PROCEEDINGS

OF THE MERCHANT MARINE COUNCIL

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PROCEEDINGS

OF THE

MERCHANT MARINE COUNCIL

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PROCLAMATION 3421

FIRE PREVENTION WEEK, 1961

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

WHEREAS an unconscionable number of lives and approximately a billion dollars worth of property are lost each year because of fires which could have been prevented or controlled; and

WHEREAS our communities and the Nation can ill afford this inexcusable waste of our resources:

NOW, THEREFORE, I, JOHN F. KENNEDY, President of the United States of America, do hereby designate the week beginning October 8, 1961, as Fire Prevention Week.

I urge State and local governments, the American Red Cross, the Chamber of Commerce of the United States, and business, labor and farm organizations, as well as schools, civic groups, and public-information agencies, to observe Fire Prevention Week by bringing fire safety facts effectively to the attention of the public. I call upon all citizens to understand and personally support the fire prevention and control efforts of their respective community fire departments. I also direct the appropriate Federal agencies to assist in this effort to reduce the shameful waste caused by preventable fires.

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 twentieth day of July in the year of our Lord nineteen hundred and sixty-one, and of the [SEAL] Independence of the United States of America the one hundred and eighty-sixth.

JOHN F. KENNEDY

By the President:
DEAN RUSK,
Secretary of State.

DIST. (SDL NO. 73)

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

WANTED—COMMON SENSE

By E. J. Gossen, CHMACH, USCG

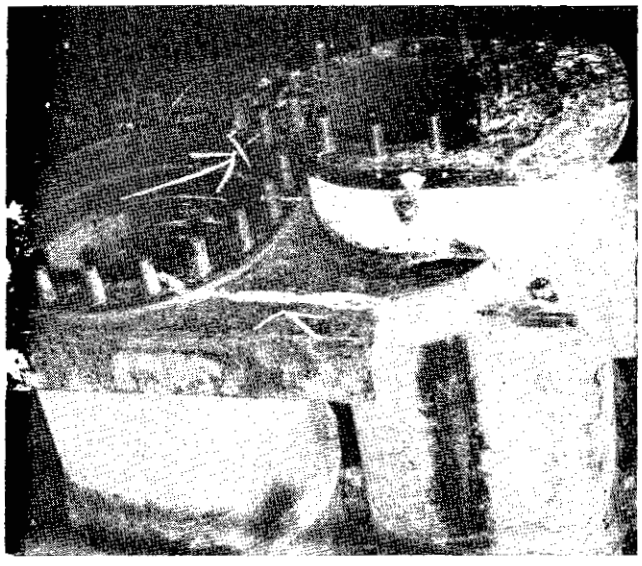

FIGURE 1.

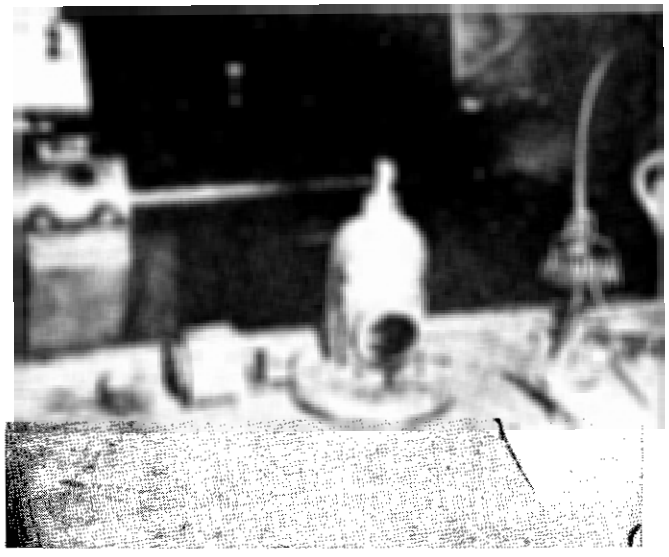

FIGURE 2.

ADVERTISEMENTS for the sale of modern machinery are generally highlighted by mention of safety devices incorporated in the unit. They do not, however, stress the fact that the operator must use common sense in depending on such devices. These eye-catching ads cannot be expected to give a course in safety, nor do they point up the fact that when a marine engineer hangs his license on the bulkhead he has been hired to apply his common sense.

When any pressure system is designed, the size and capacity of the safety devices are calculated in proportion to the output capacity of the pressure-making means, i.e., boiler safety valves are correlated to the heating surface and BTU's per hour of the furnace; compressed gas and water pressure system relief valves vary in accordance with the piston diameter and stroke of the pump, or, in the case of a remote tank such as a household hot water tank to the size of the inlet pipe.

The size of the tank itself in any pressure system has nothing to do with a properly designed pressure relieving system. Any misunderstanding of this fact can cause trouble.

In 1769 James Watt patented his improvement of Newcomen's steam pump. He had added a steam chest and valves operated by an eccentric and rod. This was progress, as it increased the engine speed and power. Progress in this case put the boy who had operated the valve by hand out of a job, and to Watt's dismay, he discovered the added danger of a dead-center crank starting position with his valve arrangement. Ever since that discovery all operating instructions for reciprocating engines have noted this and warned engineers on the danger of starting in that position.

H.P. CYLINDER CASUALTY

The facts surrounding a main propulsion machinery "accident" suffered by a "steamer" recently will serve to illustrate what can go wrong. The unit, a triple expansion "knee-action turbine," built in 1907 and still running strong, was the victim. The vessel was moored for 17 hours during unloading operations, and the high pressure crank of the main engine had been placed on bottom center to facilitate repair of the valve cages on the air pump connected to that cylinder's con-rod cross-head. A known leak of "negligible" size in the throttle valve partially filled the high pressure cylinder with condensate. The gun was now loaded.

WARM-UP PROCEDURE DISCUSSED

Normal "warm-up" procedure is accompanied by the opening of certain drains and bleeders, and then "cracking" the throttle valve to start rotation. As the engine slowly moves, the Stephenson Link Motion valve control lever is moved back and forth, to successively change the rotation of the engine before any piston reaches top or bottom center. Several minutes of this operation will pump all condensate progressively through the engine and into the condenser. The opened bleeders indicate by a peculiar sound when the cylinders are clear of condensate and receiving clean steam. Among the aids to proper machinery handling is also a small (2-inch) by-pass line to allow throttle pressure steam to by-pass the HP cylinder and go directly to the IP (intermediate pressure) and/or LP (low pressure) cylinder. Basically this is an aid to start the engine when the HP crank is on dead center, as the expansion of steam from the small line is "gentle" in the comparatively larger cylinders. The by-pass line can also be used to give a small added impetus when the engine is running at full load and speed.

