PROCEEDINGS

OF THE MERCHANT MARINE COUNCIL

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PROCEEDINGS

OF THE

MERCHANT MARINE COUNCIL

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LCDR N. B. Binns, USCG, *Editor*
T. A. DeNardo, *Assistant Editor*

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This copy for not less than 20 readers—pass it along.

PROCLAMATION 3544

FIRE PREVENTION WEEK, 1963

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

WHEREAS our Nation can ill afford the terrible havoc which fire brings to our homes, our businesses, and our lives; and

WHEREAS our States, municipalities, and industries have organized programs and established plans for more effective protection against devastation by fire; and

WHEREAS the job of fighting fire by active prevention demands the willing support of those programs and plans by every citizen:

NOW, THEREFORE, I, JOHN F. KENNEDY, President of the United States of America, do hereby designate the week beginning October 6, 1963, as Fire Prevention Week.

I earnestly request that we, as a Nation and as individual citizens, dedicate ourselves to a year-round campaign against the ever-present menace of fire; and I call for maximum efforts from State and local governments, the Chamber of Commerce of the United States, the American National Red Cross, and labor, business, farm, and professional organizations, as well as schools, civic groups, and public information agencies, in observing Fire Prevention Week and in enlisting the support of all segments of our society in fire prevention efforts.

I also direct the appropriate Federal agencies to initiate and carry on effective fire prevention programs which will advance the cause of safety and stem the destruction of our resources by fire.

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 nineteenth day of July in the year of our Lord nineteen hundred and sixty-three, and of the Independence of the United [Seal] States of America the one hundred and eighty-eighth.

JOHN F. KENNEDY

By the President:

DEAN RUSK,
Secretary of State.

[F.R. Doc. 63-7943; Filed, July 24, 1963; 4:14 p.m.]

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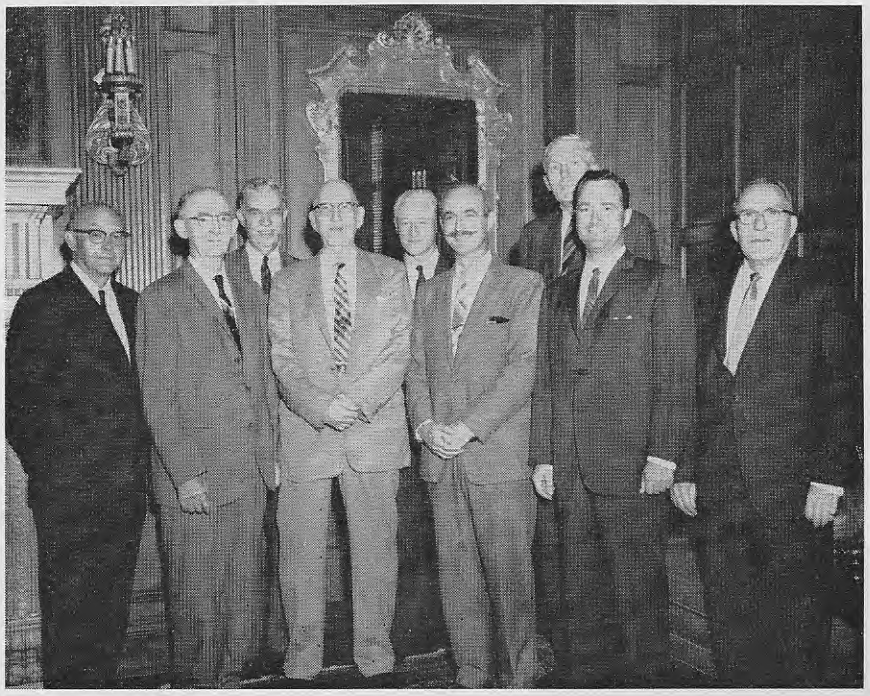
SECRETARY OF THE TREASURY'S COMMITTEE ON TANKER HAZARDS



MEMBERS OF THE SECRETARY OF the Treasury's Committee on Tanker Hazards assembled for the submission of their formal report. Left to right: E. Carroll Creitz, Dr. Glenn H. Damon, CAPT Wm. S. Vaughn, Professor H. L. Seward, L. C. Hoffmann, Dr. Homer Carhart, Richard Parkhurst, Charles S. Morgan, and Arthur Gatewood.

THE PROBLEM of gas-freeing tank vessels after discharging combustible or flammable cargoes is one which has concerned the maritime industry and the Coast Guard for some time. In order to assure safe practices and procedures for such vessels, every possible source of information regarding gas freeing and inerting should be developed.

In 1962 the Commandant of the Coast Guard recommended to the Secretary of the Treasury that a special committee, composed of representatives from federal agencies, industry, and others concerned with maritime safety, be created to look into all aspects of the problem.

The Secretary of the Treasury concurred with this recommendation and the Committee was established, consisting of:

CHAIRMAN:

Herbert L. Seward, Emeritus Professor of Mechanical and Marine Engineering, Yale University, and former Professor of Maritime Economics at the U.S. Coast Guard Academy.

MEMBERS:

Dr. Homer Carhart, Head, Fuels Branch, Naval Research Laboratory, Department of Navy.

E. Carroll Creitz, Fire Research Section, National Bureau of Standards, Department of Commerce.

Dr. Glenn H. Damon, Staff Research Coordinator, Bureau of Mines, Department of the Interior.

Arthur R. Gatewood, President, American Bureau of Shipping.

Ludwig C. Hoffmann, Chief, Office of Ship Construction, Maritime Administration, Department of Commerce.

Charles S. Morgan, Assistant General Manager, National Fire Protection Association.

Richard Parkhurst, Former Chairman, Boston Port Authority and former Commissioner, U.S. Maritime Commission (Ret.).

Captain Wm. S. Vaughn, USCG, Chief, Testing and Development Division, Office of Engineering, Coast Guard Headquarters.

SECRETARY:

Lieutenant Clyde T. Lusk, Jr., USCG, Merchant Marine Council Staff, Coast Guard Headquarters.

The Committee completed its work and submitted its final report in August 1963. The work was divided into three phases: (1) Gathering of data and information, (2) Preparation of findings, and (3) Preparation of recommendations.

704-872—63

FOREWORD

As a foreword to its findings and recommendations, the Committee stated that "The transportation of flammable liquids in large oceangoing tankers has been increasing for many years. While the bulk transport of such liquids is relatively cheap and provides a ready means of distributing the world's supplies of such materials, there are certain inherent hazards in the operations which have caused considerable concern. The handling of such hazardous materials by land transportation results in numerous accidents and it is not surprising that sea transportation of such materials has also resnlted in accidents. The principles involved in the initiation and propagation of fires and explosions are identical regardless of the locale of the operation.

"Safety" is a term which is more talked about and less understood than many other industrial problems. There is no operation which can be described as absolutely safe. Safety can be described only in relative terms, and is based on experience in situations similar to those under consideration.

The hazards connected with any industrial operation are often difficult to ascertain with any degree of certainty. In fact, there are many areas of operation where the degree of hazard cannot be assessed. Reasons for this difficulty are severalfold, but a most important factor is that most operations depend upon human judgment. Even highly mechanized operations require a certain dependence on human effort and judgment. Since this judgment varies so markedly from individual to individual and with the physical condition of any given individual the variation in hazard may be very wide. Additionally, there is a degree to which all human beings exhibit a certain amount of carelessness even though they will normally deny such behavior. The actual technical hazards involved in a given operation are generally statistical in nature and it is possible to estimate the probability of an accident happening. However, when technical problems are superimposed upon the human problems it is often next to impossible to arrive at a final conclusion which has any reasonable degree of accuracy.

In view of the uncertainty regarding the actual hazards involved in any operation or series of operations, one may readily ask whether it is possible to set up any given safety standards. Safety standards can and should be set up but they should be based on the most hazardous operation known to exist in any given situation. If economically feasible, the safety engineer will then add a factor of safety to cover the unforeseen circumstances which cannot be measured quantitatively. On this basis we believe it reasonable to formulate safety standards. This does not mean that an accident cannot happen.

