hearing held 22 March 1965.

Indicative of the interest in the proposals was the attendance of 52 persons representing all segments of maritime and allied interests.

The proposals considered were: (1) Rules of the Road; (2) Merchant marine officers and motorboat operators; (3) Uninspected vessels; (4) Inspected vessels; (5) Lifesaving appliances and fire precautions; (6) Marine engineering; (7) Electrical engineering; (8) Dangerous cargoes in bulk; (9) Dangerous cargoes; (10) Specifications and approvals of equipment; and (11) Pressure vessels. The Merchant Marine Council in Executive Session considered the oral comments and the additional 254 written comments submitted, containing over 300 suggestions or changes in the proposals. The proposals as accepted by the Merchant Marine Council will be submitted to the Commandant, U.S. Coast Guard, for approval and publication in the Federal Register as soon as possible.

With respect to proposals dealing with fire extinguishers and ventilation on motorboats and motor vessels, Item 3, the comments indicated confusion due to the similarity of the phrases "open construction" and "open boats." The Council recommended that the wording of the two definitions be revised to remove this confusion. It was suggested that, if necessary, sketches showing the intent of the regulations be prepared and made available to both Coast Guard enforcement personnel and the public.

Regarding decking within surgical operating rooms on passenger vessels, Item 4b, the proposal was revised to show that current provisions of the new Code would apply only at the time of construction or alteration of the vessel. The repairs to such decking may be made in accordance with the standards in effect when the installation was made.

The proposals regarding automated or partially automated steam-propelled vessels, Item 4g, were commented on extensively at the public hearing and in written comments. The Council recommended that all the proposals be tabled for further study. It was suggested the Coast Guard continue consultations with affected labor unions, management, and owners or operators of such vessels.

With respect to the use of emergency battery-operated lights, Item 7j, the Council recommended continuation of such installations when such lights are equipped with a battery charger. This revision is similar to the requirements for such lights on small passenger vessels (Subchapter T).

The proposal regarding a bow telephone, Item 7j, was commented on extensively. Certain types of vessels do not need an installed device for communication between the bow and the bridge. Therefore, the proposals are revised to require an efficient means of communication between the bow and the bridge only when necessary because of the distance involved between the two stations.

Several comments regarding the prohibition for jackboxes or headsets installed on required telephone installations were rejected, since such equipment has the potential to decrease reliability of such installations.

With respect to the withdrawal of approval of cork and balsa wood life preservers, it was proposed in the Agenda to make such withdrawals effective 26 May 1965. This date was changed to 1 July 1965 for all the outstanding approvals for models 32 and 36 cork life preservers and models 42 and 46 balsa wood life preservers as evidenced by certificates of approval issued to manufacturers. Notwithstanding this withdrawal of approvals, all such life preservers manufactured pursuant to approved plans and requirements prior to 1 July 1965 may be placed in service and/or continued in use so long as such life preservers are in good and serviceable condition. However, by this action it is not intended to permit the installation of such life preservers on merchant vessels constructed on or after 26 May 1965, which are also subject to 1960 Safety of Life at Sea Convention.

The recommendations to continue cork life preservers in use on certain vessels were rejected primarily because the existing types of approved cork or balsa wood life preservers do not provide the desired degree of protection.

Item Xi was editorially revised to place the requirements into three specification subparts rather than one as set forth in the Agenda. In order to accomplish this, necessary editorial changes in references will also be made in other regulations referring to these specifications. With respect to the termination of approvals for backfire flame arresters under the specification in 46 CFR 162.015, all such approvals and certificates of approvals will be terminated as of 1 January 1966. However, all previously approved flame arresters found to be in compliance with requirements in the applicable new specifications will be reissued new approval numbers and certifcates of approvals as soon as possible under such specifications. All approved flame arresters manufactured in accordance with Specification Subpart 162.015 prior to 1 January 1966 may be continued in use on board motorboats or motor vessels so long as such backfire flame arresters are in good and serviceable condition. However, only those backfire flame arresters bearing the new approval numbers will be permitted to be installed on motorboats after 1 January 1966.

The Council accepted certain changes in the following proposals and recommended their approval as revised: Items (1), Rules of the Road; (2) Merchant marine officers and motorboat operators; (3) Uninspected vessels; (4b) Decking within surgical operating rooms on passenger vessels; (4c) Automatic sprinkler pumps; (4d) Limitation on the use of firehoses on cargo vessels; (4f) Combustible gas indicators on tank vessels carrying Grade E liquids; (5) Lifesaving appliances and fire precautions; (6) Marine engineering; (7) Electrical engineering (except 7d, motor controllers); (9) Dangerous cargoes; (10) Specifications and approvals of equipment; and (11) Pressure vessels. The Council recommended withdrawing Items 4a, vent systems for Grades D and E liquid cargo tanks on tank vessels; 4c, feeders required in loading and stowage of grain cargoes; 7d, motor controllers; and Item VIII, dangerous cargoes in bulk.

