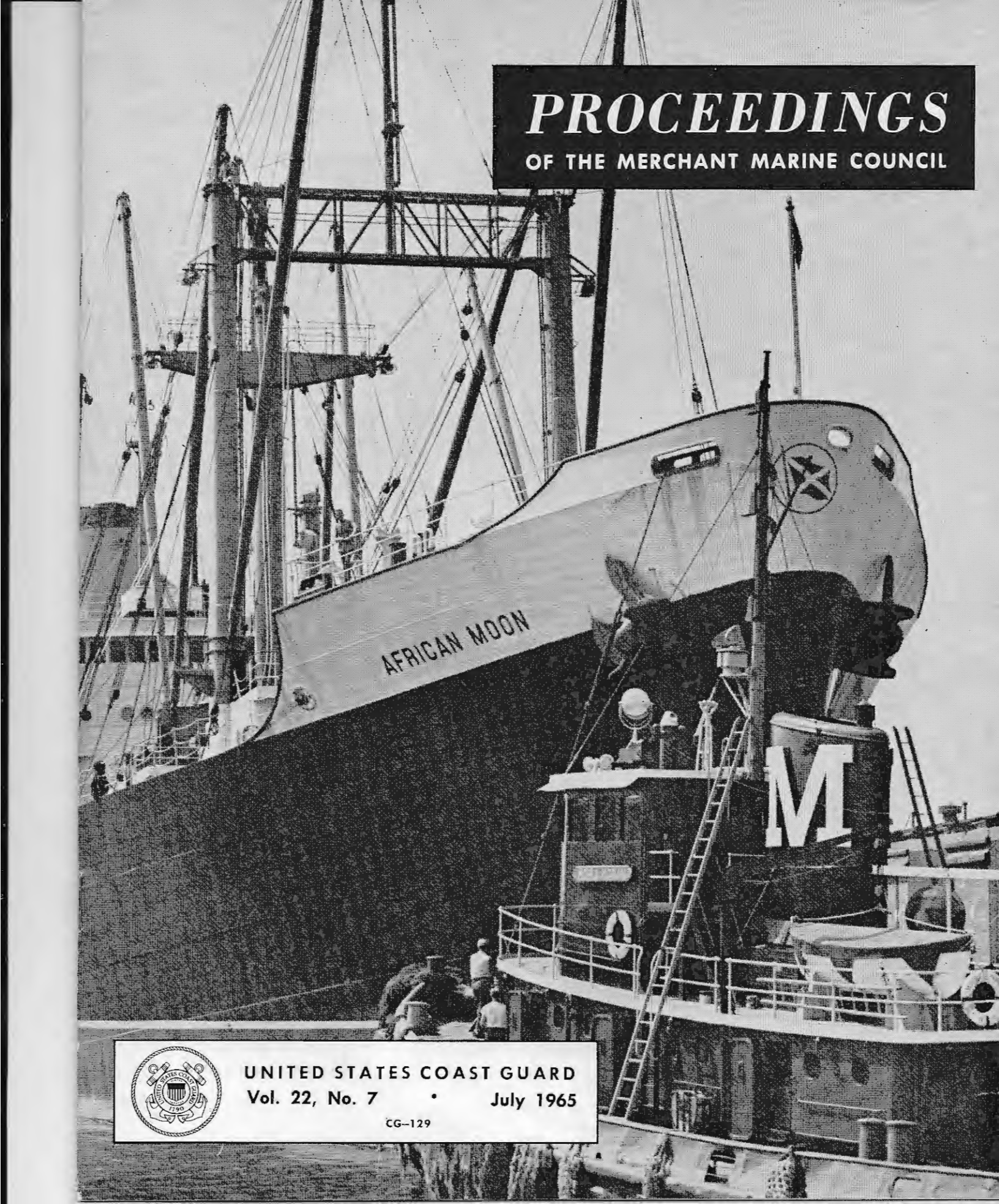


# PROCEEDINGS

## OF THE MERCHANT MARINE COUNCIL

UNITED STATES COAST GUARD

Vol. 22, No. 7 • July 1965

CG-129

## IN THIS ISSUE . . .

*The Commandant surveys the development of sealanes as an anticollision device beginning page 147.*

*A student of the marine field whose many studies have appeared on the backs of Pilot Charts for several years reveals some unnerving facts about geography and collisions beginning page 150.*

**THE 471-TON RED WOOD, first of the new class of 157-ft. U.S. Coast Guard coastal buoy tenders, gets underway from Baltimore for her assigned homeport at New London, Conn. She is the largest vessel built at the Coast Guard Yard since World War II.**

**The *Red Wood* is powered by two 900-horsepower diesel engines, and can attain a speed of 14 knots. She is equipped with twin controllable pitch propellers, and a bow thruster unit to give her high maneuvering ability. Her hull is reinforced for light icebreaking work in inland waterways and harbors. Steering and engine control stations are located on each bridge wing as well as in the pilothouse. Lever controls replace the conventional steering wheel, allowing the helmsman to lean out either side pilothouse window to ease the tender close to a buoy that needs checking. The buoy tender carries a 10-ton hydraulically powered boom, controlled from either of two enclosed stations built into the superstructure just below bridge-deck level.**

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# *PROCEEDINGS*

**OF THE**

**MERCHANT MARINE COUNCIL**

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

## An Overview

# SEALANES

**By Admiral E. J. Roland**

***An unending quest continues: a quest to make the seas safe from collision. With the specter of rising collision frequency prodding for quick resolution in the form of anticollision programs, searches for solutions have intensified. Studies, surveys, conferences, and individuals have proposed "answers"—and the work goes forward. Out of the welter of current proposals one seems to be prowing to prominence: Sea Traffic Lanes.***

***An in-depth study of Sea Traffic Lanes as a method of reducing ocean collisions is presently being undertaken by the Coast Guard.***

***Early this year the Commandant appeared before the Marine Society of New York and addressed himself to the history and future of this program. This article is adapted from that address.***

THE COAST GUARD'S statutory duties designed to save life and property at sea and in U.S. waters can be divided into many categories. They involve both operational and administrative jobs; they can entail newsworthy, exciting action taken immediately after a disaster or merely tedious routine inspections to prevent a possible material failure.

One administrative task which, if developed wisely with the aid and cooperation of groups interested in safe waterways, could have an important effect in the reduction of collisions between vessels in our waters and wherever else U.S. flag vessels ply, is the formulation and publication of the use of vessel traffic lanes.

The idea of separate lanes to reduce the danger of collisions is over a century old. An early exponent of them was an illustrious member of the Marine Society of New York, Lieutenant Matthew Fontaine Maury. Soon after the 1854 collision between the U.S. Steamer *Arctic* and the French Steamer *Vesta* in fog, Lt. Maury wrote a paper proposing and justifying separate lanes for steamers in the North Atlantic. He pointed out that there was no necessity to apply these lanes to sailing vessels because the periods of heavy fog were generally accompanied by lighter winds than usual. His idea was the forerunner of the current North Atlantic Track Agreement, directly involving 16 shipping companies flying 6 different flags as parties. While Lieutenant Maury succeeded in having separate North Atlantic steamer lanes printed on U.S. charts as early as 1855, the lack of wider acceptance of these lanes leaves them almost as ineffective as they were when the *Andrea Doria* and the *Stockholm* collided.

Several events have occurred since the loss of the *Andrea Doria* that indicate more should be done to develop the use of sealanes or anticollision routes in crowded waters off our Atlantic Coast. Early in 1957 the House of Representatives Safety of Life at Sea Study Report mentioned that adherence to published sealanes would have prevented the *Andrea Doria-Stockholm* collision. It further stated that the science of navigation is sufficiently advanced today so that compliance with lanes could and should be required. The year before the 1960 SOLAS Conference two major collisions took place in the waters off New York Harbor: the *Santa Rosa-Valchem* and the *Constitution-Jalanta*. The 1960 Convention was drafted to strengthen the use of routes in the North Atlantic; it placed an obligation on our Government to have shipping companies give public notice of regular routes proposed, to induce passenger vessels to follow these routes, and to try to encourage all vessels to adhere to them in converging areas. This convention became effective in May of this year, and the Coast Guard plans to give careful attention to these provisions in the hope that collisions such as the *Transglobe-Tubingen* and the recent *Shalom-Stolt Dagali* could be avoided.

ADMIRAL ROLAND

Today, collisions develop as a result of meeting, crossing, or overtaking situations. The meeting situation, the most dangerous as far as relative speed is concerned, offers a potential collision danger that separate lanes will effectively diminish. The crossing situation is affected by lane usage because the location of its development becomes fairly predictable. The overtaking situation, which is not affected by separate lanes, offers the least

danger due to slower relative speeds. As an aside, I won't leave you with a suggestion that vessels running in the same direction can't collide disastrously, for the classic *HMS Camperdown-HMS Victoria* tragedy suggests what is possible but highly improbable. Those two dreadnoughts were leading parallel columns in formation; simultaneous 180 degree column turns were ordered which directed the starboard column to the left and the port column to the right. The collision and high loss of life resulted only moments after the vessels were moving at a relative speed of zero.

Reducing the collision danger is a goal to be constantly sought; as lanes adhere to them as a contributing cause of collisions in Coast Guard Marine Boards of Investigation. You will note that these actions have been taken in the interest of safety, without the need of legislative action or support.

The collision rate on the Great Lakes is considerably lower than that of any other part of our waterways. Of course, one reason is that much of the distance traveled by vessels there is on open waters. However, a very big factor in minimizing the number of collisions on the Lakes is the use of separate courses or lanes. This is borne out by a comparison of the number of collisions before and after the lane principle was put in effect.

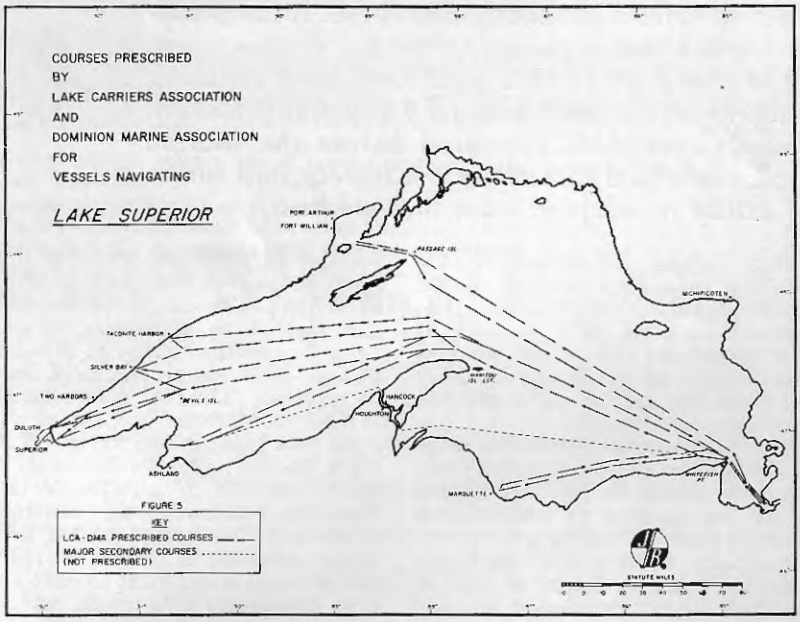


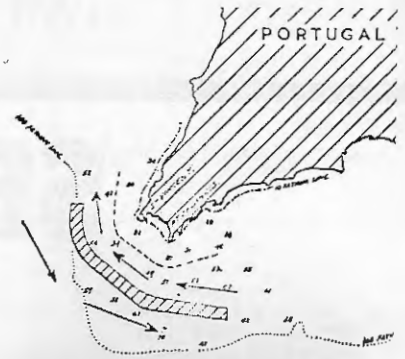
FIGURE 5

should do this fairly effectively if followed, their application in many areas appears justified.

In 1911 the Lake Carriers' Association established separate upbound and downbound courses for their members' vessels on Lakes Huron and Superior. These courses were actually devised by masters who were still plying the lakes and had a great stake in their success. The concept was accepted by the Canadian operators, too, and the separate courses eventually covered all the Great Lakes. The U.S. Government has given them support in various ways: By recognition of them in Admiralty courts; by printing them on Lake Survey Charts; by describing them in detail within the Great Lakes Pilot; and by citing vessels' failure to

Today the worldwide interest in separation of traffic is steadily increasing. The Institutes of Navigation of the United Kingdom, France, and the German Federal Republic have been working to agree on traffic lanes within the English Channel. This has the approval of the Inter-Governmental Maritime Consultative Organization. The actual lanes should be established as soon as interested nations resolve all questions of detail.

A North Sea traffic problem has arisen with the use of buoyed swept channels through dangerous mine areas off the Netherlands, Germany and Denmark. In a paper prepared for the three Institutes of Navigation mentioned previously, Captain F.

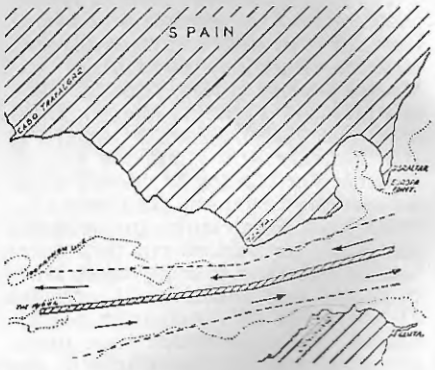


Suggested Cape St. Vincent traffic lanes. A mile-wide traffic-free area divides the west/north-bound ships from the south/east-bound ships.