It must be recognized that there is *always* danger associated with the handling and transport of flammable materials. There is, of course, not the slightest question that a tanker is in safer condition when gas free on a ballast voyage than when *not* gas free. A practical difficulty is that gas freeing a tanker is always a hazardous operation.

Of prime consideration in the Committee's deliberations are the hazards presented aboard a tanker, under varying circumstances, by empty, nongas-freed cargo tanks. These are likely to be found under each of the following three conditions: while the vessel is under way, is transferring cargo, or is undergoing repairs.

In its approach to the solution of the problem assigned, the Committee has been mindful of the far-reaching implications of its findings and recommendations both on the national and international scene. It must be understood that the circumstances from which these problems arise are neither unique in character nor peculiar to the United States.

We are concerned here with the transportation by water of a variety of liqnid products which are inherently hazardous. But these same products are not transported solely by water. They move also in interstate commerce over our highways, our railroads and to a lesser degree by air. Thus any limitations or controls established in the name of safety for the waterborne movement of these products must be consistent with corresponding controls established for the same reason in reference to other common forms of transportation where hazards to public safety are by no means less severe.

We are conscious also that, unlike our land transportation operations, seaborne commerce is international in character. The fact that there is a domestic coastwise segment of these operations does not alter the basically international character of the whole, because our domestic waterways, harbors, and terminal facilities are used by vessels of all maritime nations. By the same token, vessels of the United States merchant fleet must use the port facilities of foreign lands.

Elaborate means have been developed over a period of many years for the negotiation and agreement among maritime nations on matters of safety. It would be unwise for this Committee to propose controls on tankship operations which might easily upset the balance of our relations with other maritime nations and handicap our own tankship operators unless such proposed controls provided safeguards deemed to be essential to public safety.

In our consideration of these points, we have consulted with knowledgeable representatives of foreign tanker fleets to inform ourselves of accepted safety practices in these quarters. We are convinced that the established practices of the United States tankship operators, as well as the regulations of the Coast Guard with which they must comply, are in the van among their counterparts overseas.

The Committee feels that one of the major steps taken with regard to the advancement of maritime safety was the enactment of the Tank Vessel Act of 1936. Under this law the United States Coast Guard is given the responsibility for inspecting tank vessels and for promulgating rules and regnlations for the bulk movement of flammable and combustible liquids by water.

In the United States-flag ocean-going tanker fleet, there are about 400 vessels of 1,000 gross tons and over. These include some 80 in present inactive status, mostly in the National Defense Reserve fleet and do not inclnde small tankers operating exclusively on the Great Lakes and Inland Waterways. Numerically, these 400 vessels comprise about 10 percent of the world tanker fleet and while there are many new ships in the lot, their average age of 13.80 years is the highest among tanker fleets of all flags. United States owned or controlled companies also hold interests in foreign flag tankers. These include about 265 so-called "Flags of Necessity" or "Flags of Convenience" vessels, considered by the Department of Defense to be under effective United States control for use in the event of war or national emergency. These latter tankers are, for the most part, modern, large, high-speed vessels, with an average age well below that of United States-flag tankers.

Size, speed and cargo tank volume of tankers have all increased as compared to the standard T–2 WWII type * * *. These changes in the modern tanker, and the increasingly varied composition of cargoes in tankers and barges (already, by Coast Guard estimate, more than 140 different liquids are carried or proposed to be carried) compound the need for greatest alertness safetywise. This statement applies to construction, ship and cargo handling, aids to navigation especially in congested waters, crew training and enforcement of regulations."

FINDINGS

The findings of the Committee are as follows:

1. Safety problems relate more to *personnel* than to *materiel*.

2. A need exists for more adequate training of men to be assigned to tankers and also the updating by further education of experienced personnel.

3. There is no formalized procedure for the identification and the elimination of accident-prone individuals who may jeopardize the safety of crew and ship.

4. Most tank ship and tank barge operators have long recognized that hazards are associated with their industry and are continuing their efforts to deal with these hazards.

5. The incidence of fires due to liquid cargo is low compared to the total number of fires on all vessels.

6. A relatively higher number of deaths and injuries aboard tankers have resulted from fires and explosions *not* directly related to: (1) collisions while empty and not gas free, (2) tank cleaning, or (3) gas freeing.

7. Considerable scientific knowledge of the factors responsible for fires and explosions exists. Information on actual conditions existing in tank vessels and contributing to such hazards still is fragmentary.

8. With respect to responsibility for collisions, the tanker record is better than the average for all types of ships. The accident rate of tankers is relatively low on ballast voyages with tanks neither "gas freed" nor inerted. A truly gas-free tank, i.e., one that is completely free of vapor (or liquid that can form vapors) is inherently safer than an inerted tank that has not been gas freed.

9. Confusion exists regarding the differences between inerting and gas freeing and the results to be accomplished by each.

10. Inerting reduces the hazard of fire and explosion, but to what extent remains undetermined.

11. There is a lack of agreement in the industry as to the value and practicability of inerting. Because of possible contamination and/or reaction of product, flue gas inerting in tanks used for certain chemicals and for some clean petroleum cargoes is likely to be unacceptable.

12. The process of gas freeing is hazardous. It is more hazardous when done in port than when done at sea.

13. U.S. regulations covering construction and operation of U.S.-flag ships are generally more stringent than those of other nations.

14. Tankers carry a sufficient number of crew, providing that each tanker meets minimum manning requirements of the USCG.

15. U.S. Coast Guard Regulations do not require gas-monitoring equipment to be carried aboard tank vessels.

16. Present USCG Tanker Regulations are generally adequate for petroleum products and the procedures for revision are satisfactory. Existing regulations for the bulk transportation of chemicals are inadequate, but new regulations are being developed.

17. The "state of the art" relating to tanker design and construction is continuously improving and many of these improvements enhance safety benefits to the crew and tanker.

18. It is generally recognized that the pump room is a particularly hazardous space. Continuing studies are being made on means of minimizing this hazard.

19. There are too many diverse sets of Rules of the Road which govern the movement of vessels on the navigable waters of the United States.

20. Most collisions occur in restricted waters, and a principal cause is excessive speed.

21. Recent developments in radiotelephony make bridge-to-bridge communication practicable, especially in restricted waters.

22. In general, the width and depth of channels have not kept pace with the increase in size of vessels.

23. Whistle lights have been used advantageously in certain waters, but they are not in general usage.

24. There is lack of uniformity among the many State pilot authorities in respect to licensing, investigation of casualties, and disciplinary procedures.

25. The courts do not make sufficient use of the expertise available from the Coast Guard and other unbiased scientific and technical sources.

26. A number of court decisions declare a vessel to be "unseaworthy" for reasons that puzzle engineers, scientists, and experienced seamen. For legal purposes, seaworthiness appears to be whatever the courts say it is.

27. It is very difficult to retrieve significant statistical information on marine casualties from available records.

RECOMMENDATIONS

Based on its findings, the Committee made the following 11 recommendations:

1. That in the light of present knowledge, no regulations be promulgated which would make mandatory the gas freeing or inerting of empty cargo tanks prior to or during the navigation of the vessel concerned. The Committee recognizes that under certain circumstances not related to navigation, such as preparation for hot work, gas freeing is required.

2. That a uniform set of Rules of the Road be developed, applicable to all the navigable waters of the United States. Such a system should follow closely the International Rules of the Road.

3. That, when necessary, traffic in narrow or shallow channels should be controlled to avoid collision hazards such as occur in the maneuvering of large tankers. Special consideration should be given to the use of one-way traffic and speed control.

4. That an endorsement on the Merchant Mariner's Document of men assigned to tankers be required which would indicate at least an elementary knowledge of regulations and safety practices applicable aboard a tanker. No man should be allowed to turn to without such an endorsement and without such additional safety instructions as deemed necessary by the employer.

5. That particular note of individual performance be kept and that any irresponsible, negligent or careless behavior be recorded with a view toward eliminating the accident-prone individual from service on tank vessels.

6. That the Coast Guard continue development and use of better methods of recording and retrieving significant statistics on maritime accidents.