MARITIME SIDELIGHTS

SEARCH AND RESCUE OPERATIONS SEMINAR

The U.S. Atlantic Maritime Search and Rescue Coordinator will conduct a 3-day North Atlantic Search and Rescue Operations Seminar at the U.S. Mission to the United Nations, New York, N.Y., commencing May 12, 1965.

The Commander of Coast Guard's Eastern Area, Rear Adm. Irvin J. Stephens, USCG, the Atlantic Maritime Search and Rescue Coordinator, has invited 13 nations bordering the North Atlantic to participate. Those nations invited are: Belgium, Canada, Denmark, the Federal Republic of Germany, France, Iceland, Ireland, Netherlands, Norway, Portugal, Spain, Sweden, and the United Kingdom.

The purpose of the seminar is to discuss mutual problems in international coordination and planning of search and rescue operations. Additionally, information concerning present facilities, planned or programed facilities, and developmental projects will be discussed.

Other subjects of interest to be developed during the seminar include the establishment of a North Atlantic Search and Rescue Plan; the dissemination of information concerning new developments in search and rescue techniques, doctrine, and equipment; improvement of direct communications among operational agencies of various nations having search and rescue responsibilities; and the manner in which information from the Atlantic Merchant Vessel Report (AMVER) System can best serve the entire maritime community of the North Atlantic Ocean.

RESIDUAL FUEL COMBUSTION STUDIED

Combustion of residual fuel oil with massive recirculation of combustion products will be studied under a contract awarded by the Maritime Administration of the U.S. Department of Commerce. The research is to be completed within 1 year.

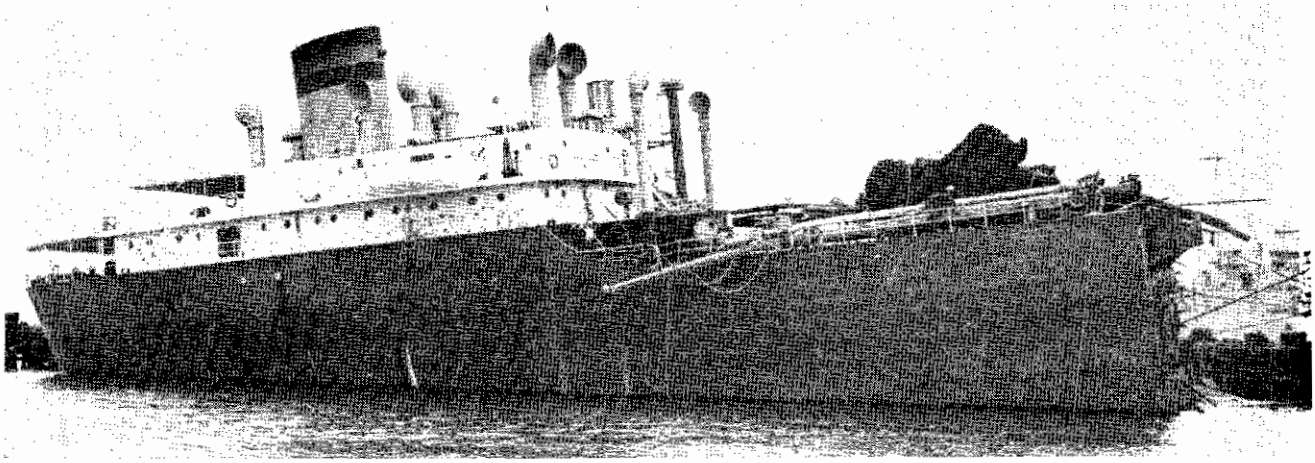
This research is part of the Maritime Administration's continuing program for studying the application of low-priced residual fuel to marine propulsion and auxiliary drive equipment. The trend for ships to become faster, which requires more power and correspondingly higher fuel consumption, indicates that it is important to utilize the least expensive residual fuel available. The efficiency of modern propulsion plants is limited, however, by detrimental effects of corrosion and erosion from burning residual fuel at high temperatures.

A contract awarded a year ago provided for investigating improved combustion for marine boilers. The present research is concerned with the capability of burning unselected residual fuel, specifically to determine the effects of recirculating exhaust gases back into the primary combustion zone. Previous research has shown that a major reduction in the exhaust smoke density can be achieved.