PURPOSE OF A RELIEF VALVE

Installed on each cylinder is a "relief valve." These valves are designed for the purpose of relieving *small* quantities of water (if the boilers prime) or steam (if the cylinders are over-loaded when running at maximum speed using the by-pass lines, or if the valve lap and lead setting is incorrect).

'THAR SHE BLOWS

In starting up the engine after completion of the repairs, no attempt

(*Continued on page 177*)

LARGE SHIP EFFECTS IN

By Captain Milton Breece

THE ADVENT of large, fast vessels has presented some very serious problems to those responsible for maintaining adequate channels and berths. It is no longer just a question of dredging to a depth sufficient to provide adequate clearance under the keel of a vessel in still water.

Let us consider some of the problems of handling 35,000 dwt and larger bulk carriers in restricted channels, particularly in regard to the following:

a. Increased drafts and decreased maneuverability due to wave and swell action at harbor and channel entrances.

b. Decreased bottom clearance due to "squat"—a phenomenon of which I am sure you are all aware—in restricted channels.

c. The various factors affecting a vessel's maneuverability in channels of restricted width and depth due to decreased rudder effect, bank suction and other factors.

Wave and swell action is in general most applicable to loaded vessels entering port. The same conditions, however, apply to loaded vessels leaving port in certain locations, such as the Gulf Coast of the United States between Louisiana and Texas.

Pedro Miguel Locks, Pedro Miguel, Canal Zone.

INCREASE IN DRAFT

Wave and sea action cause the draft of a 50,000 dwt vessel to increase approximately one foot per degree of roll. We believe the maximum roll that will be experienced on vessels of 50,000 dwt and above due to wave action near harbor entrances in normal weather will be 5°, with a resultant increase in draft of five feet or slightly more. It is generally believed that not much pitch will be experienced on these large vessels due to the decrease in the length of waves as they advance into shallower depths which are usually found in the vicinity of the majority of harbor entrances. However certain locations, such as the approaches to the Sabine-Neches Waterway in the Gulf of Mexico, are relatively exposed. A large tanker recently touched bottom in the area between Sabine Bar and East End Buoy due to swell conditions and suffered $36,000 in bottom damages.

Experience may prove that the effects of roll and pitch have been underestimated. If that latter proves to be the case, some delays can be expected when a large vessel arrives off the harbor entrance. She may have to wait for moderate weather to be assured of sufficient bottom clearance for a safe entrance into the harbor channel.

Harbor entrances such as those found off San Francisco and the Columbia River Bar near Portland, Oregon present special problems due to the unique conditions in these locations. The abrupt shoaling in the vicinity of the bars causes exceptionally heavy swells in and near the entrances to these channels. These swells have caused smaller vessels to yaw excessively while crossing the bar. Several have grounded due to uncontrollable yaw. Waves and swells have caused others to strike bottom in the channel. Heavy swells from astern or on the quarters in shoal water tend to make steering extremely difficult. The forward motion of the swells causes a vessel's stern to act somewhat similar to a surfboard. Although larger vessels are less affected by this wave action, some pitching, yawing, rolling and sounding can be expected when crossing a bar during rough weather.

INCREASE IN STERN TRIM

For some time it has been known that a vessel underway at high speeds will apparently sink deeper in the water with a corresponding change of trim. This phenomenon became quite apparent with the advent of the high speed destroyer. It was noted that the height of the sea astern a destroyer traveling at high speeds was, at times, nearly level with the eyes of a man standing on the poop deck. The effect became more pronounced when the vessel was entering or leaving port through restricted channels.

Little attention was paid to this phenomenon by those concerned with merchant ships other than to note that more power was required to propel vessels at a given speed in restricted channels than was normally required in deep open water. However, persistent reports of vessels touching bottom in channels where the known depth was in excess of the vessels' draft made "squat" a real problem.

In 1904 the U.S. Army Engineers conducted a series of observations of vessels over 500 feet in length underway in Ambrose Channel at New York to determine the cause of the apparent increase in draft. These tests indicated that squat actually exists. That is, vessels underway actually float in a reduced water level caused by the motion of the vessel.

Since that time additional observations have been conducted in the

RESTRICTED CHANNELS

and Captain James G. Moffitt

Photo *courtesy Sun Oil Company.*

Delaware River, Panama Canal, model basins and at other locations. The objects were to determine the cause and magnitude of this apparent sinkage; the relationship between squat and the vessel size, speed, depth of water and cross-sectional channel area, and to determine maneuverability, rudder efficiency, etc.

EXPERIMENTS CONDUCTED

The model basin experiments indicated that when a vessel is underway the water ahead of the vessel moves forward, outward and downward in the form of a bow wave. At a comparatively short distance aft of the bow the forward motion ceases but the water still moves outward and downward to make way for the body of the vessel. Near this point the water starts to flow aft. This reverse flow continues to within a short distance aft of the stern, where the water closes in and upwards behind the vessel and has a forward motion in the form of a following stern wave.

Wherever changes in water velocity occur there is a change in the level of the water surface. In shallow water or restricted channels, the region of disturbed water about the vessel is confined to a relatively small area. Therefore, the reverse flow of water relative to the vessel has a greater velocity than in open water.

Thus, the change in the water level, due to the accelerated reverse flow, results in a reduced water level between the bow and stern wave. In effect, the vessel is floating in a trough between the bow and stern wave, the mean level of which is below the mean level of the surrounding undisturbed free water. This floatation in a reduced water level in the immediate vicinity of the vessel is known as squat.

As a result of several surveys, it has been concluded that (1) squat increases with an increase in speed, the rate of increase becoming greater with higher speeds; (2) for any given speed, squat generally increases with a decrease in depth of water under the keel and is more pronounced where the ratio of the cross-sectional area of the channel to the cross-sectional area of the immersed portion of the vessel is 4.5 to 1 or less. The latter is due to the accelerated reverse flow caused by the restricted cross-sectional area of the channel. The majority of observations have indicated that vessels loaded on an even keel have a tendency to squat slightly more by the bow than by the stern.