7. That in order to provide more definitive knowledge on which safer tank vessel practices may be based, further studies be made to delineate factors which contribute to fire and explosion hazards associated with flammable cargoes with particular emphasis on vapor concentration, static electricity and inerting.

8. That bridge-to-bridge radiotelephone be used in congested waters by all ships for the exchange of navigational information. A single frequency should be assigned and its use limited to this particular purpose.

9. That serious consideration be given to requiring a bright light to be synchronized with a vessel's whistle. The light should be located so as to be clearly visible all around the horizon and of such character that it could not be mistaken for a vessel's navigation lights.

10. That Coast Guard Tank Vessel regulations be amended to require a suitable, properly calibrated, explosive gas indicating device to be carried and used aboard tank vessels, particularly in the pump room.

11. That prevailing judicial procedures be revised to assure that the courts will have expertise from unbiased scientific or technical sources to aid them in making their decisions.

IS RADAR AN AID TO SAFE NAVIGATION?

By J. R. Webster
Radar Examiner, U.K. Ministry of Transport

SHIP'S OFFICER plots relative course on the face of a radar indicator unit in the wheelhouse.

THE FOLLOWING article is extracted from a paper delivered by Mr. Webster before the Insurance Institute of London in 1962. After a seagoing career as a radio officer on British merchant ships, he turned to the task of lecturing merchant navy officers on the finer points of radar and radio navigational aids. For the past 13 years Mr. Webster has served as Lecturer/Examiner in Radio Aids to Marine Navigation with the U.K. Ministry of Transport. In this position of responsibility Mr. Webster oversees all forms of radar training for merchant navy officers including courses and examinations for Radar Observer and Radar Maintenance Certificates. Mr. Webster has designed a Radar Simulator Course and is keenly interested in ways and means of improving training in radar and radio aids with its resultant increase in navigational safety for all ships.

The title of my talk has been chosen because concern has been expressed from time to time about the value of radar as an aid to safe navigation and collision avoidance. This concern stems from the results of collisions between ships which have occurred in circumstances when radar should have been a valuable aid to avoiding collision. Indeed it was said at a recent Court of Formal Investigation that a particular collision would, probably, not have occurred had the ships not carried radar. It is a melancholy thought that having radar available on a ship has led a mariner into actions which have involved the ship in collision. However, one cannot say in such a case that the instrument was the cause of the collision, but rather it was the misuse of the instrument which led to actions which resulted in collision. Hence the fault must be with the user. In my opinion, therefore, the short answer to the question which is the title of this talk is: "Yes, radar is a valuable aid to safe navigation, providing that it is well understood and properly used."

RADAR VS. COLLISION

Let me, at this stage, make one point clear. There does not appear to be any concern about the value of radar when used as an aid to avoid stranding. This is possibly because there is no clear evidence that misuse of radar has contributed to strandings, whilst, there are, of course, so many other aids which will help the mariner to avoid running ashore. Moreover the radar picture is much more easily appreciated when it is being used as an aid to avoid stranding, probably because land does not move. Therefore, I shall confine my talk to the relationship between the use of radar and collision avoidance.

Why do cases occur that lead us to believe that radar is often improperly used? Ships do not normally have collisions in clear weather under similar circumstances to those which occur in fog when using radar. When radar was first introduced, however, it was imagined that it would be as useful in fog as are the eyes in clear weather. Let us then consider what radar needs to provide and how far it can do so.

Before the advent of radar the means of detecting hazards to navigation such as the coast and other ships was sight and sound, sight being the greater aid because of the ability, on seeing an object, to judge size, shape, aspect, distance, direction, and much other detail. In fog sight is only useful to a very limited range, and the mariner has to rely first on sound, which gives a warning of the presence of the object responsible for the sound, but other than a very rough indication of direction no other information is given. It was inevitable under these circumstances that ships would be proceeding at very slow speeds in fog.

TRAINING NECESSARY

When radar was introduced on merchant ships, about 15 years ago,

A TECHNICIAN adjusts controls on the transmitter of the Coast Guard's experimental television radar station at Sandy Hook, N.J. A picture of harbor activity from Ambrose Lightship to the Narrows is obtained from a high definition radar that scans the area.

it came at a time of increasing speeds and demands for faster voyages so that any device which was an aid to reducing delays was welcomed. The publicity given to radar has at times included exaggerated claims, such as "radar will enable ships to go at full speed in fog," "the end of collisions at sea." This publicity led many to believe that radar would enable the mariner to see through fog as well as he could see in clear weather and that delays would be no more. There was, and I am sure there still is, a belief that the mariner needs little or no training to use radar because he is using the information gleaned from the radar set in the same way as he uses the information which he gained from his eyes on seeing another ship. This is not so, and the differences between the two sets of circumstances are such that training and practice are needed to enable the mariner to relate one to the other. No doubt when he can do this his clear weather experience will be most valuable even when he is using radar.

What is radar and how can it help the mariner? The word "radar" is coined from the phrase "radio direction and range" and that, if one accepts that detection is implicit in direction and range, expresses completely the information directly presented by a marine radar display.

A short pulse of radio waves is transmitted in a predetermined direction and a small amount of energy in the pulse is reflected when it meets an object in its path. Detection by the radar set of this reflected wave indicates an object in the direction of transmission at a distance which can be determined from measurement of time elapsed between transmission and reception of the echo pulse. In the marine radar sets pulses are transmitted successively from a rotating aerial which scans successively in all directions surrounding the ship until a complete picture of the surroundings is obtained. The radar set has a cathode ray tube with a circular screen on which the transmitted pulse appears as a fluorescent spot at the centre, indicating the observing ship; echo pulses appear on other parts of the screen in positions which correctly indicate the ranges and bearings of the observed ships and other objects. The tube is surrounded by a bearing scale and the observing ships' heading is indicated by a fluorescent radial line. There are associated circuits which enable the range and bearing of an object to be measured.

The display of a marine radar set is similar to a television set in that there are controls for brightness, gain, etc., and, as with the television set, if one is to see a picture the controls must be adjusted and moreover, if detail is to be obtained, they must be properly adjusted.

PROPER ADJUSTMENT VITAL

I think you will appreciate that the echo received by a radar set must be very weak, its strength depending to some extent on weather conditions and on size, shape, aspect, composition, and range of the reflecting object. It is extremely important that the mariner should appreciate that there are limitations to what the radar set will show. Even with a sensitive, properly adjusted radar set, it is possible that a fibreglass dinghy might not be detected, a small wooden boat might be detected at a maximum range of 2 miles, while a large passenger ship would be detected at 12 miles or more. Maximum ranges are only achieved when the set is adjusted to its most sensitive state; not only should the observer be able so to adjust the controls but he must recognize when they are maladjusted. He will often need to adjust the set when there are no echoes showing on the display but must have confidence that all detectable objects would appear on the display at their maximum detection range. If not there is danger of running down small boats which could have been detected but were not.

It is only after a full training that an observer is in a position to say with confidence that a radar set is operating satisfactorily, properly adjusted, and its limitations fully appreciated. He can then accept with confidence the information it provides and use the information as an aid to navigation and collision avoidance.

As I said earlier, the radar display shows all objects detected in their relative positions with respect to the observing ship; ranges and bearings can be measured, but that is all the information which can be obtained at any time. However, if the observing ship and/or other ships detected are moving, their positions on the display will change and those changes will depend on the speed and direction of movement. Therefore given adequate time between observations more information can be obtained.

Most radar-fitted ships at present have sets which have a "relative" display. On this display the observing ship appears at the centre and other objects move relative to the centre. If therefore the observing ship is moving and all other ships appearing on the display are stopped in the water, their echoes will move across the display on a reciprocal track to the heading of the observing ship at a rate proportional to the speed of the observing ship. If the observing ship is stopped, the echoes of moving ships will move across the display in directions which indicate the course they are steering at rates proportional to their actual speeds. If both observing and an observed ship are moving, the direction and rate of movement of the observed ship's echo will depend on the courses and speeds of both ships. Ranges and bearings observed and recorded at known time intervals can be used to obtain a much greater knowledge of what an observed ship is doing than is indicated by simple observation of the radar display.