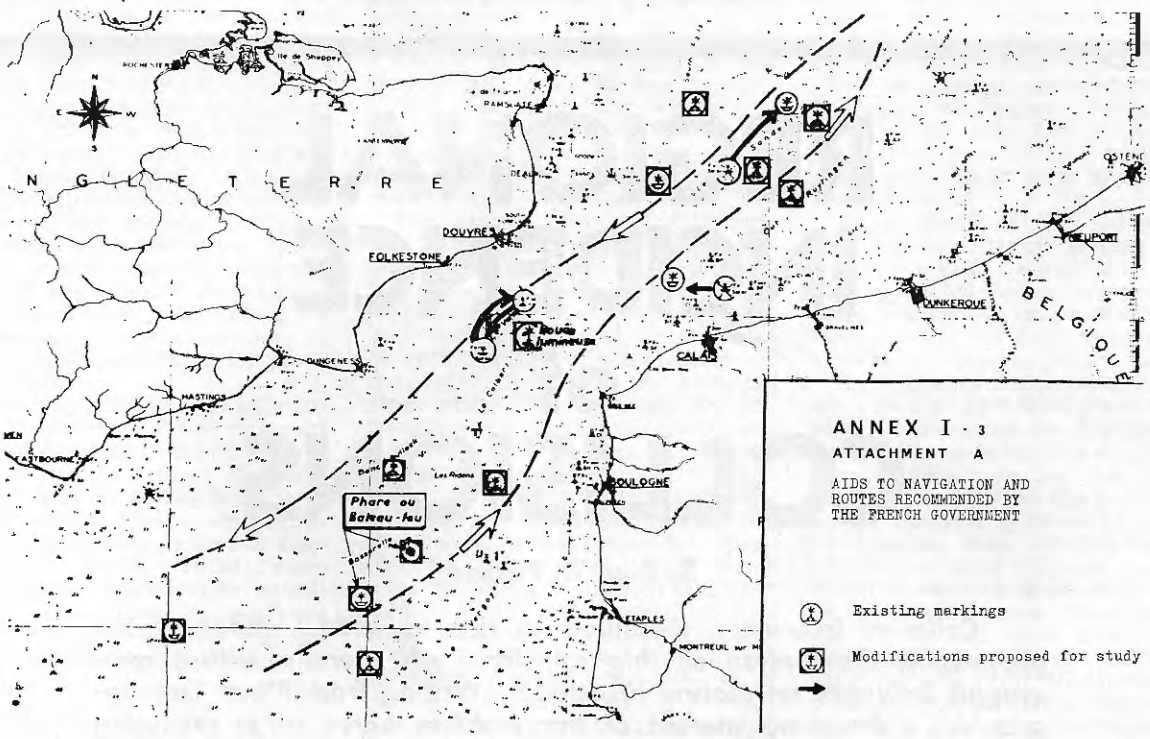
Sohnke discussed this problem and suggested many criteria to consider before arriving at a solution involving "anti-collision tracks," or separate lanes. Among these are:

Traffic density,
Traffic flow—including size and type of vessel,
The mine-free lanes—width and straightness,
The mine hazard, and
Collisions in the area.

It is of interest that Captain Sohnke touched upon the "freedom of the seas" issue, by asking whether many captains wouldn't rather have safer voyages through separated tracks instead of having complete freedom to choose their routes. In the North Sea, complete freedom of the seas could only be attained if the danger of magnetic mines were removed. However, it was implied that an increase in the number of mine free lanes, so that traffic on reciprocal courses would be separated, is safer



Suggested Straits of Gibraltar traffic lanes. A ½-mile-wide traffic-free area divides the westbound from the eastbound ships.




**One proposal for Straits of Dover traffic lanes—this one proposed by the French Government.**

and preferable. If separate lanes can be attained in the North Sea by sweeping the new lanes and marking them with buoys, it would be far easier to establish them off our own minefree coast.

Other areas of high traffic density have plagued mariners around Europe. The conditions confronting petroleum carriers on the northern Europe to Persian Gulf route have induced Shell Tankers, Ltd. to devise and institute a system of "Central Dividing Zones" to separate traffic moving in opposite directions wherever necessary. This plan applies to their own vessels and places these zones at such heavily trafficked locations as around Cape St. Vincent, Portugal, and through the Straits of Gibraltar. It also states that the concept is equally useful at the approaches to major ports. Perhaps other companies will join Shell in adherence to the plan.

The European tankship developments bring to mind a part of the report of the Secretary of the Treasury's Committee on Tanker Hazards. It recommended that, whenever necessary, traffic be controlled in restricted channels utilized by tankers, and mentioned one-way traffic and speed control as methods to consider. The idea of one-way traffic can involve either separate channels or one channel that is open in only one direction at a time. The former concept is essentially the same as sealanes and is currently in use in various rivers connecting the Great Lakes.

Collisions off the Atlantic and Pacific Coasts of this country indicate that steps might be desirable to insure separation of vessel traffic at the approaches of the larger U.S. ports. The Coast Guard is not currently seeking enabling legislation to effect this because much of the dangerous area for any coastal port would be in International waters, where such legislation would be of questionable value. A voluntary agreement between the shipping lines involved would solve problems expediently, if attainable. Perhaps greatly expanded acceptance of the North Atlantic Track Line Agreement would be a step in the right direction.

At this time the Coast Guard is considering the expansion of the role of the Rules of the Road Coordinating Panel of the Merchant Marine Council so that it would include all safety of navigation matters. If this were done, experienced masters and pilots would become available to answer detailed questions of sealanes. Further, Coast and Geodetic Survey representatives would be consulted to discuss the actual charting of recommended traffic separation systems.

The Coast Guard's specific statutory authority to proceed with the implementation of sealanes appears within the 1960 SOLAS Convention. It is limited to assisting companies in the selection of North Atlantic routes, requiring U.S. passenger vessels to follow these routes, and encouraging *all* U.S. vessels to do so where they converge. With the speeds of tank vessels and freighters increasing gradually, perhaps the broad concept of routes should apply to them. Another logical step would be the application of lanes off our coast to all foreign vessels through the cooperation of all governments accepting the 1960 SOLAS Convention.

This topic of sealanes necessitates a cautious approach. Well-followed traffic lanes for safety are time-proven on the Great Lakes, but is a relatively new concept elsewhere. They are difficult to effect in International waters. It is hoped that progress will be made in this field through the cooperation of all maritime interests. And, the Coast Guard, with its statutory responsibility for safety of life and property at sea, plans to pursue this matter in an effort to make vessel traffic safer at the approaches to our major ports.

# REGIONAL INCIDENCE of COLLISIONS

By Fred W. Fricker

***Collision frequency continued to rise in 1964. What of the geographic distribution of ship collisions? Is there a critical geographic influence on marine disasters? Writing from Navy Oceanographic, a longtime student of the problem bares some revealing findings.***

AT THE INSTANT the first ship in the world was joined by another, the risk of marine collision became a reality. On the basis of this simplified theory, it follows that as more ships sailed the seas this risk increased accordingly. This is not to imply that there were any great number of collisions in the early days of seafaring, for encounters at sea were infrequent. It would have been a rare stroke of misfortune that produced a collision between two vessels in the vast emptiness of the oceans.

A little over a hundred years ago, however, collisions at sea began to occur more frequently. This sudden rise in the collision rate was primarily a result of the growing use of steam propulsion. Not having to depend on the vagaries of the wind, shipping began concentrating on single, direct routes between ports and headlands. In addition, the steady expansion of seaborne commerce had increased the traffic along the common routes.

The mounting incidence of marine collisions over the years resulted in the development of minimum safety standards for the protection of lives and property at sea. From operating experience, often bitter, a set of practical procedures for avoiding collisions gradually evolved, which became part and parcel of the art of seamanship. More importantly, these procedures inevitably led to the international adoption of regulations which, today, govern the construction standards, operating procedures, and conditional maneuvering of oceangoing vessels. These regulations, of necessity, have been amended and augmented periodically to cope with the changes incurred by the increase in number, size, and speed of ships and the improvements in their navigating components.

In spite of man's best efforts to provide collision avoidance standards, the collision incidence rate has risen to a point where it now ranks as the leading maritime casualty. According to the Casualty Returns of the Liverpool Underwriters' Association, a staggering total of 1,818 ships of 500 gross tons and over were involved in collisions during the year 1962. This is a record number for any one year (except for the wartime years), exceeding by far the previous high of 1,628 ships posted in 1961. Furthermore, the collision totals for 1963 and 1964 indicated little improvement in this high rate. The sharp upward trend of the probability curve (Fig. 1) brought about by these recent increases portends an even higher rate in the years ahead, unless immediate positive steps are taken to reduce the frequency of collisions.

Based on an average acquaintance with human frailty, it is not conceivable that marine collisions can be eliminated entirely. Even the most optimistic mariner must realize that fact. There is, however, every reason to believe that the rate can be substantially reduced. A careful examination of the collision records reveals that collisions occur, time after time, in the same geographic area, under similar weather conditions, and as the result of the same rule violations. Is it not feasible, then, that if more attention were paid to these common collision factors, without an attendant lessening of all normal safety precautions, a marked reduction in the collision rate could be realized?

It is with this optimistic prospect in mind that the following article has been compiled. By indicating the geographic areas where collisions regularly occur and enumerating the factors involved, it may help to forewarn the mariner to take added precautions when faced with similar circumstances.

## GEOGRAPHIC ANALYSIS

An enlightening new slant to the collision problem has resulted from an intensive analysis of collision statistics. The main object of the study was to determine the effect, if any,

that heavy shipping concentrations might have on the incidence of collision. The sources of the statistics used were the monthly *Casualty Returns* issued by the Liverpool Underwriters' Association between 1956 and 1961 inclusive, and a list of the more important collisions which occurred during 1962 compiled by the Corporation of Lloyds, London. Only those cases which involved underway vessels, where at least one was of 500 gross tons or more, were used in the study. In all, a total of 626 collisions was considered, and although the statistics are probably limited in scope and not truly random, the conclusions to be drawn from the results of the study are significant.

The analysis revealed that approximately 57 percent of the collisions considered occurred in northwest European waters, 13 percent in North American waters, and 7 percent in Japanese waters. The remaining percentage of collisions occurred elsewhere in the world. These figures generally agree with similar recent analyses. Of the collisions which occurred in the European area, approximately 65 percent took place in pilotage waters; that is, estuaries, rivers, and canals, and 30 percent occurred in the congested waters of major traffic routes or off focal points. Only 5 percent occurred in the open sea.

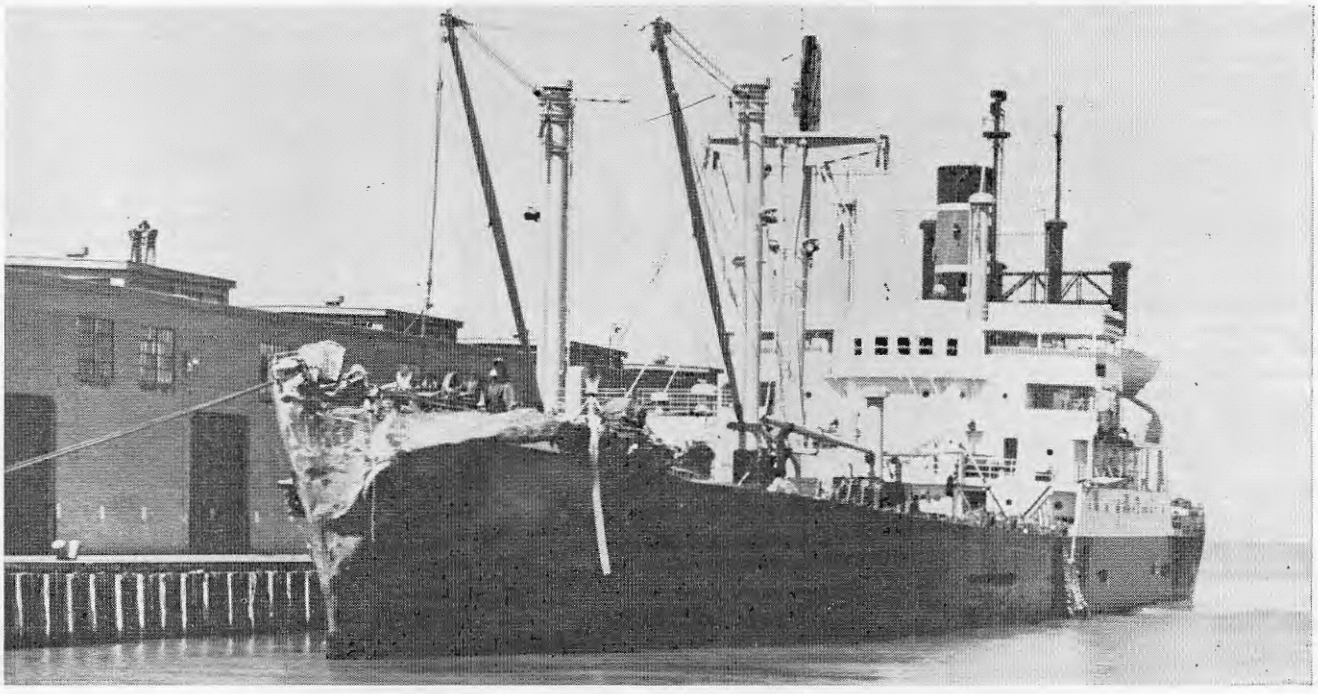
In North American waters, including the Great Lakes, approximately 80 percent of the collisions occurred in pilotage waters, 13 percent in congested waters, and 7 percent in the open sea.

In Japanese waters, the statistics available, although lacking in any great detail, indicated that approximately 44 percent of the collisions occurred in pilotage waters and a similar percentage in congested waters. The remaining 12 percent apparently occurred in the open sea.

The variance between the percentages for the different geographic locations is due, probably, to the physical features of the navigable waters adjacent to each. In any case, however, they provide a general indication of the nature of the collision problem and an overall picture of the principal areas where there is scope for improvement. Obviously, "pilotage" and "confined" waters, often synonymous in the analysis, stand out as the frequent scene of collision. Collisions in the open sea, even in reduced visibility, occur far less frequently. However, the extraordinary thing about collisions at sea is the fact that they happen at all, for in theory and in practice they are the easiest to avoid.

From this pointed evidence it is not difficult to establish that the risk of collision is materially higher in those areas where large volumes of shipping must operate within narrow, confined waters. These conditions are particularly manifest in the area of highest incidence, the northwest European waters. Here the density of shipping is very high, probably the most concentrated in the world. This is the heartland of Europe's maritime industry with a combined merchant fleet of thousands of vessels. The bulk of these ships must use the North Sea and the English Channel at some point in their voyages. Further augmenting this huge flow of traffic are the ships of practically all nations engaged on regular runs to the ports in this area.

As a result of this, commercial shipping densities at certain points attain fantastic proportions. It has been estimated that an average of 750 ships transit the Dover Strait daily. Occasionally, the daily total reaches 1,000 ships. Most of these ships select a channel about 5 miles wide between the Varne, a 1¼-fathom shoal marked by a lightship, and the English coast, irrespective of their ultimate destination. One reason for this popular choice is simply that the English side of the Channel is better marked by navigational aids. Furthermore, in choosing a route through the Dover Strait, a mariner is severely limited by several conditions. Many dangerous wrecks and shoal areas occupy the southern part of the Strait. Mariners are, therefore, induced by prudence to utilize the narrow but relatively unencumbered passage to the north. This selection has the additional benefit of permitting a straight-line course from a point off Dungeness to the Sandettie Light Vessel, in the case of east-bound shipping, and vice-versa for west-bound.

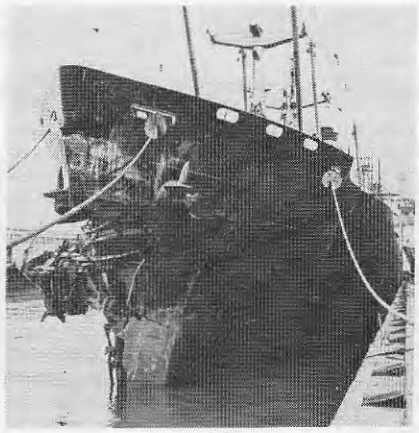


This choice of the same route by in-bound and out-bound traffic results in a dangerous concentration of ships in a channel approximately 2 miles wide and 35 miles long. The resultant encounters are, therefore, usually head-on or nearly so, the most hazardous attitude in a meeting situation. Adding to the latency of danger, many cross-channel vessels and fishing trawlers regularly operate in the English Channel. Under the best conditions, collision avoidance in this area requires a high degree of skill. But, to further complicate matters, the Channel is subject to frequent periods of low visibility. The analysis revealed that nearly all of the collisions in the Dover Straits occurred during conditions of limited visibility. Under these circumstances it is practically impossible for a ship to avoid close-quarter situations.

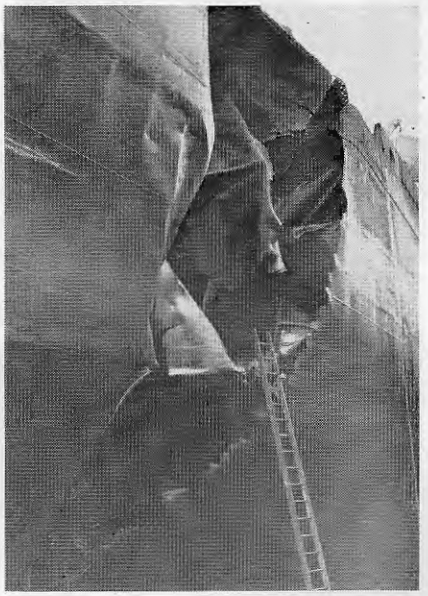
In Japanese waters, authorities have reported a steady rise in the collision rate in, and in the approach to, their main shipping areas. During the last 5 years, the casualty rate in the Uraga Suido, the entrance to Tokyo Bay, has increased annually with 1962 breaking all previous records. The approach to Kobe also ranks high as an area of dense shipping and high accident rate. During 1962, 32 ships were involved in collision in this area. It has been estimated that 1,500 ships operate daily in the vicinity of Kobe. Considering the limited size of the port, such a large number of ships is bound to have a deleterious effect on shipping movements. To further complicate matters, large and increasing numbers of small cargo vessels carry on a lively coastwise trade between the Japanese ports.

In the North American waters the areas of highest collision incidence are in the Northeastern section of the country. The inner harbors of New York and Philadelphia, together with the Chesapeake and Delaware Canal, appear to be the most frequent sites of shipping collisions, with the approaches to New York and the Virginia Capes running a good second. The Great Lakes and the St. Lawrence Seaway have contributed their share to the collision rate in this area, particularly with the large number of collisions which occur in the vicinity of the locks and port areas. Surprisingly, a significant number of collisions have occurred in the vicinity of light vessels, possibly denoting another dangerous point of convergence.

Whatever conclusions may be drawn, the mariner can clearly see that these areas are extremely hazardous to shipping. Any opportunity to bypass such areas should be considered carefully. However, as this will usually not be feasible or economical, the highest degree of caution and vigilance should be exercised when in these areas.



**A Collision . . .**



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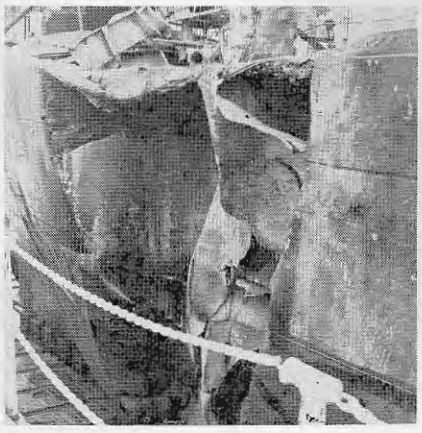


**. . . Your Whole Day.**

A comprehensive analysis of conditions surrounding marine collisions was recently conducted by the U.S. Coast Guard. A selected group of cases which occurred during a three-year period was examined with the intent of determining causes of this prevalent hazard. The analysis covered only those incidents within the purview of that investigative body regardless of the severity. In this regard, it is felt that the difference between serious and superficial consequences of a collision is due mainly to a matter of chance.

Some of the conclusions merely tend to prove that which has already been accepted by most mariners. However, certain correlations were made that may not be commonly known or realized. In keeping with the purpose of this article, highlights of that analysis are repeated as follows:

(a) More collisions occur during winter than summer. However, no pronounced month-to-month cycle was evident, and it was concluded that no great correlation existed between months and collisions.

(b) A correlation was found to exist between time of day and the incidence of collisions. A pronounced curve was formed indicating that more ships collided during hours of darkness than otherwise with the minimum number occurring at 1100.

(c) Collisions between similar size vessels happen less often than those between vessels of different sizes. Similarly, like types seem less likely than unlike types to collide. A possible explanation for these findings may be the probability that similar type and size vessels would be involved in similar operations and, therefore their operators would be better able to know and understand the other ship's maneuvers.

(d) Most collisions occurred in locations where Inland Rules applied or "Pilotage Waters". This is an expected conclusion and bears out the previously mentioned fact that confined waters and heavy traffic make up the prime collision factors. This analysis went further by indicating that the greater percentage of collisions occurred in narrow channels (59 percent of the cases considered) and that 52 percent occurred in "meeting" situations. These two findings are obviously related and tend to support the conclusion drawn from the analysis of the northwest European shipping problem.

(e) Collisions are more liable to occur in clear weather than foggy weather. Forty percent of the cases

occurred at night with the visibility over 5 miles, while 21 percent occurred in broad daylight with the same conditions of visibility. The remaining 39 percent consisted of cases which happened during various combinations of visibility and daylight. The only plausible explanation of this startling revelation is that mariners exercise more care in fog, a natural tendency. However, this finding is at variance with the northwest European analysis where it was found that most collisions occurred in fog.

(f) Of the cases considered, approximately half of the vessels involved did not attempt to exchange whistle signals as provided by the Rules.

(g) First knowledge of the presence of "the other ship" was overwhelmingly by visual observations. Only about 10 percent did so by radar and about 3 percent did so by sound.

(h) ARTICLE 18 of the U.S. Inland Rules was the most frequently violated, with ARTICLES 16, 29, and 25 being, respectively, the next most violated. While these are Inland Rules, they are of sufficient similarity to the International Rules to be considered pertinent to this article. The rules violated indicate what appears to be a marked disinclination by mariners to adhere fully to the established conventions for avoiding collisions. (See Figure 3.)

(i) An insignificant number of collisions considered were due to mechanical breakdowns.

## COMMON CAUSES

While statistics give a fair indication that certain geographic locations are more hazardous, collisionwise, than others, they cannot reveal the actual causes of the collisions which regularly occur there. There is no doubt that the large amount of shipping and periodic loss of good visibility in these areas are contributing factors. It is a mathematical fact that the higher the concentration of moving objects within a given space, the greater is the risk of colliding. Similarly a fact, avoidance reaction dependent on visual observation is impaired by reduced visibility. But these factors are not, in themselves, causes of collision, for if this was the case most ships would eventually collide. The facts of the matter are that, whether by chance or design, the majority of ships do not meet with this fate. The rate of collisions occurring today, however, is sufficiently high to warrant a second look at what causes them.

The effort to pinpoint common causes of collision is an extremely difficult task. The records are often replete with conflicting testimony as to what actually caused the accident and, in many cases, the primary motive of the postcollision investigation is not in determining causes but in fixing legal blame. However in two recent studies of collision incidents, enough evidence was available to permit some firm conclusions.

In the previously mentioned analysis of 199 collisions conducted by the Coast Guard, the study group listed eleven likely causes, determined from its combined experience in analyzing and investigating casualties. (See Figure 2.) The tabulation of these opinions attributed 77 cases of collision to excessive speed, 58 to being on the wrong side of a channel, and 45 to failure in executing sound signals; all serious breeches of the Rules of the Road. Significantly, only 12 cases existed where adverse weather or current were the dominant causes.

A study group conducting an analysis for the U.S. Maritime Administration generally concluded that the two major vulnerabilities to collisions are in the people and equipment involved with navigation. Human inadequacies, in themselves, appeared to be primarily the failure to properly perceive a warning or threat of potential danger of failure to make timely decisions essential for avoiding collision. Equipment inadequacies were attributable to malfunctions or to limitations imposed by economic considerations.

One of the major inadequacies brought out by the latter analysis was the problems associated with the use of and response to sound signals. These problems were the failure to (1) understand them, (2) hear or respond to them, or (3) to establish correctly the direction and nature of their source. Most of us have, at some time or another, had difficulty

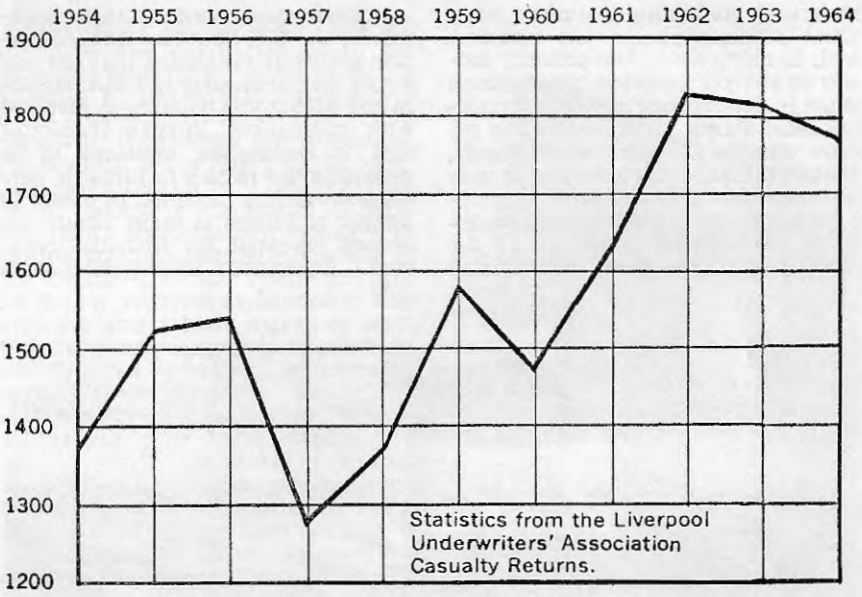



Figure 1. Graph showing increase in collisions since 1954.

waves occasionally caused by particularly dense fog also results in a doubtful evaluation of the originator's position and intent. But, probably the most serious problem involving the use of sound signals is the failure to initiate the appropriate signal when required by the Rules. The Coast Guard analysis revealed this to be one of the more frequently abused requirements, a violation difficult to justify before a court of inquiry.

However, the mariner's awareness of the consequences resulting from ineffective sound signals, whether humanly or materially engendered, should foment the exercise of greater prudence in reacting to situations requiring their use. Moderation of speed should be a primary consideration in any encounter where the least doubt exists. Yet the records show that such is not the case, as excessive speed continues to be the foremost contributing factor in collisions.

| ARTICLE | 2 | 3 | 15 | 16 | 17 | 18 | RULE I | III | V | VIII | | 19 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FY 1957 | 0 | 0 | 2 | 18 | 0 | | 27 | 5 | 0 | 5 | | 5 | 1 | 0 | 1 | 6 | 2 | 1 | 1 | 3 | 11 |
| FY 1958 | 0 | 1 | 2 | 19 | 1 | | 7 | 12 | 2 | 1 | 105 | 1 | 0 | 6 | 1 | 3 | 10 | 1 | 2 | 0 | 15 |
| FY 1959 | 1 | 0 | 4 | 27 | 5 | | 21 | 13 | 1 | 11 | | 7 | 0 | 4 | 0 | 6 | 15 | 1 | 0 | 1 | 18 |
| TOTAL | 1 | 1 | 8 | 64 | 6 | | 55 | 30 | 3 | 17 | | 13 | 1 | 10 | 2 | 15 | 27 | 3 | 3 | 4 | 44 |

Figure 3

understanding or hearing whistle signals. Often, the plume of steam from a ship's whistle is the only indication that a signal has been made. The local noise level or the wind velocity and direction may have a damping effect on sound across space. But, the failure to respond to signals, when heard and understood, is less easily vindicated. Incredibly, the Coast Guard analysis indicated that approximately 16 percent of the collisions they examined occurred even though a passing agreement had been reached!

The failure to correctly establish the nature and source of a sound signal is especially prevalent in crowded, confined channels, and in fog. It is extremely difficult, at best, for the personnel of a vessel to determine a sound signal source when more than one vessel is in the vicinity. The distortion and/or propagation of sound

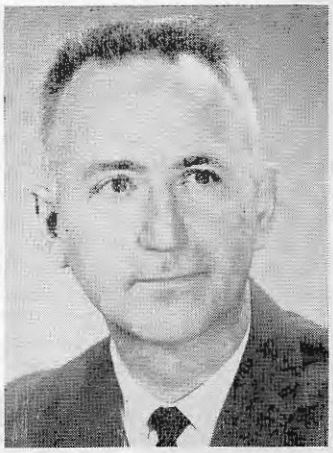
| | CAUSE | CASES |
|---|---|---|
| 1 | EXCESS SPEED | 77 |
| 2 | WRONG SIDE OF CHANNEL | 58 |
| 3 | FAILURE TO SOUND SIGNAL | 45 |
| 4 | OVERTAKING VESSEL, FAILED TO KEEP CLEAR | 29 |
| 5 | MEETING SITUATION, TURNED LEFT | 27 |
| 6 | CROSSING SITUATION, BURDENED FAILED TO GIVE WAY | 24 |
| 7 | EVASIVE MANEUVER, TOO LITTLE OR TOO LATE | 21 |
| 8 | FAILED TO STOP OR BACK | 15 |
| 9 | WIND, SEA, OR CURRENT WERE FACTORS | 12 |
| 10 | INSUFFICIENT POWER | 9 |
| 11 | OVERTAKEN VESSEL, FAILED TO MAINTAIN COURSE | 6 |

Figure 2.

One of the first rules to be adopted, internationally, for the prevention of collision was the one requiring ships to keep to the right hand side of a channel. But in spite of its vintage and pedigree, violation of this regulation is, today, one of the leading causes of collision. In approximately 29 percent of the cases considered by the Coast Guard study group, wrong-side-of-channel was a factor contributing to the event. Naturally, there are times when a shipmaster or pilot is hampered by weather conditions in complying fully with this rule. But, it seems far more likely that choice of the wrong side of the channel is a deliberate one predicated by convenience. Here again, appreciation of the consequences of such ill-advised actions should lead to a more strict adherence to the Rules.

Figure 2 shows the remaining causes of collision determined by the Coast Guard. With the exception of mechanical failure and certain external influences, all are obvious breeches of the Rules. Therefore, if these and other statistics represent the overall picture, then it is fair to conclude that the primary cause of collision is human failure.

*Frederick W. Fricker graduated from the U.S. Merchant Marine Academy, Kings Point, N.Y., in 1942 and thereupon entered on active duty with the Navy as Ensign USNR. He was released to inactive duty in 1946 and at present holds the rank of Lieutenant Commander USNR.*

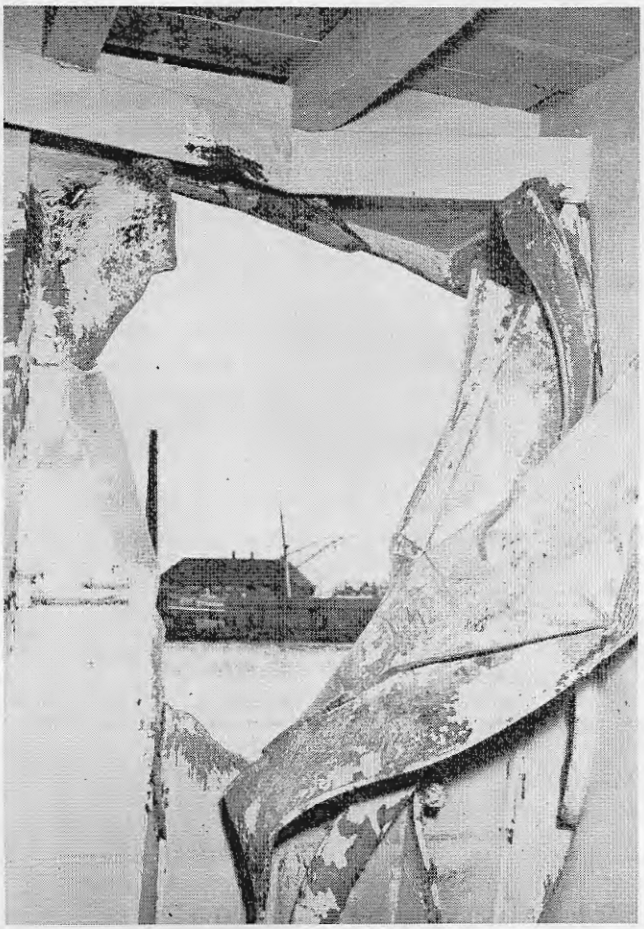


*Mr. Fricker joined the Naval Oceanographic Office in 1951 as a navigation specialist in the Division of Maritime Safety. More recently employed in that Office as a marine information specialist, he has authored several Pilot Chart Articles of general interest to the maritime community.*

Compared to the immensity of the sea, the greatest ship afloat is but a speck on its surface. For this reason alone, only a small proportion of all ship encounters will end in collision. But for the 1,818 ships that collided in 1962 this is a rather poor consolation. It seems fair to assume that the majority of these victims employed evasive tactics which they considered most expedient at the time. The fact that their decisions did not produce the desired results is the basis for a large measure of today's soul searching.

Actual escape from imminent collision does not necessarily mean that the decisions made were sound or that the actions taken were correct. It may very well be the result of pure good fortune and not skillful seamanship. To determine the difference, such encounters should be followed by an analysis of what transpired to compare what-was-done with what-should-have-been-done. The conclusions drawn should be the result of frank self-appraisal for it is dangerous to mistake success by chance for success by skill.

The experience to be gained and the lessons learned by these encounters will aid a mariner in future situations. Not only will it add to his knowledge of the variables involved in avoidance, but it should engender a renewed awareness of the severe consequences of a collision. It should be understood that actual participation in a collision provides a great deal of experience; for the most part, harrowing. But its attainment has come too late to be of much help.



The burden of collision avoidance will always fall on the shipmaster and the personnel of his command. It seems evident, that for the present and near future, any reduction in marine collisions must be accomplished not by the experts at the conference table but by the experts on the bridges of ships. Any steps the mariner may take to improve his appreciation of the collision problem will be rewarding ones. To parody a popular slogan, "the ship he saves may be his own."

# Again, . . . Fortunately

**By LT Frank R. Grundman, USCG**

Figure 2

STRIKING AN UNKNOWN submerged object with the propeller while proceeding down the Detroit River is not an uncommon casualty for a Great Lakes vessel. The resultant damage may be anything from a slightly bent propeller blade to a fractured tail shaft, or a disruption of the reduction gearing or main engine. Recently there was such a casualty on a Great Lakes vessel involving the complete loss of one propeller blade, about 20 inches above the propeller hub. The vessel was unloaded and trimmed to bring the damaged blade out of the water, and replacement was made, using one of the vessel's spares. (Because of the high probability of such casualties, most Great Lakes vessels are fitted with propellers having detachable blades.) The machinery tested out satisfactorily and the vessel proceeded on her way. This procedure is almost routine and vessel delay is not more than 12 to 24 hours. The cost of such repairs is considered a legitimate expense of the trade.

This story would have ended here had it not been for the latent danger throughout the remainder of the operating season created during the installation of that spare propeller blade. Fortunately, an undetected defect discovered at a drydocking after the close of the Great Lakes season failed to develop into casualty proportions.

The general concept of a marine propeller is that it is a component of a vessel's propulsion powerplant which converts engine torque force into propulsive force or thrust, thus overcoming the hull resistance of a ship by creating a sternward accelerated column of water. The propeller has the characteristic motion of a screw (and is called a screw propeller), because it revolves about the axis along which it is advancing.

The ore vessels of the Great Lakes are almost exclusively single-screw vessels and because of the relatively slow shaft speed, the propellers are generally four-bladed. A very common method of construction is typically referred to as "build-up." A streamlined hub is keyed to the tail shaft and upon this hub detachable blades are fixed, as shown in figure 1. Usually the blades are cast bronze, the hub cast iron or cast steel, and the bolts (securing the blades to the hub) fitted steel studs. The term "fitted" implies that an oversize stud is purchased and machined to fit the threaded hole without clearance to insure a metal to metal fit. The studs are usually six or seven in number and they are roughly 4 inches in diameter and 13 inches in length, depending, of course, on the size of the blades. The blade nuts are locked in place by cap bolts, and then the whole area of the flange is grouted with hydraulic cement to produce a streamlined joint.

The detachable blades of the vessel in question are fastened to the hub by seven studs. During the postseason drydock examination and subsequently upon removal of the defective blade, it was found that the blade was held in place by only three of its seven studs. The flange of the blade was fractured as shown in figure 2. This, however, was not noticeable prior to drydocking because the smaller broken piece was held in place by the propeller blade studs and the material used to grout the nuts. Upon removal of the blade, one stud was found to be completely fractured (labeled "B" in fig. 3) and four others were loosened substantially in the hub. Just how

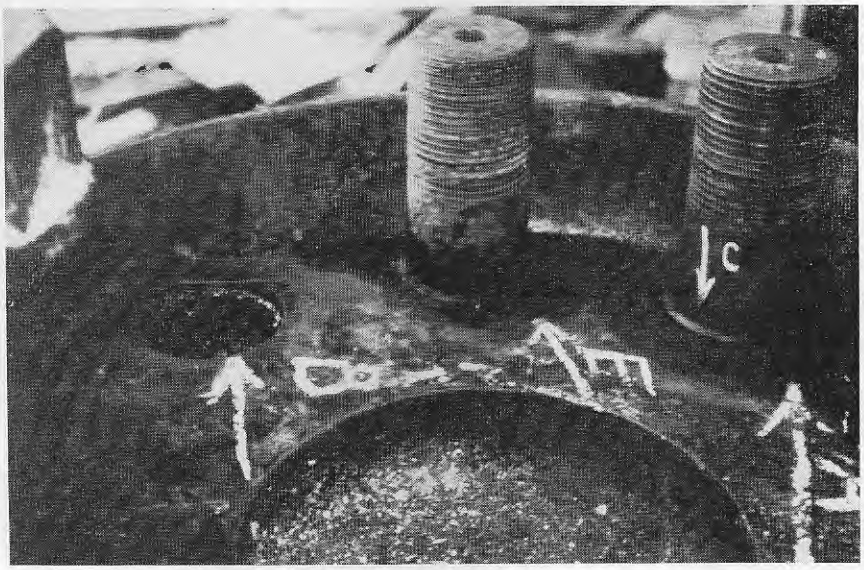



Figure 3.

long the blade would have remained in place is mere conjecture.

The important question is, Why did this latent danger exist? Figure 3 shows an area of the hub facing where the propeller blade was removed. A close examination revealed that the collar on the stud (marked "C" in fig. 3) was not properly seated within its machined recess. It projected above the hub facing a distance in excess of 3/16 inch; and therefore, the blade flange was resting on the small area of the collar and was not seated flatly on the hub as intended. The exerted pressure and working of the blade flange on the stud collar was clearly shown by the appearance of the collar. This stud did not back out while removing the defective blade.

It is now necessary to examine why the stud collar was not completely seated. When the blade in question was installed (about 4 months before drydocking) there was some difficulty

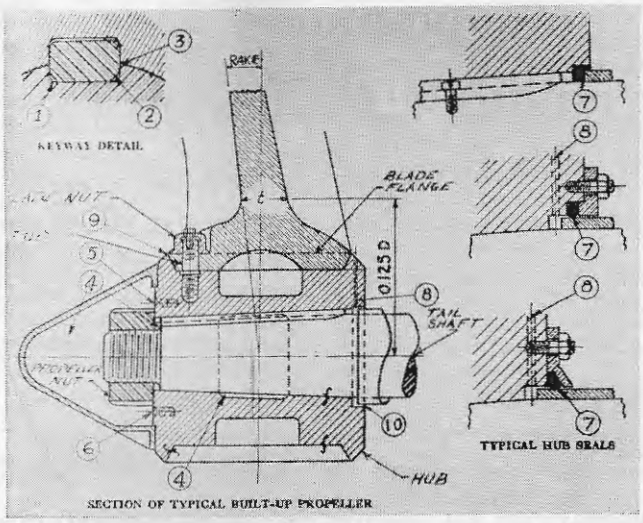



Figure 1

in driving up the nut on the unseated stud; consequently, it was alternately driven up and backed off many times in an attempt to secure it. Presumably, it was at this time that the stud backed out of its tapped hole and hence went undetected.

The essence of the latent defect was due to the fact that the propeller blade flange was not resting on the entire face of the hub because of the raised collar on one of the studs. The centrifugal force of the turning screw combined with the thrust force acting on the face of the propeller blades exert great stresses on the studs joining the hub and the blade. If the joint is to withstand these stresses, it is essential that the propeller blade flange bear on the entire surface of the hub.

Extraordinary care should be exercised in an area where at first glance it appears unnecessary. The following should be carefully considered when installing a blade on a built-up propeller:

1. Care should be exercised to insure that the stud threads are properly machined and cleaned to produce a fitted stud within the hub.

2. The airhole (a small section cut out of each thread to prevent air from being trapped in the tapped hole) should be cleared.

3. The stud collar (if oversize) must be machined to fit the recess at the top of the tapped hole.

4. Studs should be driven up completely so that the collar is flush or preferably below the hub facing. (*See* stud marked "E" in fig. 3.)

5. "Sound" the studs for tightness with a test hammer.

6. Care should be exercised not to "bug-up" (flatten, destroy, or gall) the threads when fitting the blade flange over the studs.

7. Blade nuts should be driven up tightly, but not so tight as to mechanically stretch the stud or deform the threads.

Once the propeller blade has been installed, the question remains how to detect a very slight "tilting" of the blade. Checking the pitch of the blade may or may not reveal the offset, depending on the accuracy of the setup to measure pitch and the amount of tilt. The most effective method of checking for "tilt" is quite simple. In figure 1 the clearance (marked "(9)") is usually in the neighborhood of 1/16 inch. Passing a feeler gage around the beveled surface of the blade flange as a measure of the clearance should reveal even the slightest tilting of the blade. Finally, it should be remembered that the best preventive medicine for any machinery is thorough periodic examination. This is especially important after a new component has been installed. A short time after a new blade has been installed, the hydraulic cement used to grout the nuts should be inspected for cracks which would indicate any loosening of the blade nuts or movement of the blade on the hub.

## STORES AND SUPPLIES

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

### CERTIFIED

*Apollo Chemical Corp.*, 250 Delawanna Ave., Clifton, N.J., Certificate No. 149, dated May 20, 1965, DI–333.

### AFFIDAVITS

The following affidavits were accepted during the period from April 15, 1965, to May 15, 1965:

Harrison Steel Corp., 200 Greenpoint Ave., Brooklyn, N.Y., 11222, FLANGES & FITTINGS.

Piping Products, Inc., P.O. Box 9115, Houston, Tex., 77011, FLANGES.

National Steel & Shipbuilding Co., Harbor Drive and 28th St., San Diego 12, Calif., PIPE & TUBING.[1]

McAlear Division, White Consolidated Industries, P.O. Box 10, Fairview, Pa. 16415, FITTINGS.[2]

### CG–190 CORRECTION

The April 2, 1962, edition of CG–190 listed Republic Steel Corp., as an acceptable manufacturer of Pipe and Tubing. The August 3, 1964, edition contained this listing but added a footnote concerning the approval of Welded Pipe and Tubing made in accordance with ASTM Specification A–312. It is the intent of this footnote to amend a previous approval listing to include A–312 and not to limit approval to just A–312. The wording of the footnote will be changed in the revised edition of CG–190

Stockham Valves and Fittings, 4000 10th Ave. North, Birmingham 4, Ala., was approved as an acceptable manufacturer of valves, fittings, and flanges on May 7, 1963. Their name was inadvertently omitted from the August 3, 1964, edition of CG–190, Equipment Lists. This omission in no way affects the approval status of Stockham, and their name will be listed in the next revision of CG–190.

[1] Class II pipe only.
[2] Strainers.

# 1960 AND 1948 INTERNATIONAL RULES COMPARED: REVISIONS OF RULES 29 THROUGH 32 EXPLAINED

This is the ninth and concluding article comparing the 1948 International Rules of the Road presently in use with the revised 1960 International Rules which will become effective on 1 September 1965.

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

## PART F—MISCELLANEOUS

### RULE 29

### 1960 INTERNATIONAL RULES

Nothing in these Rules shall exonerate any vessel, or the owner, master or crew thereof, from the consequences of any neglect to carry lights or signals, or of any neglect to keep a proper lookout, or of the neglect of any precaution which may be required by the ordinary practice of seamen, or by the special circumstances of the case.

*(Same as 1948 Rule)*

### RULE 30

### 1960 INTERNATIONAL RULES

### RESERVATION OF RULES FOR HARBOURS AND INLAND NAVIGATION

Nothing in these Rules shall interfere with the operation of a special rule duly made by local authority relative to the navigation of any harbour, river, lake or inland water, including a reserved seaplane area.

*(Same as 1948 Rule)*

### RULE 31

### 1960 INTERNATIONAL RULES

### DISTRESS SIGNALS

(a) When a vessel or seaplane on the water is in distress and requires assistance from other vessels or from the shore, the following shall be the signals to be used or displayed by her, either t o g e t h e r or separately, namely:—

(i) A gun or other explosive signal fired at intervals of about a minute.

(ii) A continuous sounding with any fog-signalling apparatus.

(iii) Rockets or shells, throwing red stars fired one at a time at short intervals.

(iv) A signal made by radiotelegraphy or by any other signalling method consisting of the group . . . — — — . . . in the Morse Code.

(v) A signal sent by radiotelephony consisting of the spoken word "Mayday".

(vi) The International Code Signal of distress indicated by N.C.

(vii) A signal consisting of a square flag having above or below it a ball or anything resembling a ball.

(viii) Flames on the vessel (as from a burning tar barrel, oil barrel, etc.).

*(Same as (a) thru (h) of 1948 Rules)*

(ix) A rocket parachute flare or a hand flare showing a red light.

*Changed. 1948 Rule Read:*

(i) A rocket parachute flare showing a red light.

(x) A smoke signal giving off a volume of orange-coloured smoke.

(xi) Slowly and repeatedly raising and lowering arms outstretched to each side.

*(New. No 1948 Counterpart to Sec. (X) and (XI)*

NOTE.—Vessels in distress may use the radiotelegraph alarm signal or the radiotelephone alarm signal to secure attention to distress calls and messages. The radiotelegraph alarm signal, which is designed to actuate the radiotelegraph auto alarms of vessels so fitted, consists of a series of twelve dashes, sent in 1 minute, the duration of each dash being 4 seconds, and the duration of the interval between 2 consecutive dashes being 1 second. The radiotelephone alarm signal consists of 2 tones transmitted alternately over periods of from 30 seconds to 1 minute.

*Changed. 1948 Rule Read:*

NOTE.—A radio signal has been provided for use by vessels in distress for the purpose of actuating the auto-alarms of other vessels and thus securing attention to distress calls or messages. The signal consists of a series of twelve dashes, sent in 1 minute, the duration of each dash being 4 seconds, and the duration of the interval between two consecutive dashes 1 second.

(b) The use of any of the foregoing signals, except for the purpose of indicating that a vessel or seaplane is in distress, and the use of any signals which may be confused with any of the above signals, is prohibited. (Same as 1948 Counterpart).

Rule 32 has been deleted from 1960 Rules.

*1948 Rule Read:*

### ORDERS TO HELMSMEN

Rule 32 All orders to helmsmen shall be given in the following sense: right rudder or starboard to mean "put the vessel's rudder to starboard"; left rudder or port to mean "put the vessel's rudder to port."

## ANNEX TO THE RULES

### RECOMMENDATIONS ON THE USE OF RADAR INFORMATION AS AN AID TO AVOIDING COLLISIONS AT SEA

(1) Assumptions made on scanty information may be dangerous and should be avoided.

(2) A vessel navigating with the aid of radar in restricted visibility must, in compliance with Rule 16(a), go at a moderate speed. Information obtained from the use of radar is one of the circumstances to be taken into account when determining moderate speed. In this regard it must be recognised that small vessels, small icebergs and similar floating objects may not be detected by radar. Radar indications of one or more vessels in the vicinity may mean that "moderate speed" should be slower than a mariner without radar might consider moderate in the circumstances.

(3) When navigating in restricted visibility the radar range and bearing alone do not constitute ascertainment of the position of the other vessel under Rule 16(b) sufficiently to relieve a vessel of the duty to stop her engines and navigate with caution when a fog signal is heard forward of the beam.

(4) When action has been taken under Rule 16(c) to avoid a close quarters situation, it is essential to make sure that such action is having the desired effect. Alterations of course or speed or both are matters as to which the mariner must be guided by the circumstances of the case.

(5) Alteration of course alone may be the most effective action to avoid close quarters provided that:

(a) There is sufficient sea room.

(b) It is made in good time.

(c) It is substantial. A succes-

sion of small alterations of course should be avoided.

(d) It does not result in a close quarters situation with other vessels.

(6) The direction of an alteration of course is a matter in which the mariner must be guided by the circumstances of the case. An alteration to starboard, particularly when vessels are approaching apparently on opposite or nearly opposite courses, is generally preferable to an alteration to port.

(7) An alteration of speed, either alone or in conjunction with an alteration of course, should be substantial. A number of small alterations of speed should be avoided.

(8) If a close quarters situation is imminent, the most prudent action may be to take all way off the vessel.

#### PRIMARY CHANGES

1. Three distress signals have been added to the list—red hand flares, orange smoke signals and the slow, repeated raising and lowering of arms outstretched to each side. Due to its simplicity, the latter is particularly pertinent to use on small craft in distress.

2. The Rule 31 "Note" has been expanded to include the radiotelephone alarm system.

3. Rule 32 (orders to helmsmen) has been deleted from the 1948 Rules as no longer being necessary.

4. The ANNEX TO THE RULES provides recommended guidelines on the use of radar as an anticollision device.

#### CORRECTION

In the May 1965 PROCEEDINGS on page 116, the comparison of the 1960 and 1948 International Rules of the Road, Rules 17 through 20, contained an erroneous statement that Rule 17 has been rewritten in simplified terms without any significant change. The statement should have read as follows:

"Rule 17 has been rewritten in simpler terms so that the right of way is determined first by tack and, assuming two vessels on the same tack, secondly by whether a vessel is up wind or down wind. The new Rule is adapted to fore-and-aft rigged vessels, which tack easily and jibe with some difficulty or danger; the old Rule was tailored for square-rigged vessels, which were relatively maneuverable when running before the wind, but could only weather the helm with a degree of ease when close hauled."

# nautical queries

#### DECK

Q. a. What is the purpose of the electric drill required to be carried in the emergency equipment?

b. How would you make use of a half-inch electric drill for this purpose?

A. a. The portable electric drill is to provide emergency means of access to fires through decks, casings, or bulkheads.

b. A half-inch drill can cut holes of greater diameter for inserting hose or nozzle by using a circular steel cutting saw or by marking off a hole and using a series of holes around the marking sufficiently close together that the opening could be knocked out with a steel chisel or other instrument.

Q. What are the emergency signals used for the following:

(a) Fire alarm.

(b) Dismissal from fire stations.

(c) Boat station or boat drill.

(d) To lower boats.

(e) To stop lowering boats.

(f) Dismissal from boat stations.

A. (a) Continuous rapid ringing of the ship's bell for at least 10 seconds, supplemented by the same signal on the general alarm bells.

(b) Three short blasts of the whistle supplemented by the same signal on the general alarm bells.

(c) More than six short blasts and one long blast of the whistle, supplemented by the same signal on the general alarm bells.

(d) One short blast of the whistle.

(e) Two short blasts of the whistle.

(f) Three short blasts of the whistle.

Q. May the Master establish emergency signals other than indicated in the rules and regulations?

A. Yes; the Master may establish such other emergency signals as will provide that all officers, crew, and passengers will have positive and certain notice of the existing emergency.

Q. What sort of report is made of the fire and boat drills?

A. A record of fire and boat drills shall be entered in the vessel's logbook, together with all the particulars relating to the drills.

#### ENGINE

Q. What are the requirements for the vent pipes for fuel oil tanks?

A. Fuel oil settling and similar tanks having a comparatively small surface shall be fitted with at least one vent pipe. Tanks having a comparatively large surface shall be fitted with at least two vent pipes. The vents shall be located so as to provide venting of the tanks under any service condition. Where tanks may be filled by a pressure head exceeding that for which the tank is designed, the aggregate area of vent pipes shall be at least equal to the filling connection at the tank, unless other overflows are provided. In no case shall the diameter of any vent pipe be less than 2½ inches. Vent pipes shall terminate in an open space on deck and shall be equipped with flame screens. Approved means for closing vent pipes in an emergency shall be provided where necessary. Vent pipes shall be led as direct as practicable and the inclination in all cases shall not be less than 30° from the horizontal, except on common headers where both ends are adequately drained to a tank.

Q. What are the requirements for sounding pipes for tanks and cargo holds on inspected vessels?

A. Sounding pipes not less than 1½ inches inside diameter, shall be fitted to all tanks and hold compartments which are not at all times accessible.

All pipes shall be led as straight as possible from within 2 inches of the lowest part of the tank or compartments to the bulkhead deck or other position which is always accessible. Where sounding pipes terminate below the bulkhead deck they shall be provided with a valve at the top. In passenger vessels a self-closing valve shall be required; in cargo vessels a gate valve may be used.

Upper ends of sounding pipes terminating at a deck shall be protected by a screw cap or plug. No perforations or openings will be permitted throughout the length of the pipe.

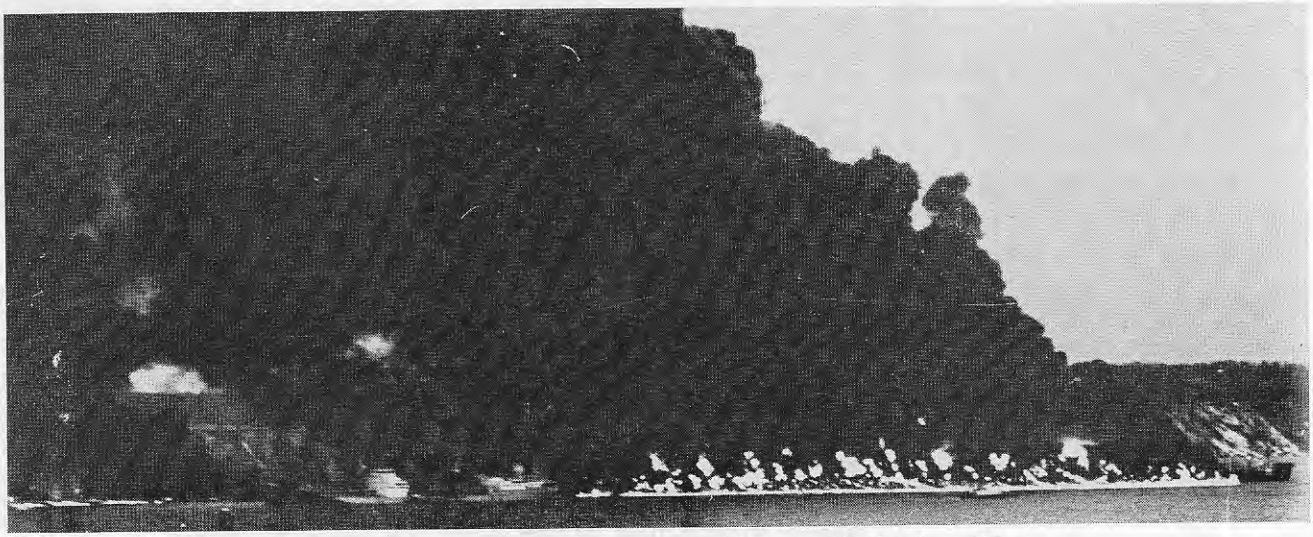
Striking plates or approved fittings shall be provided under the sounding pipes to protect the hull from injury.

## COMMANDANT'S ACTION

# Santa Maria-Sirrah Collision and Fire Findings Approved

*On the afternoon of 19 October 1964 in the waters off Anchorage, Alaska, the American tankship* Santa Maria *was set down upon the Dutch tankship* Sirrah *by a strong tidal current. The resultant collision set the two vessels, together with an attending tug, afire and apparently cost the life of one seaman.*

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



Flames and smoke engulf the *Santa Maria* and *Sirrah* shortly after the collision.

TREASURY DEPARTMENT
UNITED STATES COAST GUARD

9 April 1965.

Commandant's Action

on

Marine Board of Investigation; collision of the M/V *Sirrah* and the SS *Santa Maria* in Knik Arm, off Anchorage, Alaska, on 19 October 1964, with loss of life.

1. The record of the Marine Board of Investigation convened to investigate subject casualty, together with the Findings of Fact, Conclusions and Recommendations, has been reviewed.

2. At about 1600 AST, on 19 October 1964, the United States tankship SS *Santa Maria* collided with the Dutch tankship M/V *Sirrah* which was in the process of weighing anchor in a position about mid-channel westward of the city dock at Anchorage, Alaska.

3. The collision occurred during daylight hours. The visibility was approximately 10 miles, and the wind was from the north at about 20 knots. At the time and location of the casualty, it was about 1 hour before high tide. The current was setting about 050° True at about 3 knots.

4. Knik Arm in the vicinity of the casualty is basically oriented ENE–WSW until east of MacKenzie Point where it gradually changes to a near NNE–SSW axis. Deep water in the Arm varies between 1 and 1½ miles wide. The diurnal range of tide is about 29 feet, and the tidal currents near mid-channel attain velocities of 6 or more knots.