Squat observations taken in the Maracaibo Channel show that a 35,000 dwt tanker proceeding at 10 knots will squat 2 feet where the depth of water exceeds vessel's normal draft by 8 feet, thus resulting in a keel clearance of 6 feet. A squat of over 4 feet was observed on one tanker proceeding at 17 knots in the Maracaibo Channel.

Model basin tests were made of a 77,000 dwt tanker proceeding through a mock replica of the Suez Canal between Km 155.8 and Km 160.5 (one of the most difficult sections of the Canal to traverse due to strong currents, large Red Sea tides and a 40° channel bend). The tests indicate that a vessel of this size with a draft of 38 feet will squat nearly 3 feet with little change in trim at a speed of 6.5 knots. As the Canal is 51.5 feet deep in this area, the keel clearance would be 10.5 feet. These tests also indicated that when the vessel is loaded to a draft of 38 feet, it can reach the relatively low speed of only about six knots in narrow sections of the canal, even with the engine turning at full power. This imbalance in the vessel's normal speed/power relationship is due to (1) the frictional resistance of the accelerated reverse current flow along vessel's bottom and sides, (2) the increase in gravity resistance caused by the increase in size of the accompanying bow and stern waves, and (3) decreased propeller efficiency resulting from additional turbulence and other factors.

TAIL WAGS THE DOG

From this it can be seen that in very restricted channels a large vessel's squat will be controlled by vessel's speed which in turn will be controlled by available power. In fact, in this case it appears the tail wags the dog. Each factor, of course, is directly related to the other. As the vessel proceeds from a very restricted section of the channel to a less restricted section an increase in speed and squat is experienced. If no increase in depth of water is available, vessel may ground.

Because the maximum possible speed of a very large vessel transiting the Suez Canal is low, a limitation on the time available for a convoy to transit the canal could conceivably preclude the use of these vessels at deeper drafts. Since the controlling factor in a convoy's speed is the speed of the slowest ship, a very large ves-

sel may not be able to keep up with the convoy. Also, the extreme turbulence created by a loaded vessel of this size at maximum possible speed may cause the canal slopes to erode excessively, thus resulting in a rapid siltation at the canal bottom. These factors may cause a draft limitation to be placed on very large vessels that will be less than the maximum allowable drafts for smaller vessels. The Suez Canal Authority is presently conducting tests to determine the limitations, if any, that may be imposed.

Loaded tankers with a small amount of keel clearance proceeding in restricted channels, such as are found at the Maturin Bar in the approaches to Caripito Venezuela and in the LaPlata River near Buenos Aires, sometimes reach speeds necessary to produce squat equal to the keel clearance. Since the squat is slightly larger at the bow than at the stern, the vessel's bow touches bottom first causing vessel to sheer and occasionally ground near the channel sides. In such cases reduced speed should prevent grounding. As Masters and Pilots become more aware of squat it is believed such grounds will decrease.

BOW WAVE PHENOMENON

Accidents befalling two of Humble's larger tankers impressed us rather emphatically with the phenomenon of the bow or shock wave preceding a vessel.

One vessel, securely moored to a dock in the Sabine-Neches ship channel was caused to heave so violently against her lines that the dock bollards were pulled free and the vessel swung away from the berth.

A second vessel, at Harbor Island, Texas, was caused to surge severely at her berth resulting in the parting of several mooring lines and bringing the master hurriedly to the bridge to identify the cause of the disturbance.

In both cases, the only vessels in sight were still approaching the dock areas and both more than one mile distant.

Recent observations and model basin tests indicate that these bow waves precede the vessel, in restricted channels, to a distance far beyond our previous beliefs.

These experiments also indicated that, in such restricted channels, the waves reverberate from the sides of the channel with increased velocity. This in turn causes the wave to accelerate until it reaches a maximum velocity proportional to the square root of the channel depth.

Although considerable data has been obtained from the aforementioned tests, it is apparent that we must engage in more research on the subject in order that we may arrive at some more definite conclusions.

Captain Moffit is Operating Superintendent of Esso Tankers, Inc., and Captain Breece is Manager, Operating Department of the Marine Division of Humble Oil and Refining Co. The Captain's paper entitled "Comparison of U.S. and Foreign Port Development and Large Ship Effects in Restricted Channels" which was delivered at the recent annual Tanker Conference of the API. The article presented here is extracted from that portion of the paper dealing with the effect of restricted channels on large ships. ED.

VARIOUS FACTORS AFFECTING A VESSEL'S MANEUVERABILITY IN CHANNELS OF RESTRICTED WIDTH AND DEPTH

Having covered some of the navigational problems of wave action and squat we will now pass on to other factors affecting a vessel's maneuverability in a restricted channel. Actually, squat is closely related to maneuverability since the depth of the water under a vessel's bottom has a direct effect on both speed and rudder action. The width of a channel is perhaps the next most important factor affecting maneuverability, particularly where that width is less than five times the beam of the vessel.

A ship navigating in a narrow channel must necessarily operate near one side when passing other traffic. As the vessel nears the edge or bank of the channel, there is a tendency for the stern to move *toward* the near bank and an opposing tendency to force the bow *away* from the near bank. This is known as "bank suction." It is caused by the restricted area for the flow of water between the vessel's side and the nearest bank. This in turn results in a lowering of the water level in accordance with a basic law of physics that pressure in any fluid stream is least where the velocity is greatest and greatest where the velocity is least. If this accelerated flow on the side of the vessel nearest the bank were uniform, the vessel would be drawn uniformly toward the near bank. Such, however, is not the case.

BOW CUSHION—"BANK SUCTION" "SQUAT"

In our explanation of squat we mentioned that when a vessel is under way, the water ahead moves forward, outward and downward in the form of a bow wave and that at a comparatively short distance aft of the bow the forward motion ceases. Since the pressure is greatest where the velocity is least—the pronounced condition of the side of the bow nearest the bank—an effect called "bow cushion" is created. This forces the bow toward the opposite bank. We also mentioned that a reverse flow was experienced from a point a short distance aft of the bow to a point a short distance aft of the stern, where the water closing in and upward behind the vessel has a forward motion in the form of a following stern wave. When the bow sheers toward the opposite bank, the water between the stern and the bank is further compressed, resulting in an accelerated flow at the stern. Thus, bank suction is greater at the stern. It exerts a turning force that results in an increased sheer toward the opposite bank—in the direction of any passing traffic—and on occasions has caused collisions. Actually, bank suction is a misnomer, as is the word squat. Under the conditions just described the vessel is not sucked toward the bank, it is pushed by the pressure of water on the side of the vessel away from the bank. On this side a greater area is available for water flow. Consequently the water velocity is less and the pressure is greater. It is this increase in pressure that pushes the vessel toward the near bank. However, in accordance with customs we will continue to use the words bank suction and squat.