PLOTTING

Clearly the first information needed by the mariner after detecting another ship on his radar display is to know whether or not a collision risk exists. Such a risk is indicated by an unchanging compass bearing, but a much clearer picture of the developing situation is obtained by simple processing of three or more successive observations. If the positions indicated by the ranges and bearings are marked on the face of the display, or on a chart representing the face of the display, then a line drawn through the marked points will indicate the relative track along which the observed ship is moving, and that line extended in the direction of movement will indicate the relative track she will follow if both ships maintain their courses and speeds. The extended line at its point nearest to the centre of the display indicates the nearest point of approach, and the distance between that point and the centre indicates the nearest distance she will approach.

With this information the mariner has a complete picture of the collision risk and is then in a position to decide whether or not any action is needed to avoid collision or to increase the passing distance to avoid a close-quarter situation. Having decided that avoiding action is necessary, a knowledge of the other ship's course and speed is desirable before deciding what the avoiding action should be. These are quite simply obtained from the observations made and plotted to obtain nearest approach. These observations give the speed and direction of the other ship relative to the observing ship. To find its true speed and direction therefore, one must take away in some appropriate manner the speed and direction of the observing ship which is contained in the relative speed and direction. To do this we mark on the line representing the relative track of the other ship the distance between first and final observations.

At the first observation we apply a line parallel to the heading marker in a direction opposite to the heading of the observing ship; its length is proportional to the distance moved by the observing ship between the observations. This procedure results in a triangle with one side missing; this missing side indicates the course and distance moved by the other ship during the interval between first and final observations. The observer is now in possession of information about the observed ship much greater than can be obtained by random observations or by continuously looking at the display.

It takes time to obtain the information, and should either observing or observed ships alter course or speed it will take time to determine what are the effects of the alteration and to determine what is the new course and speed. This time is not consumed by work but by waiting between observations for sufficient movement to obtain an accurate indication of direction. The information derived from this simple plot enables the observer to visualize the situation as it would be seen if the fog cleared so that he does not entirely lose the benefit of long experience of manoeuvres in clear weather.

USE RADAR PROPERLY

You will probably be asking why collisions still occur if radar can be

such an effective aid to avoiding collisions. The simple answer is that it is too often not so used in the way described, or in any other effective way while limitations imposed by not extracting the maximum benefit are not recognized. Courts of Formal Investigation have often found that radar was not properly used and in the circumstances prevailing the vessels were proceeding at excessive speed. In at least one recent case you may remember evidence indicated assumptions of the other ship's nearest approach direction and distance and of her course were made after only two brief observations; such assumptions on such scanty evidence are dangerous. In hardly any cases of collisions which have been investigated has there been any attempt made to extract from the radar information available that information which is essential to a confident appreciation of the situation. Radar has too often been used as an excuse for proceeding at a speed which in the light of events turned out to be excessive. Clearly it is only after obtaining all the information available from radar and other sources including sight and sound that the mariner is able properly to judge what is a safe speed; indeed the radar information may warn him that it would be prudent to reduce speed further or even take all way off his ship.

There are many mariners who have said that they cannot use the techniques described because they are time consuming or that there is not the manpower available. This is no doubt true of those who have not been trained to use radar effectively and also of those who have not practiced, in clear weather, the techniques they have been taught, but I think you will agree that those officers who say they cannot, for whatever reason, obtain all the information which radar offers must not assume what that information would be and behave accordingly. Unfortunately the untrained man, not appreciating the limitations of radar, blindly relies on detection of every obstacle; he accepts as sufficient what he sees by looking at the radar screen and does not appreciate that he has anything to learn.

I have tried to make it clear without going too deeply into technicalities that the modern marine radar set is a reliable instrument which can give valuable assistance to the mariner; it has its limitations, but providing it is used by a properly trained competent radar observer there is no reason why it should not prove to be an aid both to reducing delays and to safety.

NYLON NEMESIS

BY CHMACH E. J. GOSSEN, USCG

The antics of snorting tugboats, while at work in the confines of harbors all over the world, have ever been a pleasure to see. For instance, the seemingly impossible task of bending a 600-foot Great Laker around "Collision Bend" in the Cuyahoga River at Cleveland, Ohio, provides diners at one of the city's better restaurants unexpected luncheon entertainment.

Hooked up to a short stay both fore and aft, the tugs answer to whistle signals by laying violently over on their sides with engines going full ahead or astern. The lines are passed from the tow to the tugs. The forward tug usually has hold of a fiber hawser connected to a wire pendant shackled to the stem of the vessel. The stern tug usually has hold of a fiber hawser connected to a short shot of chain shackled into a padeye welded to the deck of the ship. The stern chain pendant from the ship to the fiber hawser is a time tested and proven method used on the Lakes and is recommended by Knight's "Modern Seamanship." The chain withstands excessive chafing at the stern chock and provides safety in the acute angle taken by the stern towline at all times.

Recently, far from any spectators and in the dark of night, a stern towline parted, snapping back violently with 6 feet of chain on the bitter end, killing a tugman. The chain pendant fractured. The accompanying photograph shows an additional fracture in a recovered section of the chain. The victim was standing in a "safe" area amidships on the side of the tug outside the usually dangerous zone about the fantail and towing bitts. Excitement and consternation reigned supreme among people in the industry. Breaking hawsers might whip around the fantail, but when a chain parted it ordinarily fell into the water! This is a time-tested arrangement! Or is it? Isn't it in reality something new with idiosyncracies not understood and considered? The typical time-tested arrangement consisted of a 1⅛-inch unstudded short link chain, which, according to the American Bureau of Shipping, has a breaking test of 67,760 pounds. The manila hawser usually used is 8 inches in size and has a breaking strength of 52,000 pounds according to Knight's tables. However, there is a new product on the market called nylon. It is lighter, easier to handle, and wears better than manila. When the manila had to be replaced, 8-inch nylon was substituted. An 8-inch nylon line has a breaking strength of 125,000 pounds. A pull of 67,760 pounds, enough to break the chain, puts only about half the maximum load on the nylon hawser. The cliche "a chain is only as strong as its weakest link" took on a renewed meaning here. Instead of keeping the fiber "link" in the towline the weakest part, as originally designed, human error made the "link" stronger than the chain. Add to that a lack of knowledge of nylon's rubber-band characteristics and you have elements that stretch all the way to tragedy.

RECOVERED SECTION of chain pendant showing an additional fracture; chain parted under excessive strain from a nylon towing hawser.

Sailor beware! In gaining any advantage the characteristics of nylon have to offer, where manila has been in use, *remember* the metal connections, chains, blocks, padeyes, welds and cleats still have only their *original* tensile strength, at best. Be certain to use nylon of a size and strength commensurate with the replaced manila or the metal connecting strength, and use nylon rope stoppers for holding nylon hawsers under load.

BELT TYPE NO SUBSTITUTE FOR LIFEJACKET

A deckhand lost his life recently when he jumped from a tug to a moored barge, lost his balance, and fell. Although the man was wearing a belt-type "preserver," his heavy work clothes pulled him beneath the surface; a grim reminder that "belts" are not a substitute for a Coast Guard-approved life preserver.

MARITIME SIDELIGHTS

There were 915 vessels of 1,000 gross tons and over in the active ocean-going U.S. merchant fleet on August 1, 1963. This is four less than the number active on July 1, according to the Maritime Administration, U.S. Department of Commerce. There were 17 government-owned and 898 privately owned ships in active service. These figures did not include privately owned vessels temporarily inactive, or government-owned vessels employed in loading storage grain. They also exclude 26 vessels in the custody of the Departments of Defense, State, and Interior, and the Panama Canal Company.

There were three less active vessels and the same number of inactive vessels in the privately owned fleet. Three freighters, the *Ashley Lykes, American Contractor,* and *Export Challenger* were delivered from construction. One combination ship, *Alcoa Cavalier* and one freighter, *Alcoa Pointer* were turned in to the government on an exchange and the *American Retailer* was taken in exchange from the government. The *Barbara Lykes* was traded in to the government for credit towards new construction. One tanker and two freighters were sold for scrap, and one freighter was a marine casualty. This made a net loss of 3 to a total of 980. Of the 82 privately owned inactive vessels, 5 freighters and 6 tankers were being repaired or reactivated. The others were laid up or temporarily idle.