THE ESSO HOUSTON, 66,700 TON SUPERTANKER BUILT BY NEWPORT NEWS SHIPBUILDING AND DRY DOCK CO., RECENTLY JOINED THE HUMBLE OIL FLEET

SS *San Jacinto* Explosion Board Findings Approved

At approximately 11:15 p.m. on the night of 25 March 1964, while southbound off the Eastern Shore of Virginia, an explosion ripped the Tankship *San Jacinto*. The vessel subsequently broke in half, but was later salvaged. 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.



Salvaged stern section of San Jacinto. Bow was also saved.

TREASURY DEPARTMENT
UNITED STATES COAST GUARD

15 January 1965

Commandant's Action
on

Marine Board of Investigation; explosion of the SS *San Jacinto* in the Atlantic Ocean off the Eastern Shore of Virginia on 25 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 2315 (EST), 25 March 1964, while the SS *San Jacinto* was en route from Portland, Maine to Jacksonville, Florida and in approximate position 37 degrees, 43 minutes North, 74 degrees, 30.5 minutes West, an explosion occurred in the No. 8 cargo tanks causing the vessel to subsequently break in two. Of the 37 persons on board, 36 survived. One crewmember died of natural causes in a ship's lifeboat a short time after the explosion.

3. The SS *San Jacinto* (ex-*Fort Mercer*) was a modified T-2 type tankship, certificated to carry grade A inflammable or combustible liquids. As the *Fort Mercer*, the ship had broken in two in 1952 and was modified by the addition of a completely new bow section from frame 59 forward. The modification lengthened the vessel to 545 feet and added an additional set of tanks.

4. Cargo tanks, three across, five across, eight across, and nine port and starboard wings were normally used as ballast tanks and were fitted with magnesium anodes to control internal corrosion.

5. The vessel discharged a mixed cargo of gasoline, kerosene and fuel oil at Portland, Maine, and on 24 March, departed for Jacksonville, Fla., via the Cape Cod Canal. Prior to departure and throughout the day of 25 March, the crew was engaged in cleaning and gas-freeing tanks preparatory to entering a shipyard in Jacksonville for drydocking and Coast Guard inspection. The No. 8 center cargo tank was used as a "slop" tank during the cleaning process. At about 1930 on 25 March, the day's work was completed and the condition of the various cargo tanks at this time was: all cargo tanks gas-free except No. 3 port and starboard, No. 5 center and No. 8 across; ballasted—No. 3 center, No. 5 port and starboard, No. 9 port and starboard; ballasted but being gravitated out—No. 3 port and starboard, No. 5 center and No. 8 port and starboard. The No. 8 center tank was the last tank to be water washed but was not gas free.

6. While the tanks were being cleaned, two wasted magnesium anodes were found in the bottom of the tanks. One was found in the No. 5 starboard wing tank but the exact location in which the other was found could not be determined. Evidence was received that wasted anodes had been found in tanks on previous trips. At about 1955 on 25 March 1964, the Chief Officer made a tour about the deck prior to retiring for the evening. He found the expansion trunk covers on the No. 8 port and starboard tanks closed and dogged down; the ullage caps were opened with the flame screens in place. The No. 8 center expansion trunk cover was opened. Steam and water had been secured on deck.

7. At about 2315 on 25 March 1964 a violent explosion occurred in the No. 8 cargo tanks; however, other than for a momentary flash there was no fire. As the result of the explosion the deck and sides in way of the No. 8 tanks were destroyed with structural damage extending into the No. 9 tanks aft and the No. 7 tanks forward. Parts of the weather decks over the No. 8 tanks were

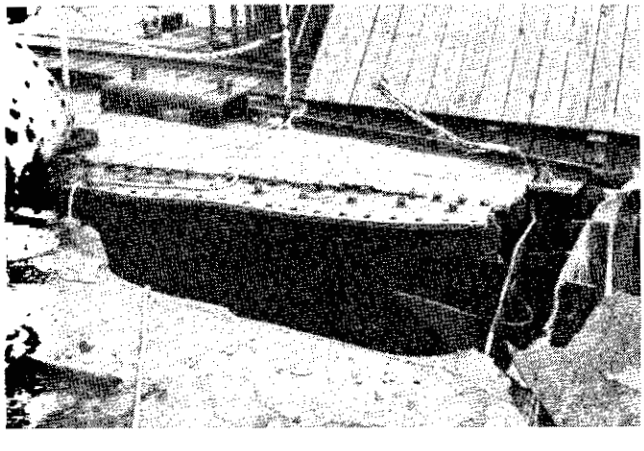
folded back and lay inverted over the No. 7 tanks. The bottom plating of the ship remained intact until about 0345, 26 March when the two sections of the vessel separated.