Bank suction explains why it is necessary for a vessel proceeding near a bank to use more helm in the direction of the bank than in the opposite direction in order to keep parallel to the bank. It can also be ap-

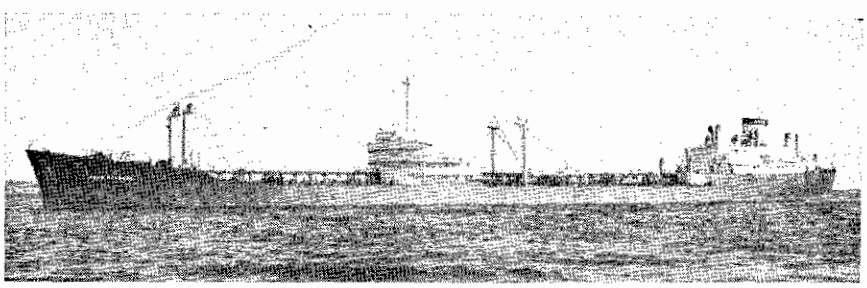

Photo *courtesy The Ships' Bulletin, Esso Shipping Company.*

plied to large vessels passing near each other, that is, when both vessels are nearer each other than they are to the banks. In such cases the vessels have a tendency to draw together for the reasons explained above. As the vessels pass, squat is increased due to the fact that the two vessels occupy a greater section of the cross channel area. A tendency to heel slightly is also experienced, caused by a combination of the forces previously discussed. This additional squat and heel results in a further reduced keel clearance with the attendant dangers.

HAZARDOUS MANEUVER

Several years ago, before the widening of the Houston Ship Channel, the Houston Pilots used a hair-raising maneuver when passing in the narrow sections of the channel. When approaching, each vessel would hold the center of the channel and steer directly for the other. Just before meeting, each vessel would apply right rudder and, in effect, head for the bank. As the bows passed, rudders would be put amidships. As the bows cleared the banks, the cushion effect and a small amount of left rudder would cause a swing to the left, thus aligning each vessel with the channel and each other. When the vessels were abreast, a small amount of left rudder would be applied, causing the sterns to swing clear of each other. Then each pilot would realign his vessel and proceed in the center of the channel. This maneuver came as quite a shock to one Master transiting the channel for the first time. However, the maneuver was necessary to counteract the suction forces and prevent each vessel from sheering into the other. Needless to say, the operation had to be, and was performed to perfection in order to avoid serious casualties. The hazards involved in such an operation are obvious.

In the Suez Canal, where cutouts are provided to allow large ships to pass one another, pilots have reported a serious tendency for ships to sheer into the cutouts as they come abreast of them. In some cases vessels have collided with other vessels waiting in the cutouts when it initially appeared they were passing with a safe margin. This can be explained by the sudden removal of the bank effect. A vessel proceeding in the center of a channel will have an equal amount of bank effect on each side. A sudden removal of bank effect on one side will cause the vessel to sheer to the side toward the cutout unless corrective rudder force is applied.

Bank suction effect is usually dependent upon the size and speed of the vessel. The force on the ship varies generally as the square of the speed.

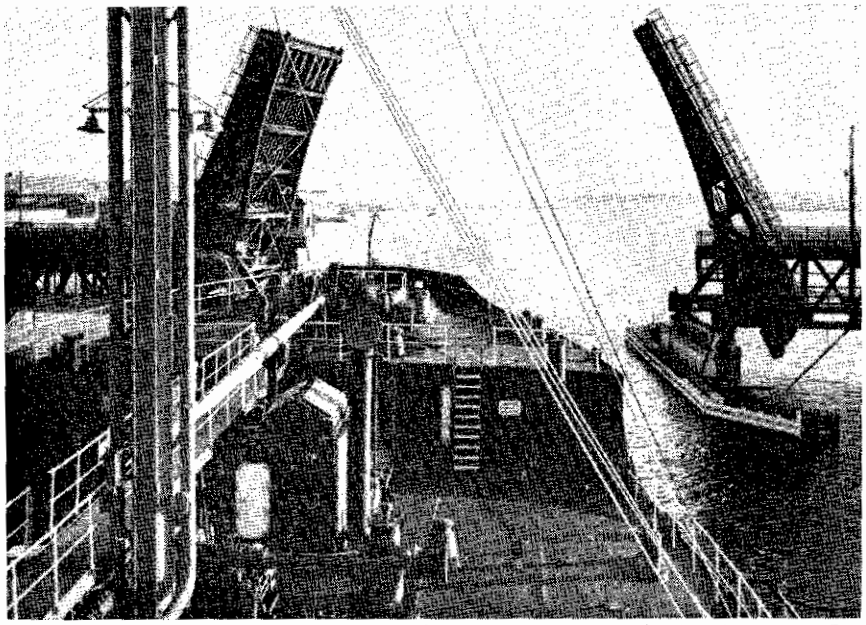

Photo *courtesy Socony Mobile Oil Company, Inc.*

Current has a profound effect on large vessels in restricted channels. A cross current obviously will tend to make a vessel "crab" up or down a channel, thus using a greater portion of the width of the other channel than with a current parallel or opposed to the ship's course. This problem is compounded if the vessel must pass through a restricted opening such as a bridge or when meeting traffic.

EFFECT OF STEMMING A CURRENT

When stemming a tide or head current, a vessel tends to yaw quickly and often, though the rudder is very effective in keeping the vessel's head steady. Frequent use of the helm and extreme vigilance on the part of the pilot and helmsman are required. When turning to follow the bend in a channel against a head current, care must be taken not to turn too late, as the current can get on the vessel's inboard bow (in the direction of the turn) and cause the ship to be set in the direction of the outer bank. The proper heading of the vessel at any moment during the turn is approximately parallel to the banks at that point in the turn.