⚓ ⚓ ⚓

The U.S. Line Co. was cited recently by the government for the sanitary excellence of its 54-ship fleet. Also, at a joint ceremony, the liner *America* was given the ship safety achievement award for a feat of seamanship displayed last year. The sanitation award, made by the U.S. Public Health Service in recognition of high inspection ratings in sanitary construction, maintenance and operation, has been won by U.S. Lines for seven consecutive years. The safety award, sponsored jointly by the marine section of the National Safety Council and the American Merchant Marine Institute, was given to the *America* for her action in May of 1962 when she diverted 150 miles from her regular route to transfer a seriously ill engineer from a freighter in heavy Atlantic seas.

ALCOA PURITAN AWARDED CITATION

THE *Alcoa Puritan* has received the Ship Safety Achievement Citation of Merit, presented jointly each year by the American Merchant Marine Institute and the Marine Section, National Safety Council.

The feat of seamanship and safety at sea by which the ship earned this honor took place the night of September 20, 1962, in the Gulf of Mexico, 80 miles south of Mobile. In rough seas, with rain and minimum visibility, the watch on the *Alcoa Puritan* sighted a distress flare. The ship's course was altered to bring her to the position of the flare and found the fishing vessel *Betty J.*, with five men aboard, in sinking condition. A boat was at once readied for launching, but sea conditions were so bad that it was determined to attempt a rescue by going directly alongside the foundering craft, indeed a delicate maneuver. All five men were then brought right aboard over the freighter's rail.

At ceremonies on board the vessel the Award was presented to Captain G. J. Hamm, Master of the *Puritan*, by Captain C. H. Broach, Chief of Merchant Marine Safety Division, Third Coast Guard District. Mr. P. S. Wise from AMMI and Captain R. E. Mackey from Texaco look on.

⚓ ⚓ ⚓

An increase in U.S. domestic oceanborne and Great Lakes tanker trade and a decrease in dry cargo traffic in the decade 1952–61 are shown in the statistics compiled for "Domestic Oceanborne and Great Lakes Commerce of the United States, 1961" just published by the Maritime Administration.

Domestic oceanborne and Great Lakes tanker cargoes in ships of 1,000 gross tons and over increased from 144.1 million short tons in 1952 to 173.8 million in 1961. Of the trade in 1961, 164.3 million tons, or 95 percent, was in the deep-sea trade, while 9.3 million tons was in Great Lakes traffic. Domestic deep-sea tanker traffic increased by a record 28.3 million tons in the decade between 1952 and 1961. Great Lakes tanker trade increased by 1.3 million tons in the same period.

Dry cargo domestic and Great Lakes commerce, however, dropped from 161.0 million short tons in 1952 to 138.1 million tons in 1961. Eighty-six percent of the 1961 traffic, or 118.5 million tons, was in Great Lakes trade, with the remaining 19.4 million tons in deep-sea commerce. In the decade between 1952 and 1961 deep-sea dry cargo tonnage decreased by 7.1 million tons, and Great Lakes dry cargo traffic decreased by 15.9 million tons.

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The Maritime Administration announces that three new publications of interest to the maritime industry are available from the Government Printing Office.

They are, "Essential United States Foreign Trade Routes" which may be purchased for 60 cents per copy;

"Relative Cost of Shipbuilding in the Various Coastal Districts of the United States"; priced at 50 cents; and

"Merchant Fleets of the World—Seagoing Steam and Motor Ships of 1,000 Gross Tons and Over as of December 31, 1962" which lists the world fleets by number, gross and deadweight tons, and type, and gives details on additions and deletions to the fleets of 12 nations. This report may be purchased for 15 cents per copy.

TREASURY DEPARTMENT
UNITED STATES COAST GUARD

ADDRESS REPLY TO:
COMMANDANT
U.S. COAST GUARD
HEADQUARTERS
WASHINGTON, D.C. 20226

MVI-3
26 June 1963

Commandant's Action

on

Marine Board of Investigation; collision of the M/V *Boheme* (Norwegian) and the Tank Barge *Parker* 102–25 in tow of the Towboat *Bonnie D,* lower Mississippi River, on 20 October 1962, with loss of life

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.

At 0340, 20 October 1962, the Norwegian tankship *Boheme* collided with the Tank Barge *Parker* 102–25, the lead barge of the tow being pushed by the diesel towboat *Bonnie D* in the lower Mississippi River near Mile 149.6 ahead of passes, slightly below Laura Light.

The Mississippi River, in the area of the collision, although basically oriented East-West, presents about a 40-degree change of course to the left for a downbound vessel. The channel is about 2,000 feet wide with deep water fairly close to either bank.

Prior to and at the time of the collision the wind was nearly calm, visibility restricted by haze to about 1½ to 2 miles. There was no fog of any consequence. The river current was one-half to three-quarter mile per hour.

The *Boheme* was en route Baton Rouge to Rotterdam with 46 crewmembers, 2 passengers, and 12,101 tons of combustible liquid cargo. Speed with one-half knot following current was about 10 knots over the bottom. The ship was about midriver as it approached the bend at Laura Light shortly after 0330. As St. Elmo Light drew abeam to port, the green lights of the *Bonnie D* and tow were sighted about 20 to 30 degrees on the port bow at a distance of about 1½ miles. After initial sighting, the rudder of the *Boheme* was placed 10 degrees left to change course to conform to the channel. Witnesses of the *Boheme* testified that about the time the rudder order was given a two-blast whistle signal was heard from the *Bonnie D.* The signal was interpreted as a proposal for a starboard to starboard passing and was immediately answered. The rudder of the *Boheme* remained 10 degrees left as the vessels closed. The relative bearing of the *Bonnie D* decreased and the vessels were in a near head and head situation at a distance of about 600 feet when a one-blast whistle signal followed by a four-blast danger signal was heard from the *Bonnie D.* The red light of the *Bonnie D* was seen and the tow, for the first time, reached a relative bearing slightly on the starboard bow of the *Boheme.* The rudder was ordered hard left and the engine full astern. Less than half a minute later, at 0340, the starboard bow of the *Boheme* struck the bow section of the *Parker 102–25* at about a 20-degree angle.

The diesel powered towboat, *Bonnie D,* en route Ostrica, Louisiana to Mayersville, Mississippi, pushing four tank barges ahead in tandem, containing a combined total of 80,500 barrels of crude oil, was upbound in the Mississippi River making good about 5 or 6 miles per hour. The *Bonnie D* is not subject to Coast Guard inspection. The Master and Pilot on watch held Merchant Mariner's documents endorsed for Tankerman. However, neither held a license issued by the Coast Guard to serve as Master, Mate or Pilot. After passing Lutcher Ferry the flotilla was near midchannel but slightly toward the left descending bank. At about 0336 the lights of the *Boheme* were sighted in the vicinity of St. Elmo's Point bearing about 40 degrees relative on the starboard bow. The Pilot of the *Bonnie D* testified he was unable to determine the type of vessel or its intentions and because it was hazy he sounded a three-blast whistle signal to point out to the other vessel that he was there. He further testified that 1 or 2 minutes after initial sighting he sounded a one-blast whistle signal. He heard no whistle signals from the *Boheme* at any time. A passing agreement was not reached. When the *Boheme* was about 1 mile distant the rudders were placed 5 degrees right resulting in a slight starboard swing. As the vessels closed, the course and speed remained virtually unchanged. The lights of the *Boheme* drifted to the left. Finally, the Pilot recognized the range lights of the *Boheme* slightly on his port bow and assumed that the ship was attempting to pass between the tow and the left descending bank. Seconds before collision the danger signal was sounded, the rudders placed full left and the engines stopped. The *Boheme* struck the bow section of the lead barge, *Parker 102–25,* shearing off a portion of the starboard bow which penetrated and remained in the *Boheme.*

Fire occurred immediately and ignited a large pool of crude oil released from the lead barge. The *Boheme,* engines stopped and reacting to full left rudder, pivoted over the burning oil and grounded nearly perpendicular to the left descending bank. The forward and after spaces of the tanker burned; however, the bulk liquid cargo did not ignite. After the *Bonnie D* had backed well clear of the fire, the lead barge sank by the bow, grounding the tow.

As a result of the fire, 20 crewmembers of the *Boheme* either died or are missing and presumed dead.

REMARKS

The Board's reconstruction of the events leading up to the casualty as set forth in the Findings of Fact is amply supported in the record.

Concurring with the Board it is concluded that the primary cause of this casualty was the failure of the *Bonnie D* to reach a passing agreement. In the absence of a passing agreement the *Bonnie D* failed to recognize the dangerous situation developing and to take timely action to avoid collision.

Further concurring with the Board, the *Boheme,* although it approached the point of collision on the assumption that a starboard to starboard passing agreement had been reached, failed to recognize a dangerous situation developing and to take timely and sufficient measures to ensure a safe passing.

nautical queries

DECK

Q. If the locking latch of a gyro compass in operation is left engaged, it will cause:

(a) The compass to turn in circles

(b) A constant error

(c) A variable error 10° east and west of the meridian

(d) The compass to hunt

(e) No error

A. (a) The compass to turn in circles

Q. During the day loran ground wave coverage extends out to about _____ miles.

(a) 1500–1700

(b) 1100–1200

(c) 400–500

(d) 1700–1900

(e) 700–800

A. (e) 700–800

Q. If the power should fail to the electric engine order telegraph system installed on a vessel contracted for after November 19, 1952, a(n):

(a) Audible alarm only will warn the watch personnel

(b) Visible alarm only will warn the watch personnel

(c) A visible alarm will warn the engineer on watch

(d) Audible and visible alarm will be given in the steering engine room

(e) Audible and visible alarm will be given in the wheel house

A. (e) Audible and visible alarm will be given in the wheel house

Q. What signal is made by a life-saving station at night to notify a vessel that:

(a) Her distress signals have been seen

(b) This is the best place to land

(c) Landing here is highly dangerous. A more favorable location to land is in the direction indicated.

A. (a) White star rocket

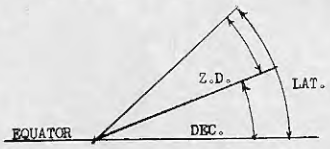
(b) Vertical motion of a white light or flare

(c) Horizontal motion of a white light or flare, followed by the placing of the white light or flare on the ground and the carrying of another white light or flare in the direction to be indicated.

MERIDIAN ALTITUDE-SUN

Q. Enroute from England to Azores, a meridian altitude of the sun was observed at D.R. Latitude 43°–54′ North, with the sun bearing South. The observed altitude was 68°–06′.5 and the declination was 21°–30′.4 North.

REQUIRED: The Latitude at time of sight.



A. Ho.	68°–06′.5	S
	89°–60′.0	
Z.D.	21°–53′.5	N
Dec.	21°–30′.4	N
Lat.	43°–23′.9	N

ENGINE

Q. (a) Explain why most high pressure air compressors are multistaged.

(b) What is the purpose of the air compressor aftercooler?

A. (a) Most air compressors are multistaged because air can be more economically compressed by multistaging with intercoolers between the stages in which the heat due to compression in the preceeding stage is removed before entering the following stage. Multistaging is also necessary to prevent temperatures within the cylinders and receivers from reaching dangerous limits.

(b) The purpose of the aftercooler is to remove moisture from the compressed air immediately after compression and before the air enters the receiver or air mains. This is accomplished by reducing the temperature of the air from the compressor to a point where the water vapor will condense and can be removed by a separator.

Q. Upon what three things does the rate of heat transfer through a substance from a hotter body to a colder body depend?

A. The rate of heat transfer from a hotter body to a colder body depends upon the following:

1. The difference in the temperature between the two bodies.

2. The surface area through which the heat flows.

3. The coefficient of heat transfer of the substances through which the heat must flow.

Q. (a) What law governs the expansion of steam?

(b) Define this law.

A. (a) Boyles law of expanding gases.

(b) The volume of all elastic gases is inversely proportional to their pressure.

Q. State the principle of hydraulics which is known as Pascal's law.

A. Pascal's law states that pressure exerted at any place on a closed container is transmitted undiminished throughout the fluid contained and acts with equal force on equal areas of the container's walls.

Q. What are the meanings of the following terms?

(a) Tensile strength.

(b) Elastic limit.

(c) Ductility.

(d) Reduction of area.

(e) Elongation as applied to boiler steel.

A. (a) *Tensile strength* is the strength of a material which resists the forces which tend to pull it apart. The ultimate tensile stress is the greatest resistance offered by a material to the forces which tend to pull it apart and is expressed as so many pounds per square inch.

(b) *Elastic limit* is the limit of unit stress which a material will stand under tension before deformation will result in a permanent set. Within the elastic limit the material will stretch under stress, but will return to its original length and form when released from tension.

(c) *Ductility* refers to the characteristic of a material which permits it to be stretched or drawn out into wire or its composition which permits alteration of its shape or form without seriously affecting its strength.

(d) *Reduction of area* is the difference between the cross-sectional area of a material after fracture resulting from tension, and the original cross-sectional area at the point of fracture, the difference being reduced to percent.

(e) *Elongation* refers to the percent increase in length between two established marks on a test specimen compared before and after testing.

[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 Register containing the material referred to may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402]

Title 46—SHIPPING

Chapter I—Coast Guard, Department of the Treasury

[CGFR 63-34]

VESSEL INSPECTION REGULATIONS

Miscellaneous Amendments and Editorial Changes

Pursuant to the notices of proposed rule making published in the Federal Register on February 2, 1963 (28 F.R. 1052–1058), and February 16, 1963 (28 F.R. 1510, 1511), and the Merchant Marine Council Public Hearing Agenda dated March 25, 1963 (CG–249), the Merchant Marine Council held a public hearing on March 25, 1963, for the purpose of receiving comments, views and data.

This document is the seventh of a series regarding the regulations and actions considered at the March 25, 1963, Public Hearing and Annual Session of the Merchant Marine Council. This document contains the final actions taken with respect to the following proposals:

ITEM IV—TANK VESSELS

a. Remote shutdown of internal combustion engine driven cargo pumps on tank vessels (CG–249, page 67).

b. Venting of cofferdams and void spaces of tank vessels (CG–249, page 68).

c. Firefighting equipment and precautions (CG–249, pages 69–76).

ITEM V—VESSEL OPERATIONS AND INSPECTION

a. Manning of lifeboats and liferafts (CG–249, pages 128–132).

b. Manned seagoing barges: Rescue boat requirements (CG–249, page 133).

ITEM VI—MARINE ENGINEERING

a. Materials and allowable stresses (CG–249, pages 171–188).

b. Classification of piping systems (CG–249, page 189).

c. Over pressure protective devices in exhaust lines of machinery (CG–249, page 190).

d. Bilge piping to watertight compartments (CG–249, page 191).

e. Arrangement of fuel oil service piping (CG–249, page 192).

f. Fuel system requirements for diesel machinery located on deck (CG–249, page 193).

g. Arc welding electrodes (CG–249, page 193).

h. Hydrostatic tests for boiler feed and blow piping (CG–249, page 194).

ITEM VII—ELECTRICAL ENGINEERING

a. Definitions, plan submittal, motors, ground detection, general alarm systems, storage batteries, switchboards, controllers, and emergency lighting and power systems (CG–249, pages 195–206).

b. Motor enclosures, receptacle outlets, emergency lighting and power system, and smoke detector systems (CG–249, pages 207–210).

Those proposals designated as "a," "b," and "c" in Item IV regarding "Tank Vessels," as revised, are approved and set forth in this document. The principal changes made change the effective date regarding remote shutdown controls on existing tank vessels to "October 1, 1963," from "July 1, 1963," in 46 CFR 32.50–35(b); require the firefighting equipment to be of an approved type when carried to provide special protection where unusual products are carried, in 46 CFR 34.01–10(a); and to limit the use of the distribution piping required in fire extinguishing systems, in 46 CFR 34.25–15(f).