8. The explosion disrupted communications between the bridge and engineroom and the engineer on watch, receiving no response to the engine order telegraph, stopped the engines. After surveying the damage to the extent practicable, the Master ordered a lifeboat lowered and a distress message transmitted. The radio officer was unable to transmit the distress message because the radio antenna system had been destroyed by the explosion. A ship was observed in the vicinity and communications were established by a flashing light. The lifeboat was lowered to the water manned by the Second Officer and Steward. While attempting to release the boat from the falls, the Steward suffered a heart attack and subsequently died. With the exception of the Master and Chief Officer, the remaining crewmembers on the forward portion of the ship descended into the boat to assist the Second Officer in manning the boat and to care for the unconscious Steward. The Master ordered the boat to proceed to the approaching SS *Mobil Pegasus* to obtain medical care for the Steward and to place the radio officer on board the *Mobil Pegasus* to assist with radio communications. Simultaneous with lowering the lifeboat, the Master and Chief Officer commenced ballasting cargo tanks in the forward section to increase that portion of the vessel's stability. After placing the Steward and radio officer on board the *Mobil Pegasus* the lifeboat returned to the forward portion of the *San Jacinto*. By this time the Master and Chief Officer had completed ballasting the forward portion of the vessel. They boarded the boat and proceeded to the after portion of the ship. Upon arrival on the after section, the Master and Chief Officer immediately ballasted the No. 10 tanks.

9. The crew remained on board the after portion of the vessel and after the ship broke in two, both sections were towed to the Newport News Shipyard.

10. During the inspection of the wreck, a 2½-inch black rubber hose was found extending through the inverted expansion trunk of the No. 8 center tank. The presence of the hose in this position cannot be fully explained. The Chief Pumpman testified that no hoses were left in the No. 8 center tank when cleaning operations ended on the evening of the 25th of March. However, since the Master testified that all tank cleaning machines were accounted for, the Board's conclusion that this was the hose through which "slops" from other tanks were discharged into No. 8 center tank and which had been inadvertently left in the expansion trunk is concurred in.

Deck plating peeled back over catwalk.



Deck fracture. Note deck strap peeled back at left.

REMARKS

1. The Board's conclusion that the explosion originated in the No. 8 center tank and progressed almost simultaneously to the No. 8 wing tanks is concurred in.

2. Further concurring with the Board it is considered that the explosion was most probably caused by a magnesium anode falling in the No. 8 center tank and striking an internal structural member on the bottom plating, thus creating a spark which ignited explosive vapors emanating from the gasoline which had previously been stripped from other tanks.

3. Acting on the Board's recommendation the Rules and Regulations for Tank Vessels (CG–123) have been amended to prohibit the installation or use of sacrificial anodes of a type capable of producing a spark as the result of falling in tanks used for the carriage of inflammable or combustible liquids.

4. The Board's recommendation that all tank vessels fitted with lifeboats amidships and aft be required to carry a suitable portable emergency radio to be stowed in the after deckhouse 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.

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

E. J. ROLAND,
Admiral, U.S. Coast Guard,
Commandant.

AMENDMENTS TO REGULATIONS

The Proceedings does not normally reprint Federal Register material in toto because of space limitations. Rather, as a public service, mention is made on this page of those Federal Register items published during the month that have a direct affect on merchant marine safety. Then, should one wish to read the regulation in its official presentation, he must purchase the applicable Federal Register from the Superintendent of Documents. Always give the date of the Federal Register when ordering. This date can be found in the Proceedings coverage of the item. See instructions in publication panel inside back cover.

TITLE 46 CHANGES

RECREATIONAL BOATING PENALTY ADMINISTRATION

The increase in recreational boating and changes in the law enforcement program within the Coast Guard requires a further latitude in the manner in which District Commanders carry out their assigned tasks. The amending of 46 CFR 2.50–1 and 2.50–10 has been made to permit the District Commander, in his discretion, to also redelegate authority to assess, mitigate, or remit penalties to his Chief, Operations Division. The amendments to 46 CFR 2.50–20 revise the procedures governing the handling of penalty cases arising out of the administration of recreational boating activities. The principal change will now enable the District Commander to take administrative action as soon as a "Notice of Violation" is received from the Coast Guard enforcement personnel. This revised procedure will eliminate the need for the alleged violators to correspond with the District Commanders in those cases excused by appropriate letters of warning. All these changes may be found in the March 4, 1965, Federal Register.

MORE RECREATIONAL BOATING AMENDMENTS

The marine safety activities of the Coast Guard have been developed into two broad areas; i.e., one for the commercial merchant marine and the other for recreational boating. In the past these activities have been administered through the Office of Merchant Marine Safety at Coast Guard Headquarters and the Merchant Marine Safety Divisions in the respective District Commanders' Offices and by the Officers in Charge, Marine Inspection, at the local levels. In order to improve administration, the Coast Guard Headquarters organization has been changed. There has been established a Recreational Boating Safety Division in the Office of Operations and there have been transferred to this Division all the functions of marine safety related to recreational boating formerly performed by the Office of Merchant Marine Safety. In addition, those functions related to appeals to the Commandant from monetary penalties assessed by the District Commanders were transferred to the Chief Counsel from the Office of Merchant Marine Safety. These changes in organization are described in the amendments to 46 CFR 1.01 and 1.05 in the Federal Register of March 16, 1965.

MORE TITLE 46 CHANGES

TANK BARGES CARRYING DANGEROUS CARGOES IN BULK AFFECTED BY NEW REGULATIONS

Extensive regulation changes have been promulgated in the Federal Register of March 9, 1965, affecting tank barges carrying dangerous cargoes in bulk.

Manning requirements of Title 46 CFR subpart 31.15 have been amended. Affected sections are 31.–15–5 and 31.15–6.

Hull and cargo tank requirements of Title 46 CFR section 32.63–1 have also been amended.

Special operating requirements of 46 CFR 35 has had new sections (35.–01–50, 35.01–55) added and 35.01–45 has been amended.

To the warning and signal signs section, 35.30–1, has been added two new paragraphs.

Cargo-handling requirements, 35.–35–1, have been amended.

The subpart in reference to ethylene oxide handling, 40.05–86, has been deleted.

To the definition-of-terms section of subpart 90.10 (cargo and miscellaneous vessel regulations) has been added the definition for "gas free" condition (90.10–12).

Part 98 on special construction and arrangement has been amended extensively. Affected are sections 98.–03–1, 98.03–35, 98.03–40 and 98.03–45.

The particulars of these changes are to be found in the Federal Register of March 9, 1965.

LATEST CIRCULARS

CERTAIN 24′ LIFEBOATS REQUIRED TO BE ALTERED

Some 105 24′ steel Welin lifeboats with removable interiors are required by Navigation and Vessel Inspection Circular 1–65 to have the short breast plate removed and replaced with a new extended breast plate. This new extended breast plate will give the hoist plate and hook assembly the necessary lateral support that is needed to correct the possibility of a lateral misalignment of the release gear hooks and hoist plate which was observed at a recent test. NVIC 1–65, dated 3 March 1965, together with drawings, list of the lifeboats affected, and a list of Welin representatives, may be obtained at the nearest Marine Inspection Office or by writing Commandant (CHS), U.S. Coast Guard, Washington, D.C., 20226.

ROCKET LINE THROWING DRILLS TO RESUME

A target date of 1 January 1966 has been established by Navigation Vessel Inspection Circular 2–65 as the date all conversions of the Kilgore Model GR 52–CK impulse projected rocket-type line-throwing appliance to remote fire should be completed. This sets the stage for a resumption of quarterly drills.

All complete appliances shipped by the manufacturer after 15 April 1965 will be arranged for remote firing. Remote Fire Conversion Kits for appliances presently in service can be obtained from the manufacturer after 15 June 1965. NVIC 2–65, spelling out the details of converting and resuming of drills, may be obtained from the local Marine Inspection Office or by writing Commandant (CHS), U.S. Coast Guard, Washington, D.C., 20226.

APPROVED EQUIPMENT

COMMANDANT ISSUES MANY EQUIPMENT APPROVALS; TERMINATES OTHERS

By Commandant's action of February 16, 1965, Coast Guard approval was terminated on various items of lifesaving, firefighting, and miscellaneous equipment, installations, and materials used on merchant vessels subject to Coast Guard inspection and on certain motorboats and other pleasure craft.

In this termination notice, published in the Federal Register of March 2, 1965, are to be found items withdrawn from the approved list either because the item is no longer manufactured or because the approval has expired.

By Commandant's action of March 19, 1965, certain other items were added to the approved list, while some were removed. This notice was published in the Federal Register of March 26, 1965.

Those interested in these equipment lists must consult both the March 2 and the March 26, 1965, Federal Register for detailed itemization and identification.

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).
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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).
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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.
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329	Fire Fighting Manual for Tank Vessels (4–1–58).

CHANGES PUBLISHED DURING MARCH 1965

The following have been modified by Federal Register:
CG–190, Federal Registers, March 2 and March 26, 1965.
CG–123 and CG–257, Federal Register, March 9, 1965.

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