5. The *Sirrah* was anchored with 10 shots of chain to the starboard anchor in position about mid-channel on a line between MacKenzie Point and the city docks. The channel is approximately 1 and ½ mile wide. The vessel was to shift from the anchorage to the off loading piers at 1600. At about 1530 with two tugs alongside to starboard, a pilot and an observer on board, and the engine ready for getting underway, the crew commenced weighing the anchor. The vessel was heading about 210° True with the anchor chain tending in a forward direction. The Master, Chief Officer, Helmsman, Pilot and Observer were on the bridge. At about this time the *Santa Maria* was observed standing into Knik Arm. The approach of the *Santa Maria* caused no particular concern on the *Sirrah* since there was plenty of maneuvering room for the vessels. The *Sirrah* continued heaving in its anchor, and witnesses testified that neither the vessel's engines nor the tug boats were used to relieve the strain on the anchor windlass caused by the flooding tidal current. The *Santa Maria* approached the *Sirrah* slowly in a crab like manner and, when about ½ mile away, was showing her starboard side and bearing to the port of the *Sirrah.* About this time, a whistle signal was heard from the *Santa Maria* but the characteristics could not be distinguished. Shortly thereafter a distinct two-blast whistle signal was heard from the *Santa Maria,* and it became apparent that the ship intended to pass to starboard of the still anchored *Sirrah.* The *Sirrah* sounded the danger signal; the en-

gines were placed full astern; the tug on the starboard bow was directed to back full; and the crewmembers left the bow when collision appeared imminent. Moments later at about 1601 and ½, after the forward portion of the *Santa Maria* had passed across the bow of the *Sirrah*, the Numbers 9 and 10 starboard wing tanks set heavily onto the bow of the *Sirrah*. The collision fractured the side shell plating of the *Santa Maria* and parted the anchor chain of the *Sirrah*. Gasoline leaking out of the *Santa Maria* was ignited by sparks caused by the friction of collision. The forecastle of the *Sirrah*, the tug alongside the *Sirrah*, and the after portion of the *Santa Maria* were in flames. After the two ships were separated, the fires on the *Sirrah* and the tug were extinguished with relatively little damage to the vessels. The tug proceeded to the *Santa Maria* to rescue the crew, and the *Sirrah*, after some delay, anchored near its original position.

6. The *Santa Maria* was proceeding from Kodiak, Alaska, to Anchorage, Alaska, with a mixed cargo of gasoline, diesel fuel and stove oil. Information was received by radio telephone that a tanker anchored off Anchorage, Alaska, would shift to the petroleum dock at 1600. The Master and Pilot of the *Santa Maria* made plans to arrive after 1600 and anchor. The *Santa Maria* passed Point Woronzof at 1525 on a course of about 065° True. Shortly thereafter, the Master came to the bridge, and a vessel later identified as the *Sirrah* was observed dead ahead at a reported radar range of 4 miles. The engines of the *Santa Maria* were used only as necessary to maintain steerageway in the 3-knot flooding tidal current and alternated between stop and slow ahead. As the ship passed MacKenzie Point, it was observed that there were two smaller vessels in the vicinity of the *Sirrah*. When the vessels were about 1 and ¼ miles apart, witnesses testified that the *Sirrah* had an anchor day signal displayed; was on an approximate opposite heading; and that her starboard anchor chain was visible and appeared to be tending aft along her starboard side. They further testified that the *Sirrah* was underway, dragging her starboard anchor and turning to starboard. As the vessels closed the intervening distance, left rudder was ordered with the intention of passing the *Sirrah* starboard to starboard, but the relative bearings between the vessels did not change. A two-blast whistle signal was sounded; and later another two-blast signal was sounded, but witnesses testified that an answering signal was not heard from the *Sirrah*. At 1556 more left rudder was ordered and the engines were placed on half ahead. At 1557 the rudder was ordered hard left, and the engines were placed on full ahead. At 1558 the engines were placed at emergency full ahead. Seconds later with collision imminent, the rudder was placed hard right in an effort to swing the stern to port in an attempt to clear the *Sirrah*. The collision followed almost immediately and resulted in a fierce and uncontrolled fire which engulfed the after deckhouse of the *Santa Maria*. After the vessels separated, the steam smothering system was activated, and a 2½" fire hose was used to fight the fire with little effect. The starboard anchor was dropped and secured with about 2½ shots of chain out, and the order was given to abandon ship. Seven members of the crew left the vessel in the forward port life boat, and 26 boarded the tug which had been assisting the *Sirrah*. Later, it was learned that one crewmember was unaccounted for. The following day, after the gasoline fire died out, the vessel was searched but no sign of the missing crewmember was found. On 21 October 1964, the remaining fire in the after deckhouse was finally extinguished. Although the *Santa Maria* was severely damaged in the way of the starboard quarter and the after deckhouse, the cargo of all tanks except Numbers 9 and 10 starboard appeared to be undamaged.

**REMARKS**

1. Concurring with the Marine Board, it is considered that the *Santa Maria* was set down on the *Sirrah* by the tidal current.

2. Further concurring with the Board, it is considered that there is evidence of negligence on the part of the Master and Pilot of the SS *Santa Maria* with regard to the navigation of the vessel. The Board's recommendation for further investigation under the Suspension and Revocation Proceedings has been initiated.

3. The Board's conclusion that Eugene L. Hughes, crewmember of the SS *Santa Maria*, probably perished in the cold waters of Knik Arm in attempting to abandon the burning vessel is concurred in.

4. The occasional obvious conflict in testimony of personnel on the respective vessels, though not uncommon in incidents of this nature is, nevertheless, striking in this case. In this regard, since the Board observed the scene of the casualty and was in the best position to assess credibility, it is considered that its Findings of Fact and Conclusions are a reasonable evaluation of the evidence and are adequately supported by the record of the proceedings.

5. The Report of the Marine Board of Investigation is approved.

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

## READERS INVITED TO SUBMIT MATERIAL FOR FUTURE ISSUES


**ALL READERS are invited to submit comments, safety suggestions, cartoons, articles, or similar material for publication in future issues of this publication. Submissions should concern the promotion of maritime safety and will be selected and edited at the editor's discretion. Credit for published material will be given to the author, as appropriate, but unused items will not be returned. A brief biographical sketch is requested of the author of any article in excess of 1,000 words.**

**Articles or requests for further information should be directed to:**

**Editor**
**Merchant Marine Council Proceedings**
**U.S. Coast Guard Headquarters**
**Washington, D.C. 20226**

# AMENDMENTS TO REGULATIONS

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

## *TITLE 33 CHANGES*

### AMENDING OF CERTAIN RULES OF THE ROAD

Changes to certain Rules of the Road considered at the March 22 Public Hearing have been announced in the Federal Register of May 8, 1965.

The following changes have been made to Pilot Rules for Inland Waters: Section 80.03 (33 CFR 80.03) has been amended by deleting footnote 1; Section 80.14 has been amended by deleting footnote 2; Section 80.16a is amended to read:

**§ 80.16a Lights, for barges, canal boats, scows and other nondescript vessels on certain inland waters on the Gulf Coast and the Gulf Intracoastal Waterway.**

* * * * *

(b) When one or more barges, canal boats, scows, or other vessels of nondescript type not otherwise provided for, are being towed by pushing ahead of a steam vessel, or by a combination of pushing ahead and towing alongside of a steam vessel, such tow shall be lighted by an amber light at the extreme forward end of the tow, so placed as to be as nearly as practicable on the centerline of the tow, a green light on the starboard side of the tow, so placed as to mark the maximum projection of the tow to starboard, and a red light on the port side of the tow, so placed as to mark the maximum projection of the tow to port.

* * * * *

Section 80.33(d) is amended to read:

**§ 80.33 Special signals for vessels employed in hydrographic surveying.**

* * * * *

(d) A vessel of the Coast and Geodetic Survey, when at anchor in a fairway on surveying operations, shall display from the mast during the daytime two black balls in a vertical line not less than 6 feet apart. At night two red lights shall be displayed in the same manner. In the case of a small vessel the distance between the balls and between the lights may be reduced to not less than 3 feet if necessary.

* * * * *

The center heading immediately preceding § 80.34 is amended to read "Miscellaneous," and the center heading immediately preceding § 80.38 is deleted.

Part 80 is amended by adding after § 80.38 a new § 80.40 reading:

**§ 80.40 Exceptions to the statutory and regulatory requirements for lights, day signals, or other navigational means and appliances when operating under bridges.**

(a) Any vessel while passing under a bridge may temporarily lower any lights, day signals, or other navigational means and appliances when required to do so because of the restricted vertical clearance under the bridge. Immediately when clear of the bridge, all lights, day signals, or other navigational means and appliances shall be exhibited as required by law or regulation.

* * * * *

Following are some of the more important changes made to Boundary Lines of Inland Waters: Section 82.35 has been amended by defining Charleston Harbor as: A line drawn from Charleston Light on Sullivan's Island to Lighted Whistle Buoy 2C; thence to Folly Island loran tower. Section 82.120 has been amended by changing "Line Kiln Light" to "Lime Kiln Light"; Section 82.122 has been added to define Grays Harbor as: A line drawn from Bar Range Rear Light to North Bar Lighted Whistle Buoy 2NB; thence to Entrance Lighted Whistle Buoy 2; thence to Grays Harbor Light. Section 82.230 has been amended by changing "Isla Morrillo" to "Cayo Morrillo" and "Isla Pajaros" to "Cayos de Pajaros."

The following changes have been made to Pilot Rules for Western Rivers: Section 95.29 has been amended to read:

**§ 95.29 Lights for barges towed ahead or alongside.**

(a) When one or more barges are being towed by pushing ahead of a steam vessel, or by a combination of pushing ahead and towing alongside of a steam vessel, such tow shall be lighted by an amber light at the extreme forward end of the tow, so placed as to be as nearly as practicable on the centerline of the tow, a green light on the starboard side of the tow, so placed as to mark the maximum projection of the tow to starboard, and a red light on the port side of the tow, so placed as to mark the maximum projection of the tow to port.

* * * * *

A new section, 95.75, has been added, reading:

**§ 95.75 Exceptions to the statutory and regulatory requirements for lights, day signals, or other navigational means and appliances when operating under bridges.**

(a) Any vessel while passing under a bridge may temporarily lower any lights, day signals, or other navigational means and appliances when required to do so because of the restricted vertical clearance under the bridge. Immediately when clear of the bridge, all lights, day signals, or other navigational means and appliances shall be exhibited as required by law or regulation.

* * * * *

Following are some of the more important changes made to Part 135—"Lights for Coast Guard vessels of Special Construction": Section 135.10 is amended to read:

**§ 135.10 Definition of terms used in this part.**

(a) *International Rules.* The term "International Rules" means the "Regulations for Preventing Collisions at Sea, 1960," as set forth in section 4 of the act of September 24, 1963 (77 Stat. 195–210; 33 U.S.C. 1061–1094).

Section 135.25 is amended by changing "(33 U.S.C. 145(a)(iii))" to "U.S.C. 1062(a)(iii))" and by changing the letter designations of all Buoy Tenders from "WAGL" to "WLB," excepting the CGC Evergreen which becomes a "WAGO."

Complete provisions of these changes are found in the Federal Register of May 8, 1965, pp. 6433–6435.

## *TITLE 46 CHANGES*

### MOTORBOAT ENGINE SPACES VENTILATION & FIRE EXTINGUISHER REQUIREMENTS AMENDED

Regulation changes aimed at clarifying the requirements regarding the equipping of motorboats with portable fire extinguishers and closely defining "open boats" have been announced in the Federal Register of May 12, 1965. Because of the high public interest in this item, these amending subparts of 46 CFR are carried below.

* * * * *

#### Subpart 25.30—Fire Extinguishing Equipment

1. Section 25.30–20(a) is amended to read as follows:

**§ 25.30–20 Fire extinguishing equipment required.**

(a) *Motorboats.* (1) All motorboats shall carry at least the minimum number of hand portable fire extinguishers set forth in Table 25.30–20 (a)(1), except that motorboats less than 26 feet in length, propelled by outboard motors and not carrying passengers for hire, need not carry such portable fire extinguishers if the construction of such motorboats will not permit the entrapment of explosive or flammable gases or vapors.

TABLE 25.30–20(a)(1)

| Class of motorboat | Length, feet | Minimum number of B–I hand portable fire extinguishers required [1] | |
|---|---|---|---|
| | | No fixed fire extinguishing system in machinery space | Fixed fire extinguishing system in machinery space |
| A | Under 16 | 1 | 0 |
| 1 | 16 and over, but under 26 | 1 | 0 |
| 2 | 26 and over, but under 40 | 2 | 1 |
| 3 | 40 and over, but not over 65. | 3 | 2 |

[1] One B–II hand portable fire extinguisher may be substituted for two B–I hand portable fire extinguishers.

(2) The intent of this regulation is illustrated in Figure 25.30–20(a1) where fire extinguishers are required if any one or more of the specified conditions exist, and in Figure 25.30–20(a2) where specified conditions do not, in themselves, require that fire extinguishers be carried.

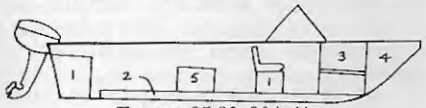



FIGURE 25.30–20(a1)

Fire extinguishers are required if any one or more of the following conditions exist (numbers identifying conditions are the same as those placed in Figure 25.30–20 (a1):

1. Closed compartment under thwarts and seats wherein portable fuel tanks may be stored.
2. Double bottoms not sealed to the hull or which are not completely filled with flotation material.
3. Closed living spaces.
4. Closed stowage compartments in which combustible or flammable materials are stowed.
5. Permanently installed fuel tanks.

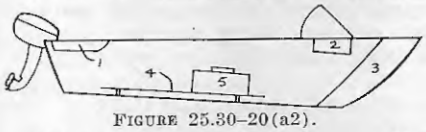



FIGURE 25.30–20(a2).

The following conditions do not, in themselves, require that fire extinguishers be carried (numbers identifying conditions are the same as those placed in Figure 25.30–20(a2):

1. Bait wells.
2. Glove compartments.
3. Buoyant flotation material.
4. Open slatted flooring.
5. Ice chests.

## Subpart 25.40—Ventilation

2. Section 25.40–1 is amended to read as follows:

**§ 25.40–1 Tanks and engine spaces.**

(a) All motorboats or motor vessels, except open boats, the construction or decking over of which is commenced after April 25, 1940, and which use fuel having a flashpoint of 110° F. or less, shall have at least 2 ventilator ducts, fitted with cowls or their equivalent, for the efficient removal of explosive or flammable gases from the bilges of every engine and fuel tank compartment. There shall be at least one exhaust duct installed so as to extend from the open atmosphere to the lower portion of the bilge and at least one intake duct installed so as to extend to a point at least midway to the bilge or at least below the level of the carburetor air intake. The cowls shall be located and trimmed for maximum effectiveness and in such a manner so as to prevent displaced fumes from being recirculated.

(b) As used in this section, the term "open boats" means those motorboats or motor vessels with all engine and fuel tank compartments, and other spaces to which explosive or flammable gases and vapors from these compartments may flow, open to the atmosphere and so arranged as to prevent the entrapment of such gases and vapors within the vessel.

(c) Where alterations are needed for existing motorboats or motor vessels to comply with the requirements in this section, such alterations shall be accomplished as soon as practicable but in any case shall be completed by June 1, 1966.

* * * * *

## *MORE TITLE 46 CHANGES*

### CHANGES MADE IN ISSUE PROCEDURES FOR TEMPORARY DOCUMENTS

A revision of procedures allowing a merchant mariner to file his request for a temporary document with the Examiner or any Officer in Charge, Marine Inspection (who will in turn forward the request to the Examiner who conducted the hearing rather than via the District Commander as in the past), has been announced in the Federal Register of May 18, 1965.

The new regulation, amending 46 CFR 137.30–15, reads as follows:

* * * * *

**§ 137.30–15 Temporary documents.**

(a) Any person who has appealed from a decision suspending or revoking his document may file a written request for a temporary document with the Examiner who rendered the decision or with any Officer in Charge, Marine Inspection, for forwarding to such Examiner. The request will be granted by the Examiner except (1) when the hearing transcript has been forwarded to the Commandant, or (2) when, in the opinion of the Examiner, the order of suspension or revocation rests upon a finding of guilty for a serious offense of such a character that the presence of the person charged on board a vessel, either immediately or for the indefinite future, would be incompatible with the requirements of safety of life or property at sea, or for a serious offense found by the Examiner to have been committed willfully.

(b) If the transcript has been forwarded to the Commandant, or if the request is denied by the Examiner, the request shall be forwarded by the Examiner to the Commandant for final action. A temporary document may be issued in the discretion of the Commandant, except where such action, in the opinion of the Commandant, would be incompatible with the requirements of safety of life or property at sea.

(c) A temporary document shall be subject to such terms and conditions as the Commandant or Examiner may prescribe. However, all such documents shall provide that they expire not more than six months after issuance or upon service of the Commandant's decision on appeal, whichever occurs first. If a temporary document expires before the Commandant's decision is rendered, it may be renewed, after authorization by the Commandant, by the issuance of a new temporary document by an Officer in Charge, Marine Inspection.

(d) Copies of the temporary documents issued shall become a part of the record on appeal.

## *APPROVED EQUIPMENT*

### COMMANDANT ISSUES EQUIPMENT APPROVALS; TERMINATES OTHERS

By Commandant's action of May 13, 1965, approvals were granted on various items of lifesaving and miscellaneous equipment, installations, and materials used on merchant vessels subject to Coast Guard inspections and on certain motorboats and other pleasure craft. At the same time the Commandant terminated Coast Guard approval for certain lifeboats and buoyant vests and cushions.

Those interested in these equipment list changes must consult the Federal Register of May 26, 1965, for detailed itemization.

## *CIRCULAR*

### PROCEDURES SET FOR SUBMISSION OF STEAM PIPE STRESS ANALYSES

Material required to be included with pipe stress analysis calculations are outlined in Navigation and Vessel Inspection Circular 3–65. Many pipe stress calculation submissions do not contain sufficient information for proper evaluation and approval by the Commandant. Complete and thorongh initial submission will greatly rednce the time required for Coast Guard approval.

NVIC 3–65 gives the following by way of instruction: Submissions, in quadruplicate, should contain: (*a*) a dimensioned isometric schematic drawing of the complete piping system. (The points for which stress is calculated should be numbered in sequence); (*b*) a dimensioned arrangement drawing of the complete piping system; (*c*) a tabular listing of all anchors, bends, branch intersection points, valves, reducers, restraints and expansion joints; and (*d*) a description of the method of analysis used together with supporting representative calculation sheets if hand calculations are used or a copy of input and output data of a digital computer is used. The circular should be consulted for complete details. NVIC's may be obtained from the local marine inspection office or by writing Commandant (CHS), U.S. Coast Guard, Washington, D.C., 20226.

## *SOLAS CIRCULAR*

### VESSEL INSPECTION REGULATION CHANGES TO IMPLEMENT SOLAS '60 LISTED IN NVIC 4–65

Vessel Inspection regulation changes designed to implement the International Convention for Safety of Life at Sea 1960 have been published in Navigation and Vessel Inspection Circular 4–65. The circular includes three enclosures spelling out the changes applicable to existing passenger, cargo, and tank vessels. Following, are extracts from the circular.

* * * * *

In writing the new regulations, it was assumed that each existing vessel was in complete compliance with all of the applicable existing requirements. This being the case, no change is contemplated to such vessels other than some items specifically required by the text of the regulations. However, if a vessel is not in compliance with all existing requirements, it should be brought up to the existing standards.

Many of the subparts of the new regulations are written specifically for new vessels and such subparts have as their concluding section the applicable requirements for existing vessels; it will be noted that the ending numbers in such sections are always "90." In most cases, instead of giving detailed requirements for existing vessels, the regulations state that existing arrangements and materials previously accepted or approved will be considered satisfactory so long as they are maintained in good condition. The advantage of this method is that it preserves the current status on arrangements and details which have been previously accepted, without an excessive amount of wording necessary to take care of the many special cases which have been acted upon in the past.

It is not intended that special inspections will be made for the purpose of determining that existing vessels are in compliance with the new requirements of the revised regulations. However, as the varions vessels come up for their regular *inspection for certification* after 26 May 1965, the new requirements will be applied so that by 26 May 1966, passenger vessels, and by 26 May 1967, cargo and tank vessels, will have been examined for compliance with the new or revised regulations.

Certain items of equipment primarily necessitated by the 1960 Convention, such as the 15-minute floating orange smoke distress signal, the emergency fishing tackle kit, and lifeboat protecting cover may not be available on 26 May 1965. It is not intended that any vessel shall be delayed because of lack of this equipment, and in such cases, time will be given to comply with the requirements. Further, although certain items necessitated by the 1960 Convention may be commercially available, such as the desalter kit or international shore connection, procurement or installation of such items could necessitate a delay to the vessel, and accordingly, time will be given to bring the vessel into compliance.

Beginning 26 May 1965, the 1960 Convention Safety Certificates will be issued to passenger vessels as they come up for their annual or initial inspections in lieu of the 1948 Convention Safety Certificates. In a like manner, cargo and tank vessels will be issued 1960 Convention Safety Equipment Certificates and Cargo Ship Safety Construction Certificates as the vessels come up for the regular biennial or initial inspections. In addition to Safety Equipment Certificates and Cargo Ship Safety Construction Certificates, cargo and tank vessels shall be issued 1960 Convention Safety Radiotelegraphy or Safety Radiotelephony Certificates as applicable. In this manner, all passenger vessels engaging upon international voyages should have the applicable 1960 Convention certificate by 26 May 1966 and all cargo and tank vessels should have the applicable 1960 Convention certificates by 26 May 1967.

The lack of items of equipment noted above will not be considered as reason for denial of the 1960 Convention certificates or certificate of inspection, as it may be impossible or impracticable to comply with the requirements for some time. However, it will be considered reasonable and practicable to require compliance in this respect as soon as possible.

Items set forth in the enclosure are enumerated, in part, below.

**The new requirements contained in the Rules and Regulations for PASSENGER VESSELS applicable to *existing* vessels.**

70.10–21(b) Extends the SOLAS boundary for vessels navigating the Great Lakes from the exit of the Lachine Canal at Montreal to a point as far east as a straight line drawn from Cap de Rosiers to West Point, Anticosti Island, and on the north side of Anticosti Island, the 63d Meridian. This area of exemption was extended to Anticosti Island to permit Great Lakes vessels to operate from Seven Islands and similar ports to the Great Lakes ports without being subject to the convention, except for portions of Chapter V, SOLAS 60. The following requirements apply to Great Lakes vessels.

1. Those vessels which operate east of the lower exit of the St. Lambert Lock at Montreal in the Province of Quebec, Canada, and Anticosti Island are required:

(a) If engaged on a voyage in which pilots are likely to be employed to be fitted with a pilot ladder as required by Regulation 17 of Chapter V of SOLAS 1960.

(b) If over 150 gross tons to have a lifesaving Signals and Breeches Buoy Instructions, Form CG–811 (revised 6–64) posted in the pilothouse, crews quarters and engine room.

75.10–5(a)(2) Lifeboats which carry more than 100 persons are required to be motor lifeboats. (When existing hand-propelled boats of more than 100-person capacity are no longer serviceable and require replacement, motor lifeboats will be required. However, if the installation of a motor lifeboat, in lieu of the hand-propelled boat, would result in the reduction of the passenger carrying allowance of the vessel, then substitution of a hand-propelled boat

manufactured under the previously approved specifications will be permitted.)

75.10–5(b) Rigid type life rafts cannot be used as required equipment.

75.10–5(b)(4) Inflatable life rafts shall have a carrying capacity of not less than 6 nor more than 25 persons.

75.10–10(b)(1) In addition to any other required lifesaving equipment, each vessel shall be provided with approved life rafts for 25 percent of the persons carried plus approved buoyant apparatus for 3 percent of the persons carried. However, if the factor of subdivision of the vessel is 0.33 or less (applies to SS *United States* only), the life rafts are not required, but approved buoyant apparatus shall be provided for 25 percent of the persons on board.

75.10–10(b)(2) Vessels on a short international voyage shall carry approved life rafts with a capacity equal to 10 percent of the capacity of the lifeboats. In addition, they shall carry sufficient approved buoyant apparatus so that the aggregate capacity of the buoyant apparatus and the life rafts is at least equal to 25 percent of the persons on board.

75.15–10(b)(7) Means shall be provided for bringing the lifeboats against the ship's side and holding them there so that persons may be safely embarked. (This requires an adequate tricing pendant and frapping line installation.)

75.15–10(c)(2) Means shall be provided to prevent the discharge of water into life rafts launched from approved launching devices.

75.15–10(c)(3) Life rafts for which approved launching devices are not required shall be capable of being launched with unfavorable conditions of trim and a list of 15 degrees.

1. To amplify the requirements concerning inflatable life rafts the following additional considerations apply:

(a) Approved life rafts weighing in excess of 400 pounds will be permitted as authorized by Navigation and Vessel Inspection Circular 4–64.

(b) Approved life rafts of less than 6-person capacity may be carried as optional equipment but not as a part of the required equipment.

(c) Presently installed approved life rafts will be fully equipped as required by revised specification 160.051 at the first servicing after 26 May 1965.

(d) Life rafts are required to be stowed to permit their floating free. A hydrostatic release may be used with a raft's installation to allow this float-free operation.

75.20–10(n) Lifeboat gunwale ladder. (This item was formerly excluded on lifeboats of less than 60-person capacity, however, it is now required on all lifeboats and is described in 75.20–15(n).)

75.20–10(mm) Signal whistle. (The whistle shall be of the ball-type, of corrosion-resistant construction, with a 3-foot lanyard attached, and in good working order.)

75.20–10(nn) Fishing kit (see note above concerning the availability of this item).

75.20–10(oo) Protecting cover. (This cover is not currently available and will not be required at the present time for existing vessels. Additional amplifying information concerning this cover will be promulgated by the Commandant at a later date.)

75.20–10(pp) Table of lifesaving signals (Form CG–811 Revised 6–64). This form shall be laminated or encased in a waterproof container.

75.20–10(qq) Desalting kit. (Approved desalting kits capable of producing an equal amount of water may be substituted for not more than one-third of the drinking water required to be carried in the lifeboats and liferafts.)

75.20–15(j) The spare bulbs for lifeboat flashlights shall be stowed in a water tight container.

75.40–5(b) All life preservers shall be provided with a whistle of the ball-type, of corrosion-resistant construction, with a 3 foot lanyard attached, and in good working order. It shall be attached to the life preserver by the lanyard alone without hooks, snaps, clips, etc., and shall extend not less than 15 inches from the life preserver body. While stowed on the life preserver, the whistle lanyard shall be coiled and stopped-off.

75.40–10(b) An additional 5 percent approved life preservers shall be provided.

75.40–90(a)(2)(i) Cork and balsa wood life preservers, constructed in accordance with the applicable provisions of Subparts 160.003 or 160.004 and manufactured as approved life preservers prior to July 1, 1965, may be accepted as new or replacement equipment required by this subchapter provided such life preservers are serviceable and in good condition.

75.43–10(b) A buoyant line at least 15 fathoms long shall be attached to one ring life buoy on each side of the ship.

75.43–10(c) Two ring life buoys with water light attached shall also be provided with an approved 15 minute self activating smoke signal and be capable of quick release from the navigating bridge. (See note above concerning the availability of this item.)

75.50–5(a)(3) A safety line and light shall be provided for the pilot ladder.

75.50–15(a) There shall be provided means of illuminating the stowage position of life rafts. Details of the illuminating system shall be in accordance with the Electrical Engineering Regulations, Subchapter J. (46 CFR 111.50–15(e)(3)).

76.05–30(b) A BII fire extinguisher may be substituted for the sand required in boiler rooms.

76.10–10(c) Vessels of 1,000 gross tons and over shall be provided with at least one international shore connection. Facilities shall be available enabling such a connection to be used on either side of the vessel. The international shore connection shall be in accordance with specification Subpart 162.034 of Subchapter Q (Specifications) of this chapter.

77.30–10(a) The portable electric drill is no longer required in the Fireman's Outfit (Emergency Equipment).

77.30–10(a) The refrigeration gas mask is no longer required.

77.30–20(a) A complete set of spare batteries shall be carried for each flashlight in the Fireman's Outfit.

77.35–5(d) Each breathing apparatus shall have attached to its belt or harness, by means of a snaphook, a fireproof lifeline of sufficient length and strength.

78.14–10 Certificated lifeboatmen will be required for the additional required life rafts.

78.17–50(a) A muster of the passengers for fire and boat drill shall be held within twenty-four hours after leaving port.

78.47–60 The vessel's port of registry shall be painted on each side of the bow of lifeboats in letters not less than 3 inches high.

78.47–63 Life floats and buoyant apparatus shall be marked with the vessel's port of registry.

78.47–65 The vessel's port of registry shall be marked on the ring life buoys.

78.53–5 Form CG–811 (Revised 6–64) Lifesaving Signals and Breeches Buoy Instructions shall be available to the deck officer of the watch.

**Rules and Regulations for CARGO and MISCELLANEOUS VESSELS which are applicable to *existing* vessels.**

90.10–17(b) (Same as 70.10–21(b).)

94.10–5(b) (Same as 75.10–5(b).)

94.10–5(b)(3) (Same as 75.10–5(b)(4).)

(Items (a) thru (d) same as found in 75.15–10(c)(3).)

(e) Vessels with amidships and aft living spaces are required to have at least one life raft amidship and one life raft aft.

(f) Cargo vessels with all living spaces amidship require at least one life raft amidship.

(g) Cargo vessels with all living spaces aft require at least one life raft aft and at least one life raft of not over 8 person capacity forward in a location protected from boarding seas.

94.15–10(b)(6) (Same as 75.15–10(b)(7).)

94.20–10(n) (Same as 75.20–10(n).)

94.20–10(kk) (Same as 75.20–10(mm).)

94.20–10(ll) (Same as 75.20–10(nn).)

94.20–10(mm) (Same as 75.20–10(oo).)

94.20–10(nn) (Same as 75.20–10(pp).)

94.20–10(oo) (Same as 75.20–10(qq).)

94.20–15(j) (Same as 75.20–15(j).)

94.40–5(b) (Same as 75.40–5(b).)

94.40–10(c) In addition to the presently required life preservers, all vessels shall be provided with additional approved adult life preservers for 5 percent of the persons carried. Such vessels carrying persons in addition to the crew shall be provided with life preservers suitable for children when children are on board.

94.40–90(a)(2)(i) (Same as 75.40–90(a)(2)(i).)

94.43–10(b) (Same as 75.43–10(b).)

94.43–10(c) (Same as 75.43–10(c).)

94.50–5(b)(2) (Same as 75.50–5(a)(3).)

94.50–15(a) Suitable illumination shall be provided for the life raft stowage areas.

95.05–1(b) In each compartment containing explosives, and in adjacent cargo compartments, there shall be provided an approved smoke detecting or other suitable type approved fire detecting system.

95.05–20(b) (Same as 76.05–30(b).)

95.10–10(c) (Same as 76.10–10(c).)

96.35–5(d) (Same as 77.35–5(d).)

96.35–10(a) (Same as 77.30–10(a).)

96.35–20(a) A complete set of spare batteries shall be provided for the flashlight in the Fireman's Outfit. The spares shall be stowed in the same location as the flashlight.

97.14–10 (Same as 78.14–10.)

97.37–37 (Same as 78.47–60.)

97.37–40 (Same as 78.47–63.)

97.37–43 (Same as 78.47–65.)

97.43–5(a) (Same as 78.53–5.)

**Rules and Regulations for TANK VESSELS which are applicable to *existing* vessels.**

30.01–36(b) (Same as 70.10–21(b).)

33.01–30(d) (Same as 75.10–5(b).)

33.10–30(f) (Same as 75.10–5(b).)(4).)

33.05–1(e) All tank ships shall be provided with approved life rafts of such aggregate capacity to accommodate at least one half the total number of persons allowed. Those tank ships having widely spaced accommodations and/or working spaces shall have at least one life raft in each such location.

(1) To amplify the requirements concerning inflatable life rafts the following additional considerations apply:

(Items (1)(a) thru (1)(d) same as found in 70.15–10(c)(3).)

(e) Tank ships with amidships and aft living spaces are required to have at least one life raft amidship and one life raft aft.

(f) Tank ships with all living spaces amidship require at least one life raft amidship.

(g) Tank ships with all living spaces aft require at least one life raft aft and at least one liferaft of not over 8-person capacity, forward in a location protected from boarding seas.

33.15–5(n) (Same as 75.20–10(n).)

33.15–5(kk) (Same as 75.20–10(mm).)

33.15–5(11) (Same as 75.20–10(nn).)

33.15–5(mm) (Same as 75.20–10(oo).)

33.15–5(nn) (Same as 75.20–10(pp).)

33.15–5(oo) (Same as 75.20–10(qq).)

33.15–10(j) (Same as 75.20–15(j).)

33.20–1(4) (Same as 94.50–15(a).)

33.20–1(f) (Same as 75.15–10(b)(7).)

33.25–5(b) (Same as 78.47–60.)

33.30–5 (Same as 78.14–10.)

33.35–1(b) In addition to the presently required life preservers, all tank ships shall be provided with additional approved adult life preservers for 5 percent of the persons carried. The additional number of life preservers presently required for personnel on watch in the engine room and pilot house may be counted toward meeting this requirement.

33.35–1(c) (Same as 75.40–5(b).)

33.35–15(b) (Same as 75.40–90(a)(2)(i).)

33.40–5(b) (Same as 75.43–10(b).)

33.40–5(c) (Same as 75.43–10(c).)

35.01–20 (Same as 75.50–5(a)(3).)

35.12–5 (Same as 78.53–5.)

35.30–20 (Same as 77.35–5(d).)

35.40–40(b) The port of registry of the vessel shall be marked on all lifeboats, buoyant apparatus, and ring life buoys. On lifeboats, the name of the vessel and the port of registry shall be marked on each side of the bow.

## NATIONAL SAFE BOATING WEEK, 1965

### By the President of the United States of America

### A Proclamation

**WHEREAS** many millions of Americans have the opportunity in this great Nation to enjoy the healthful sport of boating in their leisure hours; and

**WHEREAS** the importance of boating safety should be impressed upon every individual who pursues this outdoor pastime so that the useless waste of lives and property may be avoided; and

**WHEREAS** a continued awareness by the public of the need for safety on the waterways can only be assured by recurring emphasis by the boating industry, boating organizations, Federal and State agencies, and boating enthusiasts on the critical necessity for compliance with safe boating principles; and

**WHEREAS** the Congress of the United States, in seeking to focus national attention on the importance of safe boating practices, by a joint resolution, approved June 4, 1958 (72 Stat. 179), has requested the President to proclaim annually the week which includes July Fourth as National Safe Boating Week:

**NOW, THEREFORE, I LYNDON B. JOHNSON, PRESIDENT OF THE UNITED STATES OF AMERICA,** do hereby designate the week beginning July 4, 1965, as National Safe Boating Week.

I strongly urge all Americans to do their utmost during this Week and throughout the year to unite in the pursuit of making boating one of the safest and most enjoyable of all recreational activities.

I also invite the Governors of the States, the Commonwealth of Puerto Rico, and other areas subject to the jurisdiction of the United States of America to join in this observance in order to provide impetus in stressing recreational boating safety during the Week and the entire year.

**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 second day of April in the year of our Lord nineteen hundred and sixty-five, and of the Independence of the United [seal] States of America the one hundred and eighty-ninth.

**LYNDON B. JOHNSON**

**By the President:**
**DEAN RUSK,**
*Secretary of State.*

# MERCHANT MARINE SAFETY PUBLICATIONS

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

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

| CG No. | TITLE OF PUBLICATION |
|---|---|
| 101 | Specimen Examination for Merchant Marine Deck Officers (7–1–63). |
| 108 | Rules and Regulations for Military Explosives and Hazardous Munitions (8–1–62). |
| 115 | Marine Engineering Regulations and Material Specifications (9–1–64). F.R. 2–13–65. |
| 123 | Rules and Regulations for Tank Vessels (4–1–64). F.R. 5–16–64, 6–5–64, 3–9–65. |
| 129 | Proceedings of the Merchant Marine Council (Monthly). |
| 169 | Rules of the Road—International—Inland (6–1–62), F.R. 1–18–63, 5–23–63, 5–29–63, 7–6–63, 10–2–63, 12–13–63, 4–30–64, 11–5–64, 12–18–64, 5–8–65. |
| 172 | Rules of the Road—Great Lakes (6–1–62). F.R. 8–31–62, 5–11–63, 5–23–63, 5–29–63, 10–2–63, 10–15–63, 4–30–64, 11–5–64, 5–8–65. |
| 174 | A Manual for the Safe Handling of Inflammable and Combustible Liquids (3–2–64). |
| 175 | Manual for Lifeboatmen, Able Seamen, and Qualified Members of Engine Department (3–1–65). |
| 176 | Load Line Regulations (7–1–63). F.R. 4–14–64, 10–27–64. |
| 182 | Specimen Examinations for Merchant Marine Engineer Licenses (7–1–63). |
| 184 | Rules of the Road—Western Rivers (6–1–62). F.R. 1–18–63, 5–23–63, 5–29–63, 9–25–63, 10–2–63, 10–15–63, 11–5–64, 5–8–65. |
| 190 | Equipment Lists (8–3–64). F.R. 10–21–64, 10–27–64, 3–2–65, 3–26–65, 4–24–65, 5–26–65. |
| 191 | Rules and Regulations for Licensing and Certificating of Merchant Marine Personnel (2–1–65). F.R. 2–13–65. |
| 200 | Marine Investigation Regulations and Suspension and Revocation Proceedings (10–1–63). F.R. 11–5–64, 5–18–65. |
| 220 | Specimen Examination Questions for Licenses as Master, Mate, and Pilot of Central Western Rivers Vessels (4–1–57). |
| 227 | Laws Governing Marine Inspection (6–1–62). |
| 239 | Security of Vessels and Waterfront Facilities (7–1–64). |
| 249 | Merchant Marine Council Public Hearing Agenda (Annually). |
| 256 | Rules and Regulations for Passenger Vessels (4–1–64). F.R. 6–5–64. |
| 257 | Rules and Regulations for Cargo and Miscellaneous Vessels (9–1–64). F.R. 2–13–65, 3–9–65. |
| 258 | Rules and Regulations for Uninspected Vessels (1–2–64), F.R. 6–5–64, 6–6–64, 9–1–64, 5–12–65. |
| 259 | Electrical Engineering Regulations (7–1–64). F.R. 2–13–65. |
| 266 | Rules and Regulations for Bulk Grain Cargoes (7–1–64). |
| 268 | Rules and Regulations for Manning of Vessels (2–1–63). F.R. 2–13–65. |
| 269 | Rules and Regulations for Nautical Schools (5–1–63). F.R. 10–2–63, 6–5–64. |
| 270 | Rules and Regulations for Marine Engineering Installations Contracted for Prior to July 1, 1935 (11–19–52). F.R. 12–5–53, 12–28–55, 6–20–59, 3–17–60. |
| 293 | Miscellaneous Electrical Equipment List (6–1–64). |
| 320 | Rules and Regulations for Artificial Islands and Fixed Structures on the Outer Continental Shelf (10–1–59). F.R. 10–25–60, 11–3–61, 4–10–62, 4–24–63, 10–27–64. |
| 323 | Rules and Regulations for Small Passenger Vessels (Under 100 Gross Tons) (2–3–64) F.R. 6–5–64. |
| 329 | Fire Fighting Manual for Tank Vessels (4–1–58). |

## CHANGES PUBLISHED DURING MAY 1965

The following have been modified by Federal Registers:

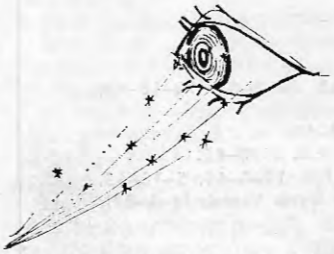
CG–169, 172, and 184 Federal Register, May 8, 1965.
CG–258 Federal Register May 12, 1965.
CG–200 Federal Register May 18, 1965.
CG–190 Federal Register May 26, 1965.



U.S. GOVERNMENT PRINTING OFFICE:1965

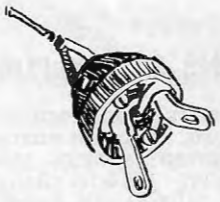
# DON'T PLOT AGAINST YOURSELF

WITH SELF-MADE MANTRAPS!



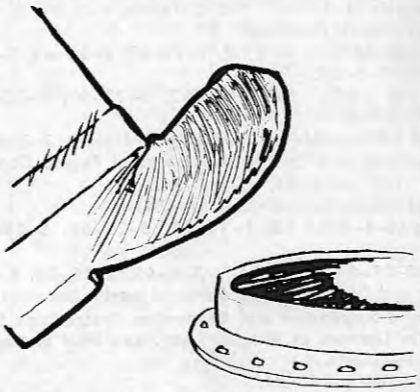
"IT'S ONLY A SMALL DRILL I'M SHARPENING - I'LL USE SAFETY GLASSES NEXT TIME."

**MANTRAP NO. 1**



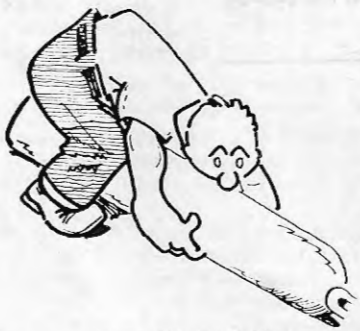
"I SHOULD REPLACE THAT PLUG - BUT I'M GETTING OFF TOMORROW—"

**MANTRAP NO. 3**



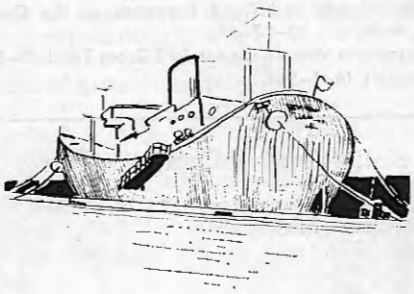
"I WON'T CLOSE THIS MANHOLE - NOBODY ELSE IS COMING DOWN TODAY."

**MANTRAP NO. 4**



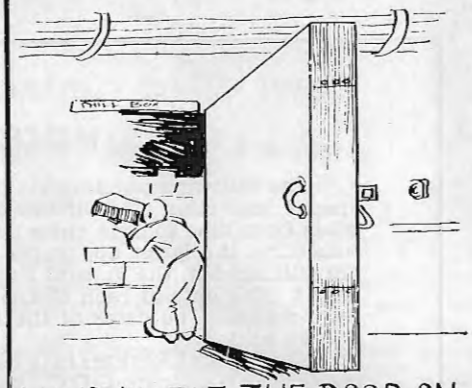
"I SHOULD HOLLER FOR HELP - BUT I USED TO LIFT 700 POUNDS AS A KID!"

**MANTRAP NO. 2**



"WE DON'T HAVE TO DROP THE GANGWAY - THE TIDE IS GOING OUT SHORTLY."

**MANTRAP NO. 5**



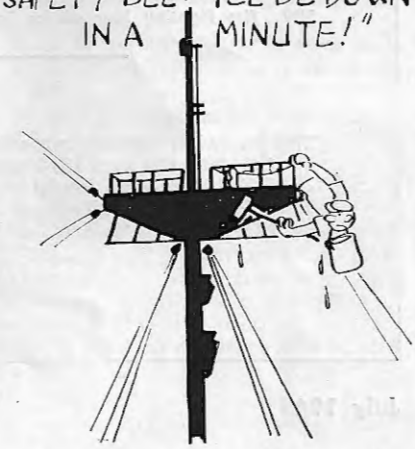
"I WON'T PUT THE DOOR ON THE HOOK - THE SHIP HASN'T ROLLED ALL DAY."

**MANTRAP NO. 6**

"NO USE CLEANING UP THE GARBAGE 'TIL WE GET OUT TO SEA."

**MANTRAP NO. 7**

"REALLY NO NEED FOR A SAFETY BELT - I'LL BE DOWN IN A MINUTE!"



**MANTRAP NO. 8**