Those proposals designated as "a" and "b" in Item V regarding "Vessel Operations and Inspection," as editorially revised, are approved and set forth in this document.

Those proposals in Item VI regarding "Marine Engineering," as revised, are approved and set forth in this document. Changes were made in 46 CFR 51.67–1, and 51.73–1 regarding aluminum bronze alloy E and oxygen-free copper, respectively; in 54.03–1 (b) and (g)(2) regarding materials (bronze castings and steel plate); and in Table 54.03–10(c) regarding allowable stresses for steam bronze castings and ounce metal. Table 55.04–5 regarding pressure and temperature limitations for piping was modified so that requirements for "molten sulfur" are limited to a maximum temperature of 330° F. In 46 CFR 55.10–25 the bilge and ballast piping to watertight compartments will not be applied to unmanned barges. In 46 CFR 55.10–40(c) the restriction to "short lengths of pipe" was removed and all welded lengths of fuel oil service piping may be located beneath floorplates and behind structures.

Those proposals in Item VII regarding "Electrical Engineering," as revised, are approved and set forth in this document. The provisions of 46 CFR 111.25–5(c) were changed so that "anchor windlass motors" were removed from the nonvital category so that nameplate requirements for "vital category" continue to apply. The value of the potential to which the normal source may drop was changed to "15 to 40 percent" in 46 CFR 112.20–5(a), 112.25–5 and 112.30–5(a). The location for contact maker of the general alarm system on tank ships is required to be in the deck officers' quarters rather than the "officers' quarters in the amidship deckhouse."

Other changes of an editorial nature have been made to bring statutory authorities up to date, correct references in regulations, and to clarify intent of regulations. These changes are in 46 CFR 2.50–25(b), 31.10–20(a)(4), 51.04–1, 51.46–1, 51.49–1, 52.25–1(c)(1), 55.07–1(i)(3), 55.07–15, 56.05–5(a)(2), and 57.10–15(c)(1). Those changes which were not described in the notices of proposed rule making published in the Federal Register are considered to be editorial changes and it is hereby found that compliance with the Administrative Procedure Act (respecting notice of proposed rule making, public rule-making procedure thereon, and effective date requirements thereof) is unnecessary.

(Federal Register of August 20, 1963.)

DEPARTMENT OF DEFENSE

Department of the Navy

[No. 22d]

CERTAIN CLASSES AND TYPES OF NAVAL VESSELS

Navigational Light Waivers

Certificate of the Secretary of the Navy under sections 143a and 360, Title 33 of United States Code.

Whereas, 33 United States Code, sections 143a and 360, provides that the requirements of the Regulations for Preventing Collision at Sea, 1948, the Inland Rules, the Great Lakes Rules and the Western River Rules as to the number, position, range of visibility, or arc of visibility of lights required to be displayed by vessels shall not apply to any vessel of the

Navy where the Secretary of the Navy shall find or certify that, by reason of special construction, it is not possible for such vessel or class of vessels to comply with the statutory provisions as to navigation lights, and,

Whereas, a recent study of the arrangement and position of the navigation lights of that type of naval vessel known as Hydrofoil Patrol Craft, PC(H) Class has been made in the Navy Department and, as a result of such study, it has been determined that because of their special construction it is not possible for Hydrofoil Patrol Craft, PC(H) Class, to comply with the requirements of the statutes enumerated in said sections 143a and 360, Title 33, United States Code.

Now, therefore, I, Fred Korth, Secretary of the Navy, do hereby certify that Hydrofoil Patrol Craft, known as the PC(H) class are naval vessels of special construction and with respect to the position of the masthead and anchor lights on such vessels, it is not possible to comply with the requirements of the statutes enumerated in sections 143a and 360, Title 33, United States Code.

Further, I do find that it is feasible to locate the said navigation lights on the PC(H) class of vessel as follows:

(a) The masthead and anchor lights shall be located on the centerline and two feet aft of the amidship point instead of in the forepart of such vessels.

(b) The anchor light shall be carried at a height above the hull of more than 20 feet.

Further, I certify that such location and installation constitutes compliance as closely with the applicable statutes as I hereby find to be feasible.

I do specify that this waiver amends the consolidated tabulation of lights described in Waiver Certificate No. 22 published in Federal Register, volume 25, page 5791, 1960 by adding PC(H) to those vessels described in table 1 as Patrol Vessels and adding in the succeeding columns applicable to such ships the following:

PC(H) (Hydrofoil)

1st column—None.
2d, 3d, and 4th columns—After white light not carried.

I do specify further that the effective date of this certificate is August 1, 1963.

Dated at Washington, D.C., this 30th day of July 1963.

[SEAL] FRED KORTH,
Secretary of the Navy.

[F.R. Doc. 63-8338; Filed, Aug. 5, 1963; 8:57 a.m.]

WEB-FOOTED TOOL DROPPER

A MIGRATORY bird, he ranges all departments—nests on all decks. Drops wrenches on First Assistants' toes—bounces hammers from stack stays to passengers beneath. If in the Steward's department, drops pots, pans, and cases of frozen meat on the podal extremities.

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 August 10, 1963 (CGFR 63-44). Copies of these documents may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402.]

ARTICLES OF SHIPS' STORES AND SUPPLIES

Articles of ships' stores and supplies certificated from August 1 to August 31, 1963, 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

Krylon, Inc., Ford and Washington Sts., Norristown, Pa.:

Certificate No. 568, dated August 8, 1963, RUST RELEASE PENETRATING OIL-LUBRICANT #1324.

Certificate No. 569, dated August 8, 1963, SPARVAR PENETRATING OIL #S-192.

Certificate No. 570, dated August 8, 1963, ELECTRIC MOTOR CLEANER #1327.

Fuld Brothers, Inc., 702 S. Wolfe St., Baltimore, Md., 21231:

Certificate No. 571, dated August 13, 1963, F.B. 13, SOLVENT DEGREASER.

Pittsburgh Plate Glass Co., One Gateway Center, Pittsburgh 22, Pa.:

Certificate No. 572, dated August 20, 1963, TRI-ETHANE.

AFFIDAVITS

The following affidavits were accepted during the period from July 15, 1963 to August 15, 1963:

Parks-Cramer Co., Newport St. Fitchburg, Mass., PIPE, TUBING, VALVES & FITTINGS.

O. Wagner & Son Tool & Die Co., 1707 E. Ft. Lowell Rd., Tucson, Ariz., VALVES.

H. K. Porter Co., Inc., P.O. Box 95, Roselle, N.J., FITTINGS, FLANGES, & FORGINGS.

International Pipe & Ceramics Corp., P. O. Box 269, East Orange, N.J., PIPE, TUBING, & VALVES.

Contromatics Corp., 67 West St., Rockville, Conn., VALVES.

Zurn Industries, Inc., 1801 Pittsburgh Ave., Erie, Pa., VALVES & FITTINGS.

The Bruning Co., P.O. Box 147, Lincoln, Nebr., FITTINGS.

Dixie Plastics Mfg. Co., 4250 Florida Ave., Box 52769, New Orleans 50, La., PIPE, TUBING & FITTINGS.

Republic Manufacturing Co.,[1] 15655 Brookpark Rd., Cleveland, Ohio, 44135, VALVES.

Ruggles-Klingemann Mfg. Co.,[1] P.O. Box 550, Salem, Mass., VALVES & FITTINGS.

Henry Valve Co.,[1] 3215 North Ave., Melrose Park, Ill., VALVES & FITTINGS.

Anaconda American Brass Co.,[2] 414 Meadow St., Waterbury 20, Conn., PIPE & TUBING.

Kennedy Valve Mfg. Co., Inc., Box 931, Elmira, N.Y., VALVES.

Nibco Inc., 500 Simpson St., Elkhart, Indiana, VALVES.

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[1] Delete in the Formerly Approved Section of CG-190.

[2] Delete the name of American Brass Co., Waterbury 88, Conn., for pipe and tubing in the Formerly Approved Affidavit Section of CG-190.

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 parentheses 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 Examination for Merchant Marine Deck Officers (7–1–58).
108	Rules and Regulations for Military Explosives and Hazardous Munitions (8–1–62).
115	Marine Engineering Regulations and Material Specifications (3–1–63), F.R. 8–20–63.
123	Rules and Regulations for Tank Vessels (1–2–62). F.R. 5–2–62, 9–11–62, 2–6–63, 4–4–63, 5–30–63, 8–20–63.
129	Proceedings of the Merchant Marine Council (Monthly).
169	Rules of the Road—International—Inland (6–1–62), F.R. 1–18–63, 5–23–63, 5–29–63, 7–6–63.
172	Rules of the Road—Great Lakes (6–1–62). F.R. 8–31–62, 5–11–63, 5–23–63, 5–29–63.
174	A Manual for the Safe Handling of Inflammable and Combustible Liquids (7–2–51).
175	Manual for Lifeboatmen, Able Seamen, and Qualified Members of Engine Department (9–1–60).
176	Load Line Regulation (9–1–61). F.R. 7–27–62, 11–14–62, 2–2–63, 6–11–63.
182	Specimen Examinations for Merchant Marine Engineer Licenses (12–1–59).
184	Rules of the Road—Western Rivers (6–1–62). F.R. 1–18–63, 5–23–63, 5–29–63.
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191	Rules and Regulations for Licensing and Certificating of Merchant Marine Personnel (6–1–62). F.R. 10–4–62, 12–28–62, 1–22–63, 5–15–63, 6–11–63.
200	Marine Investigation Regulations and Suspension and Revocation Proceedings (7–1–58). F.R. 3–30–60, 5–6–60, 12–8–60, 7–4–61, 5–2–62, 10–5–62.
220	Specimen Examination Questions for Licenses as Master, Mate, and Pilot of Central Western Rivers Vessels (4–1–57).
227	Laws Governing Marine Inspection (6–1–62).
239	Security of Vessels and Waterfront Facilities (8–1–61). F.R. 11–3–61, 12–12–61, 8–8–62, 8–31–62, 11–15–62, 1–30–63, 3–27–63, 5–29–63, 6–4–63.
249	Merchant Marine Council Public Hearing Agenda (Annually).
256	Rules and Regulations for Passenger Vessels (1–2–62). F.R. 5–2–62, 9–11–62, 12–28–62, 4–4–63, 5–30–63, 8–20–63.
257	Rules and Regulations for Cargo and Miscellaneous Vessels (11–1–62). F.R. 2–1–63, 2–6–63, 3–13–63, 4–4–63, 5–30–63, 8–20–63.
258	Rules and Regulations for Uninspected Vessels (9–1–61). F.R. 1–20–62, 4–24–62, 5–2–62, 9–11–62, 5–14–63.
259	Electrical Engineering Regulations (12–1–60). F.R. 9–23–61, 9–30–61, 5–2–62, 9–11–62, 8–20–63.
266	Rules and Regulations for Bulk Grain Cargoes (5–1–62). F.R. 9–11–62.
268	Rules and Regulations for Manning of Vessels (2–1–63).
269	Rules and Regulations for Nautical Schools (5–1–63).
270	Rules and Regulations for Marine Engineering Installations Contracted for Prior to July 1, 1935 (11–19–52). F.R. 12–5–53, 12–28–55, 6–20–59, 3–17–60.
293	Miscellaneous Electrical Equipment List (6–1–62).
320	Rules and Regulations for Artificial Islands and Fixed Structures on the Outer Continental Shelf (10–1–59). F.R. 10–25–60, 11–3–61, 4–10–62, 4–24–63.
323	Rules and Regulations for Small Passenger Vessels (Not More Than 65 Feet in Length) (6–1–61). F.R. 9–11–62, 10–5–62, 12–28–62, 1–22–63.
329	Fire Fighting Manual for Tank Vessels (4–1–58).

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CHANGES PUBLISHED DURING AUGUST 1963

The following have been modified by Federal Registers:

CG–190 Federal Register, August 10, 1963.

CG–115, CG–123, CG–256, CG–257, and CG–259 Federal Register, August 20, 1963, Part II.

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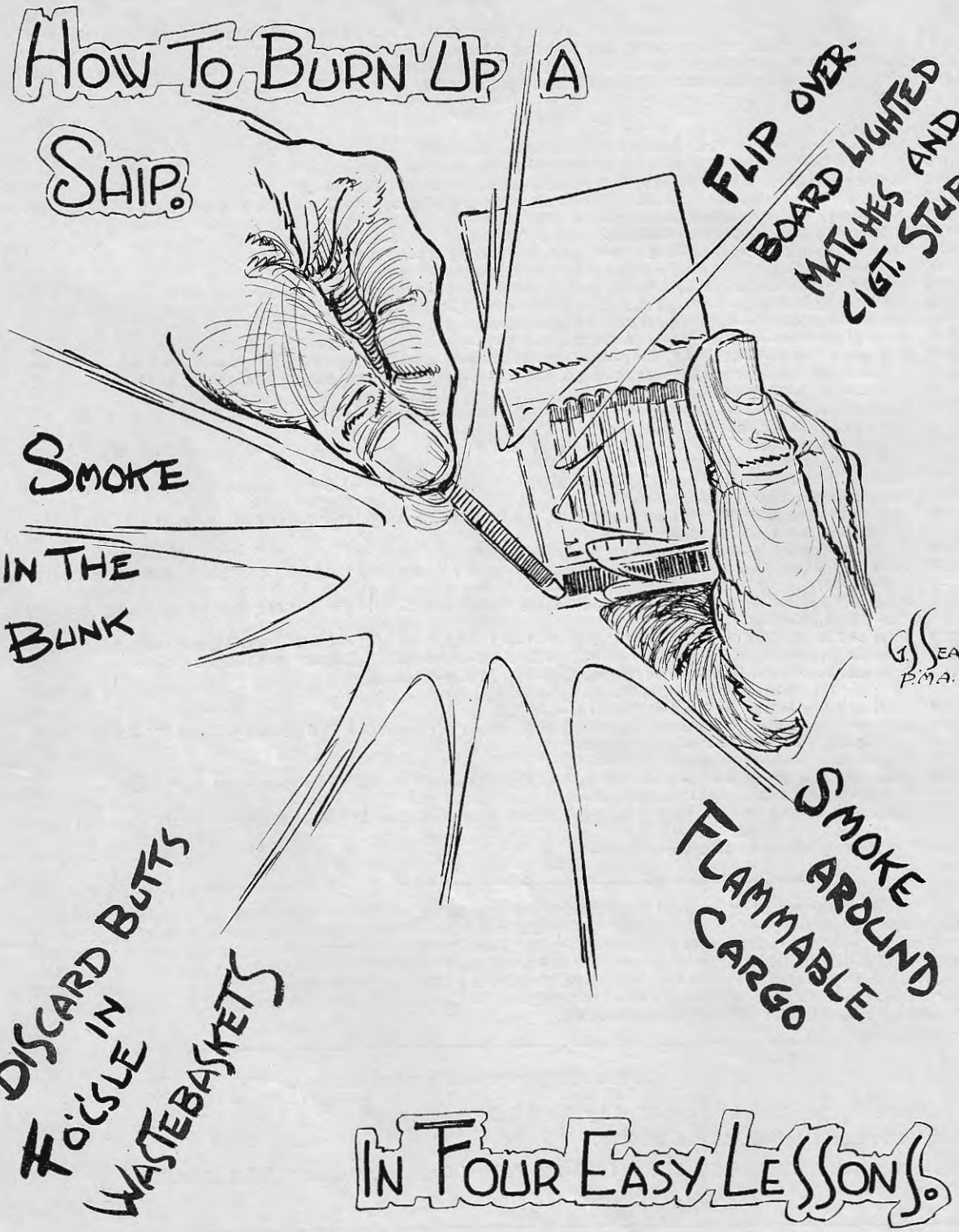
HOW TO BURN UP A SHIP.
FLIP OVER-BOARD LIGHTED MATCHES AND CIGT. STUBS
SMOKE IN THE BUNK
SMOKE AROUND FLAMMABLE CARGO
DISCARD BUTTS FO'CSLE IN WASTEBASKETS
IN FOUR EASY LESSONS.
G.J. SEAL P.M.A.