FOLLOWING CURRENT EFFECT

With a following current, a ship yaws more slowly and the response to the rudder is sluggish. Consequently, deviations in her course are long and sometimes pronounced. Here, it is better to turn early rather than late. In the former case the current will tend to carry the vessel back into the center of the channel. In the latter, a grounding may result on the outside bank.

Wind effect on a loaded tanker is generally negligible. However, with a tanker in ballast, it must be taken into account when maneuvering. Generally, a tanker with the engines going astern will tend to back into the wind when way is off unless the wind is on the starboard side or quarter. With no wind a vessel will usually back to port.

As with current, a cross wind will cause a ballasted vessel to "crab" appreciably, thereby utilizing an additional amount of channel width.

MANEUVERING PROBLEMS

Maneuvering a large vessel in a restricted channel where insufficient room is available for turning presents a formidable problem when there is a following current. If fog sets in during this maneuver, the problem is magnified unless the vessel is equipped with a stern anchor, as are Esso's tankers of 35,000 dwt and over. If not equipped with a stern anchor and the conditions described above are encountered, vessel must either continue underway with the attendant risks of collision and/or grounding, or stop and anchor. In the latter case a ship's stern will swing into the bank or ground. Either way, damage to the rudder or bottom is well nigh assured. The vessel then becomes a barrier, blocking the channel, and risks collision with other vessels underway and unable to stop in time.

Under such conditions vessels with stern anchors need only anchor by the stern and use the bow anchor to keep her head steady. If she must remain

(Continued on page 178)

DUTY OF U.S. SHIP MASTER TO SICK OR INJURED MERCHANT SEAMAN

BY CAPTAIN FREDERICK K. ARZT, USCG

SENIOR INVESTIGATING OFFICER, NEW YORK, N.Y.

WHAT IS THE DUTY of the master of a merchant vessel, which carries no doctor, to provide care and attention to a seaman who becomes ill or is injured while the vessel is at sea?

DUE CARE IS REQUIRED

A review of the case law on this subject appears to indicate that the answer is that the master, as agent of the owner of his vessel, "is under a duty to provide such care and attention as is practicable under the circumstances."[1] However, like many dogmatic legal rulings, it leaves a master of a merchant vessel, who has a sick and injured seaman on his hands, still in doubt as what "is practicable under the circumstances." On this point, even the courts are vague for they have said reasonable care depends on the circumstances of each case.[2] The ruling of the Federal Court in the case of *The Governor*[3] appears to be of some assistance in resolving this dilemma. In this case, the Court, at page 859 stated:

"I think that due care requires that the judgment of officers when dealing with injured seamen should be exercised, not only with such knowledge as they possess, but also with such as they can readily acquire. There is some testimony that libellant expressed a desire to be carried to Seattle. In view of the uncertainty of the first assistant engineer upon this point, I cannot find that this is true. But, if it were true, it would not, in my judgment, absolve the ship from the failure of the master, or those acting for him, to ascertain libellant's real condition at Victoria. I am firmly of the opinion that a due regard for the rights of seamen should require, and does require in a case like the present, when an early opportunity is presented of easily ascertaining the nature and extent of an injury, the location and external appearance of which shows that it may be serious, the officers should take advantage of such opportunity, and failing to do so, they fail to accord to the seaman the care to which he is entitled."

TRANSFER at sea of injured merchant seaman to CGC *Ingham*.

This case, while a bit more specific, does not establish basic ground rules which a layman, such as a master of a vessel of the United States, can easily understand and follow while his vessel is at sea. Therefore, to fill this void the following suggestions are made:

SUGGESTIONS

FIRST—The vessel's hospital compartment, or sick bay, as required by law[4] should be always ready to receive the sick or injured patient. The practice of allowing extra crew members or passengers to occupy this space during a voyage should be discontinued since such occupancy obviously would prevent the space being "clean, workable and in a sanitary condition" as was intended by the United States Senate.[5]

SECOND—The "chest of medicine" required by law[6] should be designed and equipped in the manner described in Chapter IV, "The Ship's Medicine Chest and First Aid At Sea."[7]

LICENSED OFFICERS

THIRD—All licensed officers, including the radio officer, should be fully instructed as to how to secure competent medical advice (as well as removal of a critically ill or injured seaman from the vessel either by plane or vessel) by properly prepared radio messages.[8] For this purpose all Coast Guard radio stations are available as well as the AMVER Center[9] in New York. A careful log of all medico messages sent and received should be kept and the messages kept in a safe place so that they will be available as evidence both in Coast Guard investigations and courts of law.

PROCEDURE

FOURTH—If a seaman is sent ashore during a voyage for examination for an illness or an injury, such seaman should not be allowed to return to the vessel for the remainder of the voyage until the master has been personally informed of the nature of the seaman's injury or illness and the recommended treatment therefor. This information should be reduced to writing, if possible, and the writing carefully retained for use as evidence. If it is not possible to get the information in writing, a prompt entry in the vessel's Official Log Book should be made in detail.[10]

CRITICAL CASES

FIFTH—If the condition of a sick or injured seaman becomes critical while the vessel is at sea, the master should, if possible, divert the course of his vessel for the nearest port[11] or rendezvous point with another vessel. The courts have looked with jaundiced eyes upon the failure of ship masters to observe this humanitarian requirement. During this diversion, there should be a capable person assigned to keep constant watch on the sick or injured seaman.

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[1] *The Iroquois*, 194 U.S. 240; *Nietes* v. *American President Lines*, 1960 A.M.C. 1603, 1606.

[2] *DeZon* v. *American President Lines*, 318 U.S. 660, 667–8.

[3] *The Governor*, 230 F. 857, 859.

[4] Act of March 4, 1915, 46 U.S.C. 660–1.

[5] Senate Report No. 184, 75th Congress, March 17, 1937.

[6] R.S. 4569, 46 U.S.C. 666.

[7] USPHS and WSA ed. GPO, 1947.

[8] *The Van der Duyn*, 261 F. 887, 890.

[9] Atlantic Merchant Vessel Report.

[10] R.S. 4290, 46 U.S.C. 201.

[11] *Morris* v. *U.S.*, 3 F. (2d) 588, 591; the *Iroquois*, *supra*; *Nietes* v. *American President Lines*, *supra*; *Unica* v. *U.S.*, 287 F. 177, 180.

MENTAL CASES

SIXTH—In the case of a deranged ew member, the master should mptly confine this individual in a fe place for the protection of the anged man as well as other mem- rs of the crew.[12] Before confining m, the person of the deranged man ould be carefully searched for any eapons or articles of clothing with ich the deranged man could harm kill himself. The place of con- ement should also be carefully utinized for this purpose. Once e man is confined he should have a hour watch to see that he does not rm himself nor want for any basic cessity. Failure to observe these sic rules has resulted in costly dgment against vessel owners and some cases, administrative disci- ne by the U.S. Coast Guard against e offending master in the form of spension of his master's license. A her ironic note of caution must be serted here. There have been some ses which have held a vessel owner ble for injuries allegedly sustained the incompetent seaman while be- restrained. Therefore, when it comes necessary to restrain a de- ged seaman, only so much force as necessary to accomplish the re- aint should be used and thereafter atements of all who participated or nessed the restraint should be en and carefully preserved.

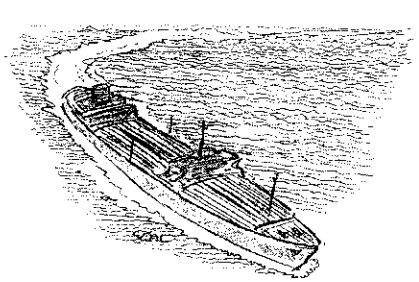
FOREIGN HOSPITALIZATION

SEVENTH—A reading of I.L.O. aft Convention No. 55,[13] together h the decision of the Supreme rt of the United States in the case *Warren* v. *United States*,[14] appears indicate that a sick or injured sea- n may be discharged abroad for spitalization before a United States nsul pursuant to R.S. 4480.[15] How- r, the mere legal authorization for discharge abroad of a sick or in- ed seaman should not be construed making it mandatory for a sick or ured seaman to leave the vessel in reign port for hospitalization. No seaman or otherwise, can be ced to accept medical and/or hos- l treatment. Some seamen are ctant to be discharged abroad for discharge stops the allotment to r dependents. In those cases where a competent physician in a foreign port recommends hospitalization for a sick or injured seaman and the seaman refuses to be hospitalized, the master cannot insist upon his discharge and hospitalization. In such a case, however, the complete incident should be recorded fully in the official log in the presence of competent witnesses and, if practicable, the sick or injured seaman and thereafter preserved carefully for possible use as defense evidence should the necessity arise.

MASTER'S RESPONSIBILITY

EIGHTH—When the master of a vessel of the United States has a sick or injured seaman aboard, while the vessel is at sea without a doctor or surgeon, he must take a personal interest in the seaman's condition, treatment and medicines used. He cannot delegate this responsibility to the purser or junior mate and then completely ignore the sick or injured seaman. An example of this type of disregard of responsibility is found in the case of a master, who issued a syrette of morphine to a purser without any inquiry as to the purpose for which the purser was going to use the morphine. The purser obtained the morphine for injection into an ill crew member who was allergic to morphine and when the morphine was injected the ill crew member died within minutes. The death of this crew member could possibly have been averted if the master had personally visited the sick man and determined for himself the sick man's condition; the medication, if any, required; and, the sick man's tolerance for such medication.

It will be seen from the suggestions set forth herein that the duty of a master of a vessel of the United States to a sick or injured seaman, while the vessel is at sea or in a foreign port, is extensive. It is believed, however, that if the foregoing suggestions are followed, considerable legal difficulties and litigation will be foreclosed and the sick or injured seaman given the care and attention required by law.



TAILSHAFT INSPECTION

A recent casualty aboard a Liberty-type vessel points up the importance of a thorough examination of a vessel's tailshaft, particularly at the inboard end of the liner.

The vessel in question lost her propeller at sea while en route to India with a load of grain. It had suffered a failure in the after section of the propeller shafting. At a shaft speed of 59 r.p.m. (10 knots) everything had functioned in a normal manner. There had been no racing of the engines during the passage as the propeller was well under water at all times. Less than an hour before the casualty, the chief engineer, in company with one of his assistants, toured the shaft alley.

When the vessel was on drydock, examination of the broken shaft revealed a straight, clean, all-around break at the precise inboard end of the bronze liner, which made this casualty an unusual one. It points up the fact that the tailshaft should be carefully examined throughout its length and not just in the way of the keyway and after end of the liner.

A visual examination for a crack initiating defect is very difficult to make in the areas at the ends of the tailshaft liners. As a possible solution to this difficult problem of crack detection, it is suggested that ultrasonic methods of examination be used when such equipment is available. An ultrasonic examination would be more effective in detecting cracks in the shaft at the juncture of the steel shaft and bronze liner than would the magnetic particle and liquid penetrant methods of nondestructive testing.

FLUME STABILIZATION SYSTEM

The new "roll dampeners" on the SS *Matsonia* are the first of their type to be fitted on a passenger liner. The Flume Stabilization System, which gets its name from the duct or flume that is an integral part of it, was installed when the *Matsonia* underwent her annual dry docking at Bethlehem Shipyard in San Francisco, and on her subsequent voyage to Hawaii the passengers, crew and technical experts were unanimous in their praise for the new system. The new "anti-roll" device reduces the ship's normal roll by as much as 80 percent. It is based on controlling a flow of water between port and starboard tanks, fitted at the ship's waterline, nearly midway between the aft smokestack and stern.

Beck v. *Pacific-Atlantic S.S. Co.*, 180 F. [illegible].

Ship Owner's Liability (Sick and Injured Seamen) Convention, 1936, eff. as to United States, October 29, 1939, 54 Stat. [illegible].

Warren v. *United States*, 340 U.S. 523, [illegible] Ct. 434, 95 L. Ed. 507.

46 U.S.C. 682.

MARITIME SIDELIGHTS

Experimental turn indicator signals are being tried out on board the MSTS vessel *Golden Eagle*. The turn signals consist of a number of two-headed arrows, 20 feet long, mounted on the flying bridge. The vessel will employ these signals at night when making turns. These signals indicate the direction in which the *Golden Eagle* is turning, and are *Not* intended to indicate action to be taken by the vessel observing these signals.

⚓ ⚓ ⚓

Oceangoing traffic through the Panama Canal reached a new monthly high recently when more than 1,000 ships made the passage. All but about a score were commercial vessels. It was the first time in the waterway's history that 1,000 or more ships of more than 300 tons passed through during a single calendar month.

⚓ ⚓ ⚓

The United States Senate by recent resolution has given its advice and consent to ratification of the International Convention for the Prevention of Pollution of the Sea by Oil, 1954 with the understanding that the instrument of acceptance will not be deposited until after implementing legislation has been enacted.

⚓ ⚓ ⚓

The Maine Maritime Academy graduated 62 Third Officers for service in the Merchant Marine at recent exercises. The men received Bachelor of Marine Science degrees and Coast Guard licenses, which will qualify them for service on American merchant vessels.

⚓ ⚓ ⚓

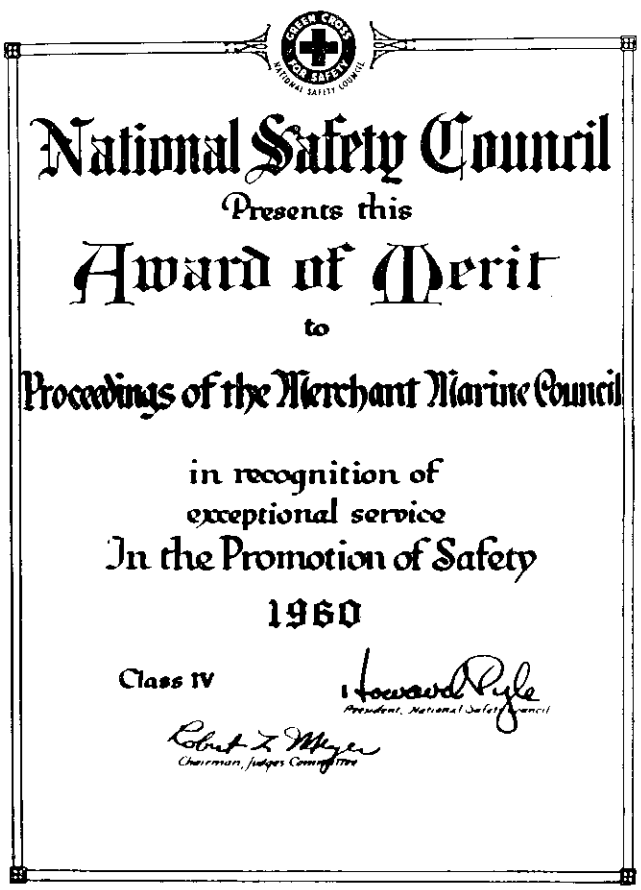
An Atomic Energy Commission examiner has held that there is "reasonable assurance" that the nuclear ship *Savannah* may be safely fueled and operated for test and demonstration purposes.

The report resulted from hearings held in March by the AEC to determine if the ship could be fueled without danger in Camden, N.J., and Yorktown, Va., for its initial sea trials.

Examiner S. W. Jensch pointed out that there is "an extremely low probability that a collision of sufficient severity to penetrate the *Savannah's* reactor compartment will occur in a harbor where population density may be high."

Initial sea trials for the ship, the world's first atomic powered merchant vessel, will take place in the near future according to Federal Maritime Board.

NATIONAL SAFETY COUNCIL AWARD



THE PROCEEDINGS is pleased to announce that for the fourth consecutive year the National Safety Council has honored this publication with an Award of Merit in the promotion of safety.

This award is the result of articles, suggestions, and comments contributed to this publication by the many persons in the maritime field who consider safety of life both at sea and ashore to be a primary concern. Without their efforts this award would not have been possible.

nautical queries

Q. Explain the steam and water circulation in a sectional-header type boiler equipped with a superheater.

A. Feed water enters the steam drum through the main and auxiliary feed stop and check valves connected to the perforated internal feed-pipe which runs the full length of the steam drum near the bottom. The relatively cool and heavy feed water sinks from the drum down through the front headers and enters the front ends of the tubes. The hot gases heat the water which expands, becomes relatively lighter, and rises through the tubes upwards and to the rear.

Steam bubbles form in the heated water and accelerate the flow of water and steam upwards to the rear headers. The steam and water rise in the rear headers and flow forward to the steam drum through the uppermost row of circulating tubes. The steam leaves the drum via the dry pipe and drum stop valve to the superheater.

The steam is superheated by the gases passing around the U-tubes of the superheater and then flows through the superheater stop valve to the main steam line.

Q. In what respects do small-tube water-tube boilers have an advantage over large tube boilers?

A. 1. Higher efficiency.

2. Greater adaptability to rapid changes in evaporation rate, due to its smaller tubes having a higher ratio of generating heating surface to volume of contained water.

3. Higher maximum evaporation rate, due to improved circulation of steam and water.

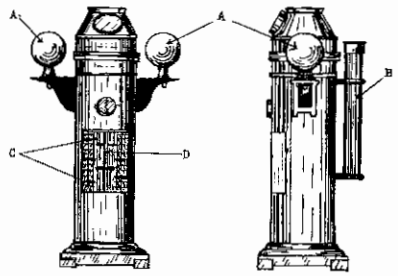
4. Less weight and space for the same maximum rate of steam generation.

Q. Explain how baffles and flame plates are installed in a three-pass, sectional header, low-superheat, water-tube boiler to give the path of the gases of combustion their necessary course.

A. The gases are forced to the rear of the furnace by fire brick roof blocks which are laid over the lower row of tubes and extend approximately two-thirds of the distance to the rear wall. These roof blocks are of special shape, hollowed out to fit over and around the tubes so that they form a solid, gas-tight inclined baffle. Cast iron flame plates are placed at right angles to the direction of the tubes and extend upward from the rear end of the roof blocks. The flame plate and baffle blocks form a wall between the tubes and direct the gases of combustion upward from the back end of the furnace to the superheater. Another row of flame plates extends downward between the front wall and the rear flame plates and direct the gases of combustion downward from the superheater to the bottom of the front flame plates and then up and out the uptakes.

MAGNETISM

Q. Name the corrector indicated by each letter on the sketch and state the type of magnetism each is designed to correct.



A. (a) Soft iron spheres to correct the quadrantal deviation caused by induction in symmetrical horizontal soft iron.

(b) Flinders bar to correct for deviation caused by induction in vertical soft iron.

(c) Fore and aft athwartships magnets to correct semicircular deviation caused by the permanent magnetism of the vessel.

(d) Heeling magnet to correct for heeling error caused by vertical permanent magnetism, vertical induced magnetism, and horizontal induced magnetism.

Q. Describe a waterwall as installed in a boiler. What purposes are served by the waterwall?

A. A waterwall consists of a series of vertical or inclined water tubes installed along one or more walls of the combustion chamber and exposed to direct radiant heat of the fire. These tubes are connected directly, or through headers and connecting nipples, to the circulatory system of the boiler.

Two purposes are served by the waterwall: (1) Added heating surface and boiler capacity are secured. Revamping and adding waterwalls to an existing boiler may even double its capacity. (2) Maintenance of the refractory wall is reduced greatly. This protection of refractory walls is extremely important when high combustion rates are desired. The practical combustion rate is about 18,000 to 25,000 B.t.u. per cu. ft. furnace volume per hr. when bare refractory walls are exposed to the furnace. But combustion rates of 40,000 to 200,000 B.t.u. per cu. ft. per hr. have been attained without difficulty with all refractory surfaces protected by waterwalls.

The circulation of water is upward through the wall tubes exposed to radiant heat. These tubes are supplied by water through headers connected by piping from one or more of the boiler drums and located outside of the boiler setting. The supply system is known as the "downcomer."

Blowdown valves are required for each header at the bottom of a series of waterwall tubes, for the same reasons that the boiler itself needs them. Sediment accumulation in a header supplying wall tubes might cause interruption of circulation, with consequent overheating and failure of the tubes.

Q. The mean diameter of the blades on a turbine rotor turning 400 r.p.m. is 48 inches. What is the relation of the steam velocity to the blade velocity, on the assumption that the steam flow has a velocity of 11,600 feet per minute through the rotor?

A. 48=4 ft.

$4 \times 3.1416 = 12.5664$ feet per revolution.

$12.5664 \times 400 = 5026.56$ feet velocity blade per min.

Steam velocity : blade velocity : : 11,000 : 5,026.56

$$\frac{11{,}600}{5026.56} = 2.307$$

Steam velocity is 2.307 times as great as blade velocity.

Q. Two vessels are in Latitude 50°–00′ N. They are 400 miles apart when they obtain radio direction-finder bearings of each other.

(a) Would they bear East and West from each other precisely on the uncorrected radio bearing?

(b) Would their bearings differ from the other by precisely 180°?

A. (a) The vessels would not bear precisely East and West from each other because radio direction finder bearings lay along great circles.

(b) Their bearings would not differ by 180° because in each instance the great circle between the two vessels would lay to the North of their common parallel.

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 8–61

AUGUST 1, 1961

Subj: Notice of Marine Casualty Reporting Forms CG–2692 and CG–924E; revision of

PURPOSE

a. The purpose of this circular is to acquaint the marine industry with subject revised forms (Report of Personal Injury or Loss of Life, CG–924E; and Report of Vessel Casualty or Accident, CG–2692) as well as the revised requirements for their submission.

b. In addition, the cooperation of the marine industry is solicited in effecting an efficient change-over from the old to the new forms.

BACKGROUND AND DISCUSSION

a. The regulations[1] which require that written notice of marine casualty be submitted to the Coast Guard have been amended, effective 1 September 1961, as follows:

(1) Casualties to persons to be reported on Report of Personal Injury or Loss of Life, Form CG–924E (Rev. 4–61); and

(2) Casualties to vessels to be reported on Report of Vessel Casualty or Accident, Form CG–2692 (Rev. 4–61).

The effect of this amendment is to require the reporting of deaths on the personal injury form, CG–924E, rather than on the vessel casualty form, CG–2692. Previous to these regulation changes, deaths were reported on CG–2692.

b. Both forms have been extensively revised; and in addition, the Report of Personal Injury or Loss of Life, Form CG–924E, has been expanded to provide more information. Past experience has shown that a more thorough understanding of personal injuries and deaths is necessary for effective corrective action. In major vessel casualties in particular, there is the tendency to ascribe the vessel casualty as the cause of all deaths and injuries, when in actuality the vesel casualty may only have been the first happening in a chain of events. The actual causes of the personnel casualties may have been failure of equipment, falling overboard, exposure in a lifeboat or other causes not directly connected to the initial casualty.

c. The information required by the revised forms is considered self-explanatory. When filling out the forms, each box should contain the designated information or the words "None," "Not Applicable" or "Unknown" as appropriate. Brief mention of some of the changes may be of interest. For example:

(1) On Form CG–2692:

(a) The "Date of Birth" of the master or person in charge is requested for identification purposes. Seamen's records at Coast Guard Headquarters are filed by name and date of birth.

(b) The "Time of Casualty" has been arranged to accommodate both ocean-going and lake or river timekeeping. In addition, space is provided for indicating whether the casualty occurred during the day, night or twilight periods.

(c) "Description of the Casualty" is used in place of "Cause of Casualty." The description asks for the events and circumstances leading up to the casualty and present when it occurred.

(d) Space has been added to permit a brief general description of the damages incurred. This description, to be of value for study purposes, should indicate the following: location of damage, the transverse, vertical and longitudinal extent of damage, and should include a brief statement outlining the extent to which specific spaces (i.e. cargo, accommodation, machinery, tank, etc. are affected.

(2) On Form CG–924E:

(a) "Date of Birth" of the person reported upon is included for the same reasons stated above in (1)(a).

(b) Deaths as well as injuries are now reported on this form. In addition, space is provided for cases where persons are missing under circumstances that suggest death and circumstances that would amount to a marine casualty, if the missing person were known to be dead.

(c) "Description of Casualty" has replaced the former heading of "How Did Injury Occur and Cause." This description asks for events leading up to the casualty and how it occurred.

(d) Space has been provided for listing four witnesses to the casualty. Frequently the injured person is hospitalized before the end of the voyage, and a list of witnesses may enable an investigation to be completed quickly and efficiently.

(3) Both forms have had the Coast Guard endorsement removed.

ACTION REQUIRED

a. On the effective date, marine casualties, other than those required to be reported on the Boating Accident Report, should be reported on the revised forms: Report of Vessel Casualty or Accident, Form CG–2692 (Rev. 4–61); and Report of Personal Injury or Loss of Life, Form CG–924E (Rev. 4–61).

b. The present forms, Report of Marine Casualