

PROCEEDINGS

OF THE MERCHANT MARINE COUNCIL

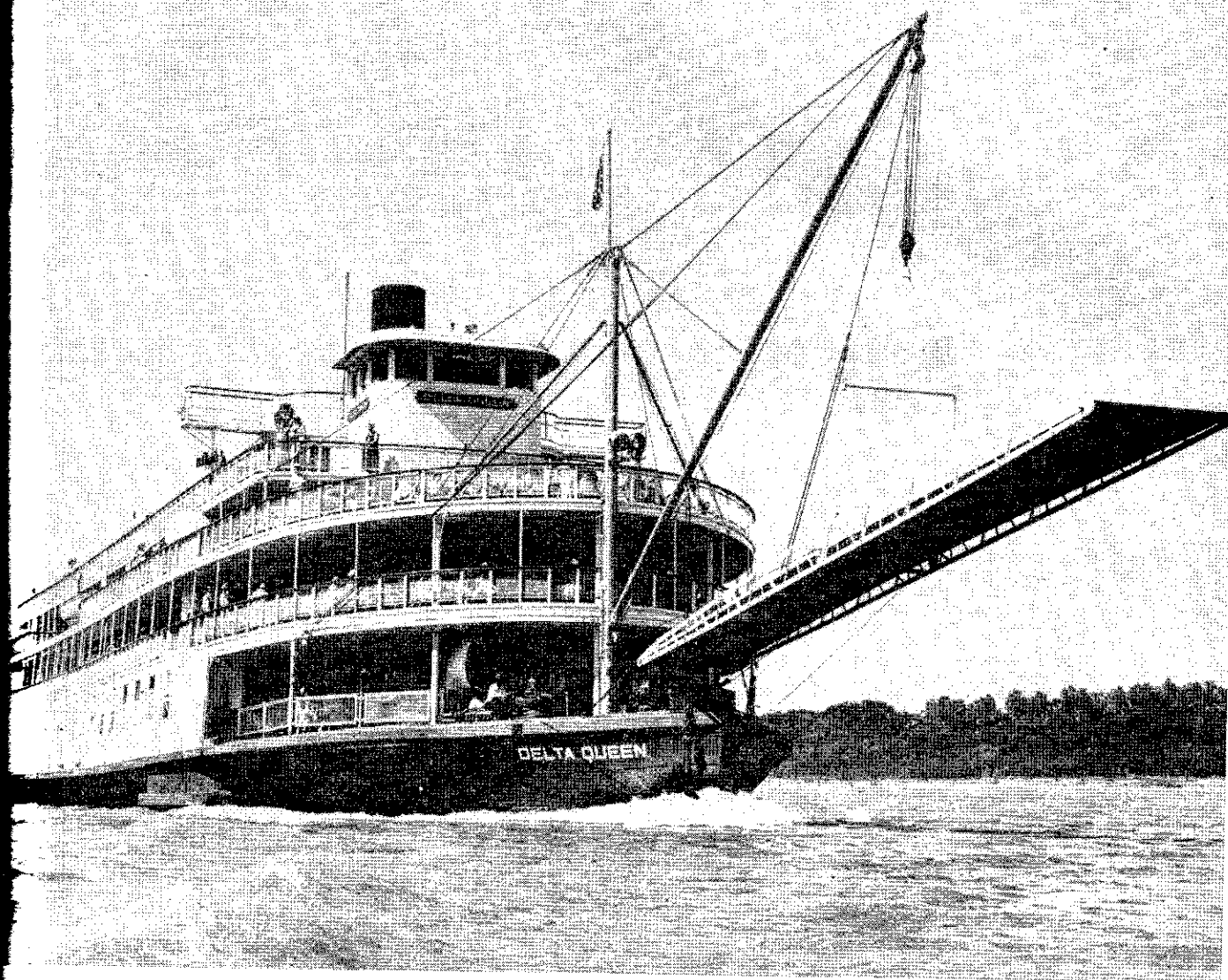


UNITED STATES COAST GUARD

Vol. 18, No. 8

• August 1961

CG-129



Features

NUCLEAR RESPONSIBILITIES OF THE COAST GUARD
SEMINAR IN SEARCH AND RESCUE

PROCEEDINGS

OF THE

MERCHANT MARINE COUNCIL

Published monthly at Coast Guard Headquarters, Washington 25, D.C., under the auspices of the Merchant Marine Council, in the interest of safety at sea. Special permission for republication, either in whole or in part, with the exception of copyrighted articles or pictures, is not required provided credit is given to the Proceedings of the Merchant Marine Council. Use of funds for printing this publication has been approved by the Bureau of the Budget October 3, 1957.

The Merchant Marine Council of
The United States Coast Guard

**This Copy FOR NOT LESS THAN
20 Readers PASS IT ALONG**

Admiral Alfred C. Richmond, USCG
Commandant

Rear Admiral Irvin J. Stephens, USCG
Chief, Office of Merchant Marine Safety, Chairman

Captain C. P. Murphy, USCG
Assistant Chief, Office of Merchant Marine Safety,
Vice Chairman

Rear Admiral J. A. Alger, Jr., USCG
Chief, Office of Engineering, Member

Captain Walter C. Capron, USCG
Deputy Chief of Staff, Member

Captain John J. Hutson, USCG
Chief, Port Security and Law Enforcement Division, Member

Captain S. G. Guill, USCG
Chief, Merchant Vessel Inspection Division,
Member

Captain Arthur W. Johnsen, USCG
Chief, Merchant Marine Technical Division,
Member

Captain Roderick Y. Edwards, USCG
Chief, Merchant Vessel Personnel Division,
Member

Captain Benjamin D. Shoemaker, Jr., USCG
Executive Secretary and Member

Mr. K. S. Harrison
Chief Counsel

LCDR N. B. Binns, USCG
Editor

CONTENTS

FEATURES

Nuclear Responsibilities of the Coast Guard.....	157
Some Observations on Collision Survival.....	157
Maritime Sidelights.....	157
Nautical Queries.....	157
Amendments to Regulations.....	157
Equipment Approved by the Commandant.....	157
Articles of Ships' Stores and Supplies.....	157

FRONT COVER

SS *Delta Queen* Steam Boatin' on The River—courtesy *Greene Line Steamers, Inc.*

BACK COVER

"Grandon's Gang" presents another one act drama in safety on the job, by Grandon Seal, *Pacific Maritime Association*.

DIST. (SDL NO. 731)

A: a a a b c d (2); remainder (1)
Bn: n (35); c (16); e (5); f (4); h (3); g (2); remainder (1)
C: a b (less Quonset Pt.) c d e f g i k (p only) m o u (1)
D: i (5); a b c d e f g h j k l (1)
E: o (New London only) (1)
List 141M
List 111

COMMENDATION



PICTURE TAKEN on the occasion of the issuance of letters of commendation by the Commandant 13th Coast Guard District to crew members of the *SS Texaco Delaware*. The timely and effective response of the participating crew members after a major explosion had occurred in the main pumproom of the vessel was in keeping with the highest traditions of the United States Merchant Marine.

FRONT ROW: Guillermo S. Padua, Messman, *Texaco Delaware*; Frank Nunez, Fireman-Watertender, *Texaco Delaware*; Thomas H. Schmitz, Second Pumpman, *Texaco Delaware*; Captain J. W. McCulley, Master, *Texaco Delaware*.

BACK ROW: Radm (then Capt.) N. W. Sprow, USCG, Chief of Staff, 13th Coast Guard District; R. S. Butler, Division Sales Representative, *Texaco, Inc.*, Seattle; John Jordan, Second Assistant Engineer, *Texaco Delaware*; G. N. Huffman, Assistant Division Sales Manager, *Texaco, Inc.*, Seattle; Sam Phillips, Fireman-Watertender, *Texaco Delaware*; W. E. Corley, Jr., *Texaco Representative*, Anacortes, Wash; Palmer Knutson, Terminal Superintendent, Portland, Oreg.

CHANGE OF COMMAND



REAR ADMIRAL HENRY T. JEWELL

Effective the first of July, Rear Admiral Henry T. Jewell has retired. He has served the Coast Guard with honor and distinction for over 37 years.

Henry Tillman Jewell was born in 1903 at Morgantown, West Virginia, and attended Ithaca High School and Cornell University in New York State. He enlisted in the Coast Guard on November 5, 1923, received his commission as an Ensign less than a year later, and climaxed his rise in rank and authority in 1956 when he was appointed permanent Rear Admiral and took command of the Office of Merchant Marine Safety at Coast Guard Headquarters. During the intervening years the Admiral served on a variety of Coast Guard Cutters on the Atlantic and Pacific coasts, and in Alaska. His early assignments on the western seaboard included duty on the destroyers *Jouett*, *Fanning*, and *Burrows* of the old Destroyer Force maintained by the Coast Guard during the hectic "rum-running" period of the '20s.

In 1938 he was assigned to the first of his tours of duty at Coast Guard Headquarters. During this period he received a Citation and Navy Commendation Ribbon for outstanding work performed as Chief, Merchant Marine Personnel Division.

In 1948, RADM, then Captain, Jewell was assigned as Liaison to the U.S. delegation to the 1948 SOLAS Conference, and in 1956 he took over as Chief of the Office of Merchant Marine Safety.

During his tour as head of the Coast Guard's Merchant Marine Safety organization the Admiral has fostered, supervised, and exercised firm control over many programs of lasting value to the public in the maritime field. He has been in no small measure responsible for the successful participation of the Coast Guard and the United States in the 1960 SOLAS Conference, for the implementation and administration of the Federal Boating Act of 1958, for the participation of the Coast Guard in the Inter-Agency Committee to develop operating procedures for the Nuclear Ship *Savannah*, the establishment

of an industry Panel to develop a Code of Good Practice for the carriage of bulk grain cargoes, the carrying out of the Coast Guard responsibilities in the offshore oil industry's artificial islands and fixed structures, the inauguration of regulations covering the carriage of liquefied gases, and the establishment of an International Maritime Safety Coordinating staff in the Office of Merchant Marine Safety to assist the Commandant in technical matters relating to safety of life at sea which stem from or relate to the Intergovernmental Maritime Consultative Organization (IMCO).

In retiring, RADM Jewell has left a record of both personal and official honor, ability, and achievement that serves as a standard of excellence for young service officers to follow. The best wishes of the many persons who have become acquainted with the Admiral, both in the Coast Guard and in the marine industry, go with him.

NEW CHIEF OF MERCHANT MARINE SAFETY



REAR ADMIRAL IRVIN J. STEPHENS

Rear Admiral Irvin J. Stephens has been designated by the Commandant as Chief, Office of Merchant Marine Safety.

RADM Stephens received his initial commission as Ensign in 1932 upon graduation from the Coast Guard Academy, and was nominated and approved for the rank of Rear Admiral earlier this year.

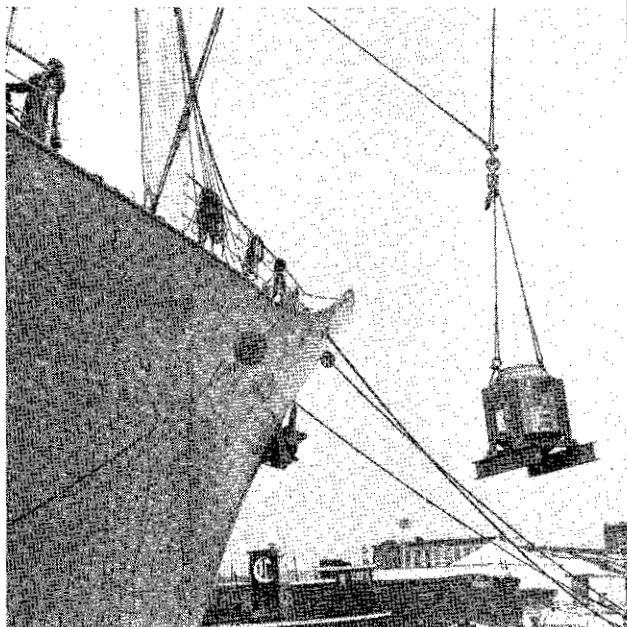
He has served in varying capacities on board the Coast Guard Cutters *Tahoe*, *Shoshone*, *Ariadne*, *Northland*, and was Commanding Officer of the *Winnebago*.

During World War II the Admiral was assigned to command of the destroyer *Merrill* on convoy escort operations in the Atlantic and Mediterranean, receiving the U.S. Navy's Commendation Ribbon and a subsequent bronze star in lieu of a second commendation.

RADM Stephens has served prior tours of duty at Headquarters in Staff positions, and has served in administrative capacities on the staffs of several Coast Guard District Commanders.

NUCLEAR RESPONSIBILITIES OF THE COAST GUARD

By LCDR John A. Flynn, USCG



VESSEL working radioactive cargo.



ILLUSTRATION of taking cargo container readings by use of AN/PRC 27 and 2112N meters.

IN MOST AREAS the progress made by the atomic industry over the past 10 years has been steady; in some it has been spectacular. There have been, of course, the inevitable setbacks and disappointments that go hand in hand with the development of any new undertaking, but undeniably significant strides have been made. The nuclear submarine is already an established fact. A nuclear merchant ship, the N.S. *Savannah*, will be in operation in the near future. The use of radioisotopes in industry, medicine and agriculture is commonplace. Atomic reactors are accepted, although not yet economically competitive, as a source of power. Nuclear energy, though not a household word, is certainly not the awesome spectre to the public that it once was.

The point of this article is to examine those aspects of our nuclear age which have affected the maritime industry; to assess the degree to which the industry has been affected; and to see how these effects on the maritime industry in turn relate to the Coast Guard's traditional responsibilities for the safety of life and property at sea.

FIVE PROBLEM AREAS

At present the Coast Guard recognizes five general problem areas

which will require constant attention. These include:

1. U.S. Coast Guard regulations for the transportation of radioactive materials.

2. Merchant Marine requirements for the design, inspection and operation of nuclear vessels.

3. The return of spent fuel elements from abroad and the carriage by vessel of highly radioactive materials.

4. Radioactive waste disposal operations at sea.

5. Stowage and handling of radioactive materials at waterfront facilities.

It is the purpose of this article to discuss to some extent the Coast Guard's role in regulating the safe water transportation of radioactive materials. Included will be a brief historical development of the Dangerous Cargo Act generally, and a presentation of current and proposed changes to those regulations in connection with the transport of radioactive cargoes.

dangerous ARTICLES IN WATER TRANSPORTATION

The responsibilities of the Coast Guard in the regulation of dangerous articles moving in water transportation trace back to nearly a century

ago. In February of 1871, the Congress enacted legislation which prohibited the carriage of various dangerous articles including nitroglycerine, nitrated oil or other explosives, loose hay, cotton or hemp, and burning fluids aboard passenger-carrying vessels.¹ Some provision was also made in the Act for the packing and marking of a restricted class of dangerous articles when carried on other than passenger vessels. In the main, however, these statutes were not sufficiently flexible to permit the development of a comprehensive yet progressive system of regulations.

REVIEW AND REVISION OF REGULATIONS

Nonetheless these regulations, with occasional revisions, persisted down the years until 1937. At that time, the maritime industry urgently requested a review and revision of the regulations. Accordingly, Government and maritime industry leaders met and formulated a new set of rules for the safe carriage of explosives and other dangerous cargoes. The recommendations of this group were incorpo-

¹ Actually the Steamboat Inspection Service was the agency charged with enforcing the provisions of the act of Feb. 28, 1871, but in 1942, after several departmental reorganizations and consolidations, these duties devolved upon the Coast Guard.

ed in the Dangerous Cargo Act (S. 4472, as amended) which was approved on 9 October 1940.

The regulations implementing this are extremely definitive and cover every phase of the transport process. They are under constant revision, being revised as necessary semi-annually, and are generally recognized throughout the world as the most thoroughly modern code in existence for the safe carriage of dangerous goods. Presently some 1,700 different commodities are classified as hazard ranging from Acetaldehyde, inflammable liquid, to Zirconium hexafluoride, which is an oxidizing material. Other classifications include explosives, inflammable liquids and gases, corrosive liquids, compressed gases, poisons and combustible liquids.

CLASS D POISONS

Notably missing from this classification list are radioactive materials. These are now regulated as Class D poisons although a law has been enacted providing for separate classification of radioactive material, as such.

Needless to say, the traffic in radioactive materials has only in the past decade presented any sort of a problem to shippers and to the Coast Guard. Prior to World War II, except for the occasional carriage of small amounts of radium or thorium ore, nuclear shipments were nonexistent. However, the use of radioactive materials in industry is widespread and their appearance on cargo manifests is increasingly frequent. In view of the rapid and evolutionary nature of the regulatory process, it is indeed fortunate that a farsighted group of men representing various interests of Government and industry addressed themselves to the problem of classifying and regulating radioactive materials back in 1948. This group put together a set of recommendations for safe shipping procedures for radioactive materials that were later incorporated into the Dangerous Cargo Regulations and now control the shipment of all radioactive materials.

NATIONAL RESEARCH COUNCIL STANDARDS

The standards used to establish limitations and radiation intensity levels were borrowed from those used by the National Research Council's Committee on Standards of Radioactivity. The criteria employed were safe conditions of transport, shielding, time and distance. It was early recognized that uniformity of control of shipments by all modes of transportation was a paramount objective; so the agencies responsible for land, water and air transportation

adopted identical shipping requirements.² The shipper is, therefore, not confronted with a repackaging problem on a shipment traveling by both rail and water. The uniformity referred to above is achieved mainly through packaging and labeling requirements. Each package containing radioactive materials of sufficient activity to warrant classification, as such, is required by law to carry enough shielding to reduce the radiation intensity level at the surface of the container to less than 200 milliroentgens per hour. At a distance of 1 meter from any point of the source not more than 10 milliroentgens per hour are permitted.³

PACKAGING REQUIREMENTS

The radiation limits stipulated for containers are really quite low. They are also within the activity limits recommended by the National Research Council's Sub-Committee on Shipment of Radioactive Materials. Further regulations prescribe shippers' requirements for the packing, marking, labeling, handling and stowage of nuclear materials, as well as the types of shipping papers needed. All in all, then, the present packaging requirements are adequate for most radioactive materials now encountered in transportation and easily safe enough to cover the hazards incident to transport.

CHANGING TIMES

The above requirements on packaging are only 12 years old, but already they require updating and review as a result of the enormous strides made by the atomic industry over the past decade. As one example, at the time the present packaging regulations were drafted, the thinking was largely in terms of millicurie and microcurie amounts of nuclear materials.⁴ Now, however, with the shipment of spent fuel rods from reactor cores to various locations in the United States for chemical reprocessing, thousands and maybe millions of curies per shipment will be encountered in transportation. Increased use of radioactive isotopes in medical therapy has vastly in-

²The Interstate Commerce Commission, the Coast Guard and the Federal Aviation Agency.

³A roentgen is a unit of measurement which for radiological health considerations relates to the amount of damage sustained by irradiated living tissue. A milliroentgen is one-thousandth part of one roentgen. An exposure of the whole body to a dose of about 500 roentgens over a short period of time (say a day or less) will cause death in about half the persons so exposed.

⁴The curie is a measure of how rapidly radioactive substances decay and hence how active a substance is. A millicurie is a thousandth of a curie; a microcurie is one-millionth of a curie.

creased the curie amounts now found in both vessel and rail traffic. To insure that the prescribed radiation levels at the surface of the container are not exceeded, huge amounts of lead are required which result in massive containers of unprecedented weights. Casks weighing up to 70 tons are now used to carry highly radioactive fuel rods by rail. Containers of such weight and density pose deck-loading and cargo-handling problems far from routine. For the next 5 years, however, it must be anticipated that there will be no major revision of shielding requirements.

REVISION OF EXISTING REGULATIONS

The Coast Guard and the other regulatory agencies are now considering revision to existing regulations in the following categories: (1) Classification of nuclear materials; (2) Curie limitations; (3) Packaging and labeling changes; (4) Stowage requirements; (5) Inclusion of fissionable materials.

The guidelines in general will be the International Atomic Energy Agency (IAEA) recommendations of 1960, which have been well received in this country. This agency, with headquarters in Vienna, has the vast technical competency of the member nations at its disposal. To a large extent the recommendations arrived at reflect United States thinking on these matters, and in fact, U.S. Atomic Energy Commission representatives made significant contribution to their formulation.

BROADENING OF CLASSIFICATION

The first change would amount to broadening the classification of radio-nuclides into three or four categories according to toxicity. This would give shippers somewhat more latitude in the amounts of the more innocuous radioactive cargoes they could ship without special authorizations from the Coast Guard or the Interstate Commerce Commission. It would also be a more realistic approach to the problem of evaluating the wide variety of radioactive materials now produced which are by no means equally hazardous to human beings.

For certain types of radioactive materials, greater curie amounts are now permitted to be shipped without special authorizations. These materials are all solid metallic elements, which if exposed, could not spread contamination over a wide area. The elements are: Cobalt 60, Cesium 137, Iridium 192, and Gold 198, and can presently be sent in amounts up to 300 curies without special authoriza-

tion. In view of the increased requirement for higher curie amounts in medical therapy, radiography, etc., the 300-curie limit is now considered too restrictive. A revision of this limitation to an upper limit of 2,000 or 3,000 curies would give the shipper wider latitude without compromise of safety since container shielding requirements would not be relaxed.

PACKAGING AND LABELING CHANGES

Packaging and labeling changes would amount to establishing two general criteria for shipment of radioactive materials, both based on radiological health standards. Where the amounts of radioactive material are determined to be very hazardous according to curie activity or toxicity to the body (or from a combination of both considerations), the more stringent packaging requirements will be prescribed. Where these properties do not combine to constitute a significant health hazard, lesser packaging specifications will be allowed. The two types of packages, then, will be differentiated according to the mechanical strength and durability of the container—the lesser package providing against rupture or leakage under most conditions normally incident to travel, and the more rugged one providing for container integrity under severe conditions of accident or fire. The two packages will be further distinguished by the color and legend of the labels which they will carry. Red and white label colors have been proposed, as have white and yellow, but no choice has been



made to date. For distinctive marking, a skull and crossbones over the trefoil symbol from which rays are emanating has been proposed and seems appropriate for the purpose.

STOWAGE CHANGES

Changes in stowage requirements would provide for greater safety for ship's crews and passengers and would reflect the current recommendations of the newly established Federal Radiation Council. This would necessitate no changes to container design but would prescribe minimum separation distances of radioactive materials from habitable areas aboard ship.

TRANSPORTING FISSIONABLE MATERIALS

As to transporting fissionable materials, no regulations have yet appeared under the Dangerous Cargo Act which control fissionable materials on the basis of critical mass considerations. The reason for this is that under present procedures, each case involving fissionable materials must be individually reviewed by the Atomic Energy Commission prior to shipment. However, to provide against the time when fissile materials will move in commerce with regular radioactive cargoes and not under the

special aegis of the Atomic Energy Commission, very detailed regulations must be drawn up. Methods for determining the suitability of a container for shipment of fissile materials are technical and considerably more complex than those governing nonfissile materials. Because of this complexity, they do not, at present, seem appropriate for inclusion in the Dangerous Cargo Regulations although their ultimate adoption seems assured.

This concludes the list of items involving transportation of radioactive materials which are of immediate concern to the Coast Guard. It is hoped that the reader has been given some feeling for the Coast Guard's part in the regulation of nuclear traffic. It should finally be reiterated that the present system of regulations is more than safe, but in the areas just described revision, amplification, and easement of some of the more restrictive particulars appear warranted. These revisions should benefit the shipper without prejudice to the health or safety of those who may come in contact with the shipment.

The time required to effect these proposed changes is bound to be protracted. The evolutionary pattern, which the revision of rules and regulations must follow, assures this. But the very strength of this process lies in its guarantee to the parties affected that their voice in the matter will be heard, that their interests will be considered, and that such revisions as are adopted will be prudent, just, and equitable.

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 6-61

JUNE 15, 1961

Subj: Shop Hydrostatic Testing of Boiler Headers

PURPOSE

To establish a uniform policy with regard to shop hydrostatic testing of boiler headers.

BACKGROUND

Current custom has been to require Coast Guard witnessed shop hydrostatic testing of boiler headers. This, in many instances, has involved a time-consuming and costly process due to the necessity of sealing openings by welding, pipe cap, or bolting and removing these closures after the hydrostatic test. When the header is installed either in new construction or as a replacement in existing boilers, it is again subjected to a hydrostatic test.

ACTION

a. Shop hydrostatic testing of boiler headers is not required but may be witnessed by Coast Guard inspectors if requested by the manufacturer.

b. In the case of headers for existing boilers;

(1) The OCMI having jurisdiction at the place of installation must be cognizant of whether or not there was a shop hydrostatic test conducted to the satisfaction of the Coast Guard inspector; and

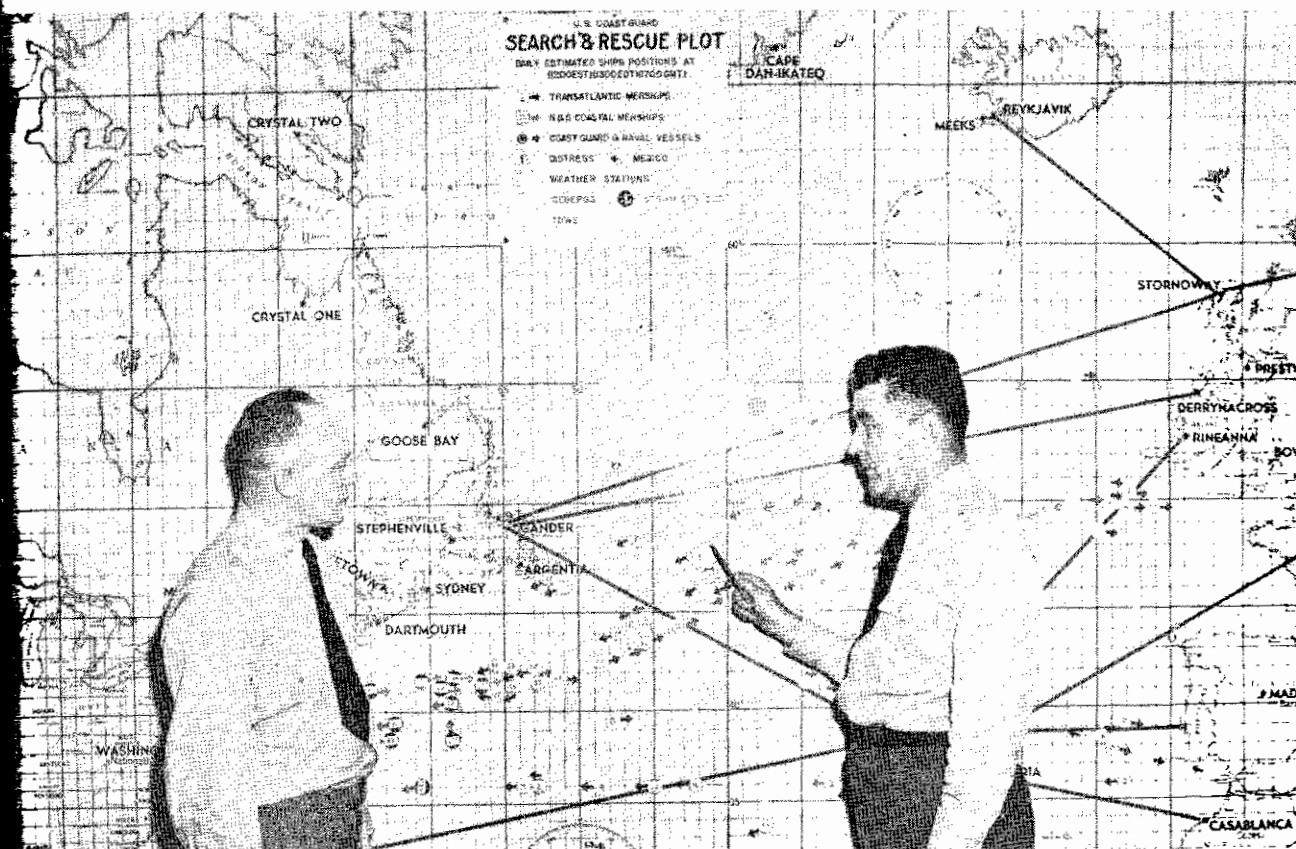
(2) If no shop hydrostatic test is conducted the insulation, lagging, covers, fire-brick, etc., which might interfere with the complete examination of newly installed headers must be removed to insure accessibility during the boiler hydrostatic test.

c. In the cases of both new boilers, and existing boilers with new headers, the entire boiler with headers installed shall be subjected to a hydrostatic test of $1\frac{1}{2}$ times the maximum allowable boiler pressure.

d. Manufacturers, ship owners and operators and other interested parties are cautioned that hydrostatic tests in the field which reveal defects in the header cannot necessitate the removal and replacement of the header or removal of the header to the manufacturer's facility and radiographing and then reinstalling.

Effective Date. Upon receipt.

SEMINAR IN SEARCH AND RESCUE



SEARCH AND RESCUE Plot at 5th Coast Guard District.

RECENTLY THE Commander East Area, USCG, sponsored a Search and Rescue seminar attended by some 71 persons professionally concerned with SAR techniques. Representatives of units having primary SAR duties from the entire East and Gulf Coasts of the United States, Canada, and offshore points as remote as Iceland, among others, attended. The meeting was arranged for the primary purpose of discussing techniques and developmental aspects of Search and Rescue procedure, with special emphasis on coordination of air effort with surface units. Several points of interest to mariners were discussed.

AMVER SYSTEM DESCRIBED

A description of the AMVER system was presented by CDR Paul E. Enhorst, COMEASTAREA Staff AMVER Officer, and a guided tour through the AMVER center was provided. Many of those present had on several occasions used information provided by AMVER for their opera-

tions, and several expressions of the high regard held for the AMVER system were voiced. This reflects most favorably on the thousands of merchant ship masters, radio officers, and others whose cooperation in this voluntary report system has given it a high standard of performance.

The vital role of merchant vessels in search and rescue efforts was discussed. Aviation plays an increasingly larger role in sea searches, however surface vessels are and will continue to be a most vital element, particularly in offshore search and rescue cases.

COOPERATION AND COORDINATION

While ship participation-time is drastically reduced when the emergency scene is first pinpointed by aircraft, there is still a need for improved coordination, especially when merchant vessels are involved. Delay, expense, and needless activity will result whenever there is a lack of timely information in the right places. It

is in this area that the AMVER system has its most important benefit. The AMVER system has developed radio liaison between thousands of merchant ships and Search and Rescue radio stations.

COMMUNICATION A PROBLEM

SAR aircraft pilots are frequently confronted with inability to communicate with a merchant ship who is close to the scene of an emergency but unaware of it. Such a situation could result in needless loss of life, or, a later and more time-consuming diversion by the merchant vessel. A suggestion was made that merchant vessels be encouraged to set a listening watch on 2182 kcs voice whenever a low flying SAR aircraft is sighted far off shore. This channel, 2182 kcs voice, is internationally recognized as a distress and calling frequency and usually is the only one held by both aircraft and merchant vessels. One exception is that Coast Guard amphibious type aircraft are also

equipped for operation on 500 kcs CW which is the primary calling channel in common marine use, but is less effective if the ship's radio officer is off watch or temporarily occupied on another radio frequency.

Aircraft at low altitude at sea usually indicate an urgent situation—either the plane itself is in difficulty or is searching for someone who is.

SEARCH PROBLEMS OUTLINED

A SAR aviator with long experience in sea searches pointed out some of the difficulties in holding the close search pattern necessary for adequate coverage when searching for relatively small objects on the water. In all aircraft search patterns the spacing between successive tracks is carefully planned to give reasonably high probability of sighting without unduly limiting the total area which can be searched in a given time. If the track spacing pattern is not followed precisely, the probability of missing the object of the search increases seriously. The many course changes required of an aircraft in following a

search pattern together with the effect of the wind make it difficult for the aircraft to follow the search track. Because of this a surface reference point is highly desirable. One surface reference point often used in small area searches is a smoke float or dye marker dropped from the aircraft.

VESSEL USED FOR REFERENCE POINT

For large scale searches beyond range of landmarks, a ship is needed. Coast Guard cutters have served for this purpose on many occasions, but are often not available in time. However, almost any merchant vessel suitably located and aware of the problems could also be used. The vessel would not be required to deviate from its course or speed. Here is what is needed to accomplish this:

The SAR aircraft must have radio communication with the vessel, 2182 kcs voice is preferred, but CW on the low frequency marine band can be used. The aviator needs the course and speed of the vessel. A brief homing sig-

nal is also necessary, on request. The vessel should transmit this signal on either 410 kcs, or his working frequency if the latter is in the range of 410 to 500 kcs. This action by a merchant vessel might well make the difference between success and failure of any search involving a particularly large area.

ELIMINATE UNNECESSARY DELAYS

As a final point of discussion, the members of the SAR Seminar agreed that any unnecessary delay of a merchant vessel on her voyage is to be avoided. This is probably best accomplished by sending enough information to merchant vessels to enable them to avoid unnecessary involvement in SAR action, and to minimize delay time after being necessarily involved. This is an important step in improving coordination of merchant vessels in search and rescue action, and is an area where SAR Coordinators can be very helpful. The proper coordination of effort and the reduction of time in arrival of assistance saves lives.

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 5-61

JUNE 6, 1961

Subj: Grounding of armor on electrical propulsion cable

PURPOSE

To call attention to a recent casualty on a T-2 tank vessel with a view toward preventing similar casualties in the future.

BACKGROUND

A licensed engineer on a T-2 tanker was electrocuted when he came into contact with the armor on a propulsion motor cable. The vessel had been constructed with the armor on the propulsion motor cables properly grounded as required by the regulations (46 CFR 111.60-10). Investigation revealed that at some time prior to the casualty, a ground had developed on one of the propulsion cables which operated the protective relay and stopped the motor. What efforts, if any, were made to locate the ground could not be determined but during the investigation it was learned that it had developed in the motor terminal box and had never been corrected. In order to operate the propulsion motor without clearing the ground someone insulated the armor on the grounded cable. This was done by wrapping the armor in way of the ground clamp with three layers of varnished fabric tape and five layers of plastic dielectric tape. The ground connection clamp was then replaced over this insulation. The five other cables in the run were taped adjacent to the clamps so that all looked exactly the same; however, the armor

on these cables had not been insulated from ground. Although insulation of the armor on the grounded cable permitted operation of the propulsion motor, this action caused up to 2,300 volts AC to be impressed on the armor. That no one was killed earlier was apparently due to the fact that this run of cable is not easily accessible from engine walkways or gratings.

DISCUSSION

The need to investigate the cause of a shutdown of any equipment or circuit due to the operation of a protective relay, tripping of a circuit breaker or blowing of a fuse is obvious. Although on rare occasions the trouble might be due to the improper functioning of the protective device, in the great majority of cases such shutdowns are caused by over load, ground or other abnormal conditions. The proper cure is obviously the elimination of the fault and not the introduction of another fault. Beyond that, this casualty indicates the value of maintaining a record of repairs made to all high voltage circuits and equipment so that such repairs may later be evaluated and verified.

ACTION

This circular is published for the information of owners, operators, engineering personnel and other interested persons.

SOME OBSERVATIONS ON COLLISION SURVIVAL

INTRODUCTION

IN THESE DAYS of appalling aircraft and auto accidents, the capsizing and sinking of a large passenger vessel with the loss of only 50 out of almost 2,000 persons might not seem very serious. When one considers, however, that the loss in 1956 of the *Andrea Doria* after collision with the *Stockholm* occurred under very favorable weather conditions and that rescue efforts were highly effective, one realizes that the loss might have been many times greater. Monetary loss and loss of human life cannot be compared, but in terms of monetary loss, this foundering was also very serious. To properly evaluate this casualty, it is necessary however, to look at it in still another light. It needs to be measured in terms of our human capabilities. The material things civilized man has at his command seem much less important than the ways in which he uses them, and his continued effort for improvement. Aircraft (at least at the present state of the art) inherently involve small margins between safety and danger. Small margins are to a considerable degree essential to their utility.

HIGH STANDARD OF SAFETY

The state of development of ship design, on the other hand, is such that a much higher standard of safety can practicably be maintained. Fewed in such terms, the loss of the *Andrea Doria* was a very serious affair. It was so viewed by the Committee on Merchant Marine and Fisheries of the House of Representatives in their investigation into the casualty and by an expert Board appointed to advise them. This Board recommended that action be instituted to accomplish:

(1) Greater observance of the recognized routes across the North Atlantic.

(2) Re-evaluation of the standards of subdivision, damage stability and ballasting, with the view to the development of realistic provisions for international adoption.

(3) Adequate training for deck officers; including a requirement for certification of such officers as radar observers.

They recommended that the following items also be included in any program for a long range study of safety of life at sea:

(4) Installation of bridge-to-bridge direct radio telephonic communication,

(5) A system of continuing and comprehensive studies by Federal

The following material has been excerpted from a paper presented by Mr. James B. Robertson, Jr., at a recent meeting of the Southern California Section of the Society of Naval Architects and Marine Engineers. ED.

agencies of radio communications in distress cases,

(6) The establishment of a mechanism for coordination in the study, development, and application of radio and electronic devices and systems.

(7) Effective provisions for the application of regulation 20 of Chapter I of the 1948 Convention for Safety Of Life At Sea, particularly the principle laid down for the dissemination of lesson from casualties.

These recommendations, together with existing practices in the design and construction of U.S. vessels formed one basis for the studies made by the U.S. Committees preparatory to the 1960 Safety Of Life At Sea Conference and were to an important degree reflected in the U.S. proposals to the Conference.

STABILITY

Without intending to detract in any way from the importance of the other items considered at the Conference, the questions of Subdivision, Damage Stability, and Ballasting were considered to be vital. Recommendation (2) of the Board report following the *Andrea Doria* loss had been implemented by formation of a committee to deal with these subjects well in advance of other preparations for the Safety Conference. The resulting U.S. proposals to the Conference represented the culmination of extensive consideration within committee as well as many studies by the technical staff specially set up for this purpose. Early in the committee's work, serious consideration was given to the making of a major departure

from the existing criterion of service and factor of subdivision concepts forming the basis of both existing U.S. rules and the Convention. As a first principle there was general agreement that passenger vessels ought to be at least two compartment ships. A good many of the committee members felt that the factorial system, aimed at providing a freeboard margin after damage, was of dubious value because, by tending to reduce bulkhead spacing without increasing the number of compartments which could be flooded, it increased the likelihood of a bulkhead being damaged. It was generally agreed that some criterion based upon the length of damage a ship could withstand anywhere within her length would provide a safer and more realistic measure of a ship's safety than the existing factorial system. Some were convinced that such a criterion need be the only one. Supplementary related consideration of the margin line lead to the clear conclusion that its distance below the bulkhead deck should in general, be increased, and should bear a dimensional relationship to the size of the vessel. It was finally agreed that the U.S. proposal to the Safety Conference should employ the criterion of length of damage to be survived and that this assumed damage length should be a function of the length of the vessel and the number of passengers, it being reasoned that a vessel carrying more passengers ought to be able, for safety's sake, to withstand a longer damage, and that a longer vessel could practicably do so. It was agreed that this length of damage standard should, however, be supplemented by a modified factorial system, wherein R (in lieu of F) was taken as the maximum allowable ratio of the combined length of any 2 adjacent compartments to the floodable length. R was also based on L and N and the formulation finally adopted was adjusted so that, on the average, and in conjunction with a margin line



located L/300 below the bulkhead deck at side, it gave a subdivision equivalent to that resulting from application of the U.S. rules, insofar as those rules require a two compartment standard or better. Recognizing that it might not be practicable for some passenger vessels to fully comply with a two compartment requirement, provision was made for some relaxation in the after part of such a vessel's length depending upon her length and the number of passengers. In the final U.S. proposal these criteria, and their subsidiary provisions were adjusted to correspond to the maximum survival ability which a consideration of U.S. vessels indicated to be practicable. In this connection it was decided that the damage inboard penetration should, for stability purposes, be assumed into the centerline. This decision was supported by an appreciable number of collision cases having damages extending inboard significantly more than the current B/5 value (some to and past the centerline) and because it was felt that any lesser limit tended to encourage arbitrary division of tanks rather than a possibly safer arrangement based upon study in the particular design case.

OILY BALLAST PROBLEM

The *Andrea Doria* casualty particularly emphasized the problems and weakness of depending upon water ballast in fuel oil tanks for maintenance of stability. This difficulty had long been recognized here, and as a result, most new U.S. passenger ships were designed for clean ballast operation in their normal service. After study of the results of an extensive tankage operational questionnaire submitted confidentially to the various U.S. operators, the U.S. committee concluded that ships of primary passenger type could and should be required to operate on a clean ballast basis, with some exception in the case of ships on very long voyages. The U.S. ballasting proposal was drafted on this basis.

CARGO VESSEL RECOMMENDATIONS

In addition to the proposals for subdivision, damage stability, and ballasting of passenger ships, the U.S. proposals in this area included subdivision and damage stability requirements for cargo vessels consistent with the requirements which are applied to such vessels by the Maritime Administration.

SUBDIVISION

The subject of watertight subdivision of ships is by no means "cut and dried," but instead is a "live" issue—with better real safety for the same

dollars as a possible reward for constructive thought. The data presented is based upon the work of the U.S. committee's technical staff prior to the Conference. However, the analyses have been somewhat reworked and the results presented slightly modify and amplify the previous staff work.

PROBLEMS TO BE STUDIED

The above discussion to some extent outlines the problem areas which a Solas Subcommittee to Study Subdivision and Stability is to review. This study will be conducted in the areas of special rules for subdivision, stability of ships in damaged condition, and ballasting, which are referred to in recommendations No. 6, 7, and 8 of the 1960 Convention. A U.S. working group for this purpose has been appointed by the Commandant.

MERCHANT MARINE STATISTICS

There were 941 vessels of 1,000 gross tons and over in the active oceangoing U.S. merchant fleet on June 1, 1961, 4 less than the number active on May 1, 1961, according to the Maritime Administration.

There were 45 Government-owned and 896 privately owned ships in active service. These figures did not include privately owned vessels temporarily inactive, or Government-owned vessels employed in loading grain for storage. They also exclude 23 vessels in the custody of the De-

partments of Defense, State, and Interior, and the Panama Canal Co.

There was a decrease of 6 active vessels and an increase of 8 inactive vessels in the privately owned fleet. Two freighters, the *President Lincoln* and the *Del Sol*, were delivered from construction. Three freighters were transferred from foreign to U.S. registry, and 2 freighters, *Myriam III* and *Peter Blix*, and a tanker, *Marine Chemist*, were transferred to foreign flag. The privately owned fleet increased by 2 to 990. Of the 94 privately owned inactive vessels, 1 passenger ship, 12 freighters, and 12 tankers were undergoing repair or conversion. The others were laid up or temporarily idle.

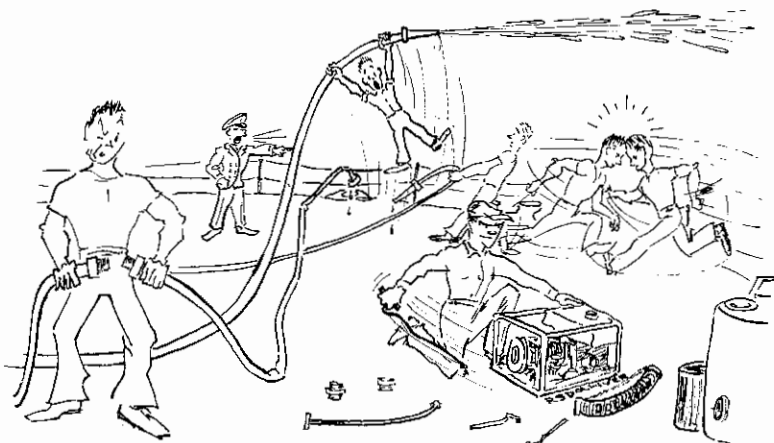
The Maritime Administration's active fleet increased by 2 ships, while its inactive fleet decreased by 17. Two troop transports, 20 Liberty ships, and a tanker were sold for scrap. Eleven Navy-owned ships were placed in reserve fleet custody, and three were returned to the Navy. This decreased the Administration's fleet by 15 to a total of 1,960. The total U.S. merchant fleet decreased by 13 to 2,950.

One new shipbuilding contract for a private tanker was placed during the month. Two new freighters were completed. The total of large merchant ships on order or under construction in U.S. shipyards dropped by 1 to 85.

Seafaring jobs on active oceangoing U.S. flag ships of 1,000 gross tons and over, excluding civilian seamen manning MSTs ships, were 49,290.

Prospective officers in training in Federal and State nautical schools numbered 2,023.

DRILLS, DRILLS, AND MORE DRILLS

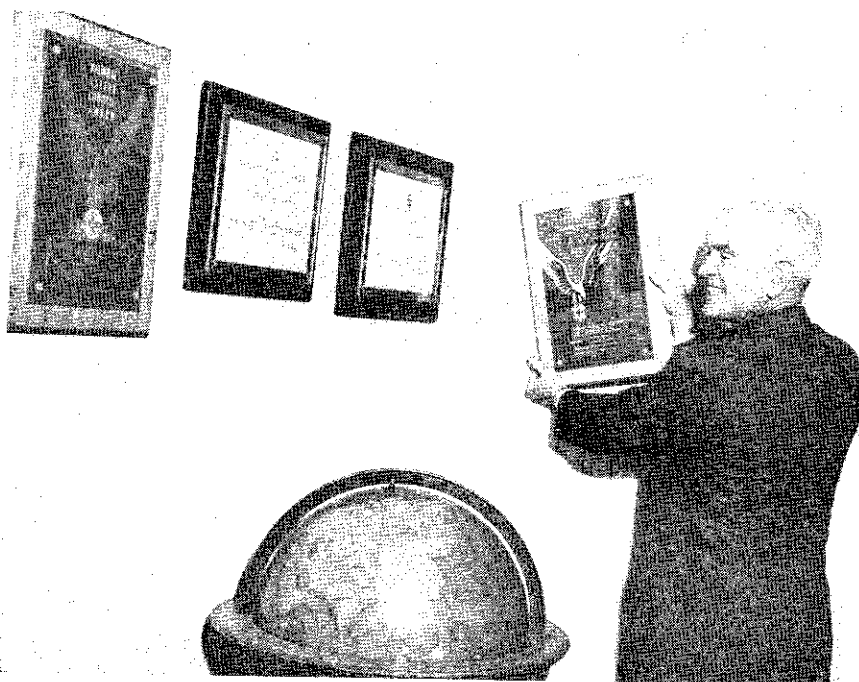


Better an hour "lost" on drills than a life lost forever.
Drills are a life insurance policy. A little time out of your life spent on drills now will insure your "life-time" for the future.



MARITIME SIDELIGHTS

SAFETY AWARD



HUGH C. ELLIS, manager of the West Coast Division of the Marine Department of Socony Mobile Oil Company, hangs the plaque on the wall of his office in San Pedro (Calif.) which was awarded by the National Safety Council as a result of the company's two Pacific Coast oil tankers winning first place in the tanker section of the council's 1960 safety contest. The tankers, S.S. Colina and S.S. Syosset, completed the year without a lost time injury to their crews.

Joint Commissions from the United States and Canada have completed a compact for establishment and control of pilotage on the Great Lakes. This agreement, which is now in operation, sets forth rules for pilotage, and establishes rates and districts where pilotage is mandatory. There are now three established districts where ships must take professional pilots. These are (1) in the St. Lawrence River area between Lake Ontario and the international boundary in upper New York; (2) the channels west of Sandusky, Ohio on Lake Erie, through the Detroit River, the St. Clair River and into Lake Huron; and (3) the waters in the vicinity of the Sault Ste. Marie.

A waterfront rehabilitation program that seeks to rival San Francisco's Fisherman's Wharf is now under way at Seattle. Superstructures on old piers are now being razed and concrete platforms poured which will jut several hundred feet into Elliot Bay.

A new Medical Center was recently completed in New York City to serve the medical and dental needs of approximately 30,000 waterfront workers and their dependents. The \$1,500,000 structure was erected as a result of joint cooperation between maritime, labor and management groups.

The Maritime Administration announced recently that "approval in principle" has been granted to the 1681 Corporation, a subsidiary of Victory Carriers, Inc., for the construction of two tankers of 46,000 deadweight tons each. The proposed tankers will be of basically the same design as the *Mount Vernon Victory*, which was completed in January 1961. The new vessels, however, will have a speed somewhat in excess of 17 knots. The new ships will be owned and operated under U.S. flag.

According to the New York Times, a recent ruling of the Federal Court of Appeals has held that the Commandant of the Coast Guard may consider Communist activities when screening radio-telegraph applicants for the Merchant Marine. In part of his opinion, Circuit Judge Charles Fahy stated "In view of the sensitive nature of the position involved, a position closely associated with the nation's security, we think consideration of the ideological matters referred to is permitted under the statute."

The Maritime Administration will install an experimental Gas Turbo-Generator and Waste-Heat Boiler system for shipboard testing aboard the United States Lines' ship SS *Pioneer Moor*, it was announced recently by Thomas E. Stakem, Chairman of the Federal Maritime Board, and Maritime Administrator, U.S. Department of Commerce.

Development of the experimental 60 KW unit was instigated by the Maritime Administration as a means of providing a source of standby electrical power primarily for inport use. This would permit the shutting down of the ship's steam power plant for port maintenance, thereby simplifying existing procedures. A waste-heat boiler, powered by gas turbine exhaust gases, will provide steam for auxiliary purposes. Present plans call for test-operating the unit for two years aboard ship.



nautical queries

Q. What advantages are gained with the use of hollow shafting? How does the strength of a hollow shaft compare with a solid shaft?

A. The shafts of high speed vessels constitute a considerable portion of the total machinery weight and are frequently made hollow to reduce weight. Hollow shafts permit the use of long spans between bearings. The removal of a comparatively large weight of material from the bore of the shaft has only a small effect on its strength in torsion and bending and a very small increase in diameter compensates for this loss.

Q. During constant flow conditions, when water flows horizontally through a pipe that has a narrow constriction, how is the speed and pressure of the fluid affected in passing through the restriction?

A. During constant flow conditions, when water flows horizontally through a pipe that has a narrow constriction, the water speeds up as it approaches and flows through the constriction, and this increase in speed is accomplished by a decrease in pressure.

Q. What preparations should be made to insure easy starting of a large marine diesel engine during cold weather?

A. Circulate warm water through the jackets of the engine; either from auxiliary engines or boilers if available. Temperature of circulating water to be from 140° to 170°. The lubricating oil should be heated to the normal operating temperature and circulated through the engine. Air heaters, if provided, should be used to heat the inlet air. The engine should be turned through several complete revolutions with the jacking engine.

Q. (a) Discuss the causes of incomplete combustion in a two-cycle solid-injection diesel engine.

(b) What are the adverse effects of incomplete combustion?

A. (a) Incomplete combustion may be caused by any of the following:

(1) Poor atomization of the fuel which may be a result of dirty, clogged, or leaky injection valves; low fuel oil pressure or excessively high viscosity of the fuel.

(2) Insufficient air due to dirty intake air strainers, or overload on the engine or poor scavenging.

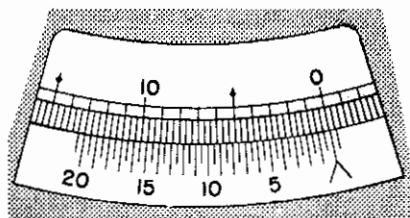
(3) Low compression pressure due to worn rings or liners, dirty intake air filter, or, where used, leaky exhaust valves.

(4) Faulty timing of the fuel injection system.

(b) The immediate effects of incomplete combustion are excessive smoke, increased fuel consumption, and a reduction of maximum power. Incomplete combustion may also cause sticky rings and more than normal wear on the rings and liners.

SEXTANT

Q. What is the index error of the sextant whose arc and vernier are shown below?



A. 1'.5 off the arc (to be added).

Q. Why is it that most diesel engines cannot be run at very low speeds?

A. In diesel engines the ignition of the fuel depends entirely upon the heat generated by quickly compressing the air in the cylinder; consequently, there is a minimum speed below which the compression temperature will fall off causing misfiring.

Q. What is the usual cause of corrosion of bearing materials? What are the factors which tend to accelerate corrosion on bearing surfaces during the operation of medium speed diesel engines?

A. Corrosion of bearing material is usually caused by the chemical action of oxidized lubricating oils. Oxidation may be minimized by observing the recommended oil change periods. Corrosion will be accelerated as a result of high crankcase temperatures. This will cause acids to form, particularly if the oil contains water, fuel oil, or other foreign matter.

Q. Explain how combustion knock or detonation may occur in a diesel engine.

A. Combustion knock in a diesel engine is caused by the accumulation of fuel in a cylinder prior to ignition. Even under conditions that insure ignition, the fuel does not ignite instantaneously but only after a definite delay. The longer this delay the more fuel accumulates in the engine, which then burns more or less simultaneously, accompanied by an audible knock. Combustion knock may be aggravated by many conditions including poor compression, fuel, turbulence, atomization and also by excessive cooling.

Q. Explain how a sense antenna is used to resolve the 180° ambiguity of a bearing obtained by means of a radio direction finder.

A. A sense antenna obtains a uniform signal from all directions. When combined with the figure 8 pattern signal of the loop antenna a cardioid response pattern is obtained which is unidirectional.

The methods of using the pattern are varied by different manufacturers. The instructions for the particular set should be known and used in order that, when necessary, in such a case as aiding a vessel in distress, the proper bearing can be quickly determined.

Q. (a) How would you turn the gyrocompass to the approximate heading of the ship when the power is off and the rotor is stopped?

(b) How would you turn the gyrocompass to the approximate heading of the ship when the power is on and the rotor and followup system are operating?

A. (a) With power off and rotor stopped, take hold of both sides of phantom and vertical rings and turn them slowly until compass card indicates approximate heading of ship. The compass should never be turned in azimuth, with the power off, by pressure on compensator weights or mercury ballistics.

(b) With power on and rotor and followup system operating, precess the compass to the approximate heading of the ship by pressing down on one or the other of the rotor-case bearing housings. The rotor can then be leveled by pressing against the vertical ring until the bubble is in normal settled position.

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

Chapter I—Coast Guard, Department of the Treasury

[CGFR 61-25]

Subpart 171.05—Vessel Identification

The Coast Guard is charged with the responsibility for the general superintendence of the administration and enforcement of the Federal Boating Act of 1958 (46 U.S.C. 527-527h), and the act of April 25, 1940, as amended (46 U.S.C. 526-526u). These laws apply primarily to recreational boating on the navigable waters of the United States and the high



The provisions of 46 CFR Subpart 171.05 require the display of identification numbers on certain undocumented vessels in accordance with the Federal Boating Act of 1958. The Coast Guard and State law enforcement boarding officers in checking individual vessels for compliance with the numbering requirements have found numerous instances where the identification numbers displayed on motorboats do not conform to the requirements of law and regulations. The numbers required to be displayed on boats are intended to provide ready identification of the boat. Such identification numbers must be at least 3 inches high, of block character of good proportion, and of a color that contrasts with the background color to which such characters are affixed so that they can be seen and read easily. The law and regulations place the responsibility for meeting these requirements upon the boat owner.

The use of numbers of improper size and type, the lack of contrast with the background of the hull of the motorboat on which placed, and improper placement on the boat have been primary difficulties found in checking numbers displayed on individual vessels for "clear legibility for identification" as required by 46 CFR 171.05-5(b). To overcome the misunderstandings regarding identification of motorboats, conferences were held with the manufacturers of numbers, State boating law administrators and others to explain the requirements for vessel identification. In addition, the Commandant issued a Press Release No. 40-60 in December 1960 cautioning against the display of improper boat numbers. As a result most manufacturers of numerals and letters are now producing numerals and letters which meet Coast Guard requirements. However, there are still many misunderstandings regarding the meaning of various phrases or words used in describing vessel identification requirements. The purpose of the interpretations and definitions in this document is to clarify and to define the intent of the vessel identification requirements and to answer the questions raised as to the exact requirements.

The Registrar of the Institute has informed us that Namei is the only institute, at the present time, in the Philippines which offers a 5-year course of study leading to a degree of Bachelor of Science in Naval Architecture and Marine Engineering.

Contributions or inquiries should be addressed to the Namei Polytechnic Institute, 524 Sales corner Ronquillo Sts., Sta. Cruz, Manila, R.P.

(Federal Register Document No. 61-5971
Filed June 26, 1961, and printed June 27,
1961.)

Chapter I—Coast Guard Department of the Treasury

LICENSED OPERATORS FOR UNINSPECTED VESSELS; SPECIFICATIONS FOR HATCHETS AND FOR REPAIRING AND CLEANING LIFE PRESERVERS; EXPLOSIVES ON BOARD VESSELS

The standards for manning of uninspected vessels carrying passengers for hire and subject to the act of April

Manufacturer	Valve type	Identity	Drawing Number
Vickers Inc., 624-627 Wyatt Bldg., 14th & New York Ave. NW., Washington 5, D.C.	Solenoid Operated two and four way valves.	DG4S4-01**--40.	I-237969

FIREFIGHTING ABOARD TANKERS

A new motion picture "Firefighting Aboard Tankers" has been produced by the Coast Guard in conjunction with the tanker industry. The film is 16-mm, in color with sound, and of 28 minutes duration. Scenes include proper techniques in the use of standard firefighting equipment to combat fires above and below decks. The proper equipment to use, and the proper ways to use equipment are stressed. Included in the footage are scenes showing the combating of an actual fire on a tanker.

Release films will be sent shortly to the various Coast Guard District Offices for distribution on a loan basis to interested groups.

Those desiring permanent copies of the film may obtain information by addressing an inquiry to Byron, Inc., 1226 Wisconsin Ave., Washington, D.C.

25, 1940, as amended (46 U.S. Code 526f), are set forth in 46 CFR 157.30-30. The amendment to this section in this document is intended to clarify the intent of the present regulations and to set forth the standards followed in permitting substitution of other grades of licenses for operators of uninspected passenger-carrying motorboats or other uninspected vessels of 15 gross tons or less, carrying 6 or less passengers for hire, in a manner similar to that in 46 CFR Part 186 which describes substitutions followed with respect to manning on small passenger vessels carrying 7 or more passengers. In the heading for 46 CFR 157.30-30 the adjective "uninspected" is inserted before the word "vessels" to aid someone in finding these requirements. Section 157.30-30 (a) and (c) are repeated without any changes. In § 157.30-30(b) a clarification of the requirements has been made by adding the phrase "on the class vessels, waters and within other restrictions in his license" so that it will not be possible for a person with the license described to substitute for the motorboat operator's license one which would not qualify a person to operate a mechanically propelled passenger-carrying vessel. A new § 157.30-30(d) is added to clarify the application of this section. This paragraph describes various operations of vessels on routes and the licenses held which will be permitted in manning these uninspected vessels without requiring the holders of such licenses to obtain an additional license or an endorsement for the specific capacity and routes permitted.

This paragraph corresponds with a similar regulation in 46 CFR 186.10-1 which governs the manning of inspected small passenger vessels.

The amendment to 46 CFR 160.006-5(a), regarding specification requirements for cleaning of life preservers where the buoyancy fillers are not removed from the envelope covers during the cleaning process, is to clarify the wording of the regulation to remove any question that a company possessing a valid Coast Guard approval certificate for cleaning life preservers may be restricted to cleaning only Coast Guard type approved life preservers and may not clean other types of life preservers. It was never intended that the specification should restrict a company's activities. Therefore, the change in this paragraph changes the first sentence from "only life preservers of approved types shall be admitted to cleaning" to "only life preservers of Coast Guard approved types shall be admitted to cleaning under Coast Guard supervision."

The amendments to 46 CFR 160.013-1(a) (1), 160.013-2(a), and 160.013-3(a) change and bring up to date the references to Federal Specifications. The Federal Specifications GGG-H-131 for hatchets has been revised and it is no longer considered applicable for use in manufacturing hatchets for lifeboats and liferafts. The Federal Specification GGG-A-926 for axes of Type I, Class I, Design D or E, is substituted as the current applicable Federal Specification.

The amendment to 46 CFR 146.22-40(b), regarding nitro carbo nitrate in Coast Guard Federal Register document 61-4077, was published in the Federal Register of May 5, 1961 (26 F.R. 3924). This amendment numbered 14 inadvertently omitted a reference to retain § 160.22-40(b) (1) and (2) on page 127 of the Semiannual Cumulative Pocket Supplement to 46 CFR Parts 146-149 dated January 1, 1961. Federal Register document CGFR 61-11 is amended by inserting "introductory sentences of" before "paragraph (b)" in the instruction numbered 14 (26 F.R. 3924, second column).

Because the amendments to the regulations in this document are changes considered to be editorial in nature, clarification of practices and administration, or correction of a prior document, it is hereby found that compliance with the Administrative Procedure Act (respecting notice of proposed rule making, public rule making procedures thereon and effective date requirements thereof) is impracticable and unnecessary.

(Federal Register Document No. 61-5986 Filed June 27, 1961, and printed June 28, 1961.)

EQUIPMENT APPROVED BY THE COMMANDANT

[Editor's Note.—Due to space limitations, it is not possible to publish the documents regarding approvals and terminations of approvals of equipment published in the Federal Register dated June 2, 1961 (CGFR 61-17, 61-22), and Federal Register dated June 8, 1961 (CGFR 61-22). Copies of these documents may be obtained from the Superintendent of Documents, Washington 25, D.C.]

ARTICLES OF SHIPS' STORES AND SUPPLIES

Articles of ships' stores and supplies certificated from 1 June to 30 June 1961, inclusive, for use on board vessels in accordance with the provisions of Part 147 of the regulations governing "Explosives or Other Dangerous Articles on Board Vessels" are as follows:

CERTIFIED

Desmul Chemical Co., P.O. Box 1032, Bellingham, Wash., Certificate No. 191, dated 5 June 1961, FE-6 HYDRO-CARBON FUEL CATALYST.

Chemical Compounding Corp., 262 Huron St., Brooklyn 22, N.Y. Certificate No. 231, dated 8 June 1961, QUIST #1412—SUPER (INSECTICIDE).

AFFIDAVITS

The following affidavits were accepted during the period from 15 May 1961 to 15 June 1961:

Patent-Seal Valve Corp., 2516 Wroton Rd., P.O. Box 6872, Houston 5, Tex., VALVES & FITTINGS.

Superior Tube Co., Box 191, Norristown, Pa., FERROUS AND NON-FERROUS PIPING.

Quaker Alloy Casting Co., S. Cherry St., Myerstown, Pa., CASTINGS.

Sporlan Valve Co., 7525 Sussex Ave., St. Louis 17, Mo., FITTINGS.

Fuller Co., Catasauqua, Pa. VALVES.

FUSIBLE PLUGS

The regulations prescribed in Subpart 162.014, Subchapter Q Specifications, require that manufacturers submit samples from each heat of fusible plugs for test prior to plugs manufactured from the heat used on vessels subject to inspection by the Coast Guard. A list of approved heats which have been tested and found acceptable during the period from 15 May 1961 to 15 June 1961 is as follows:

The Lunkenheimer Co., Cincinnati 14, Ohio, Heat Nos. 637, 638, 639, 641, 642, 643 and 644.

MERCHANT MARINE SAFETY PUBLICATIONS

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

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

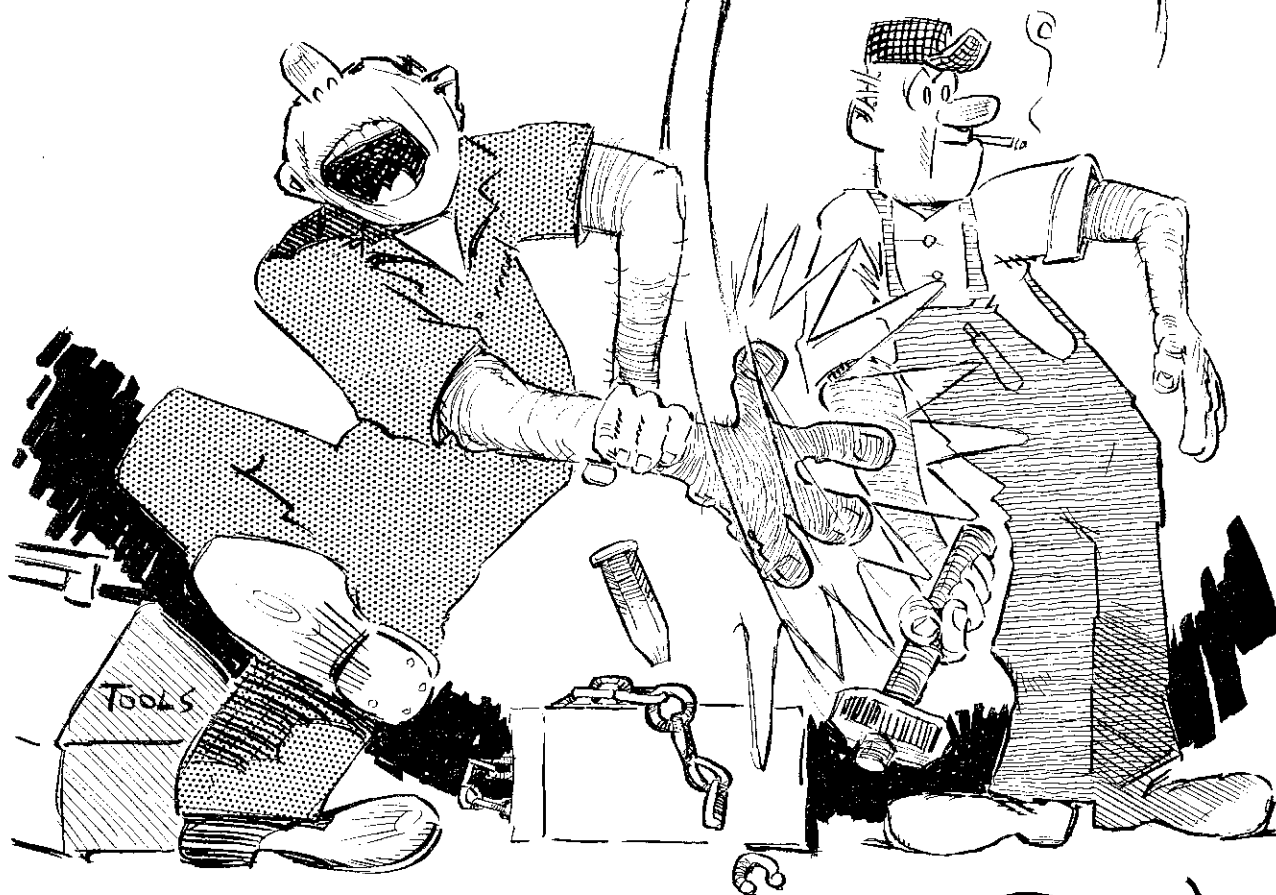
Official changes in rules and regulations are published in the Federal Register, which is printed daily except Sunday, Monday, and days following holidays. The Federal Register is a sales publication and may be obtained from the Superintendent of Documents, Government Printing Office, Washington 25,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

CHANGES PUBLISHED DURING JUNE 1961

The following have been modified by Federal Register:

CG-190 Federal Register, June 2, and June 8, 1961. CG-268 Federal Register, June 28, 1961.

LOOK WHERE YOU'RE SWINGING.



IN SETS OF FIVES OUR FINGERS GROW,
NO MORE OUR NEEDS EXPECTED.
A HEEDLESS EYE-A MAN LAID LOW,
PRECAUTION WAS REJECTED.

G. SEAL
P.M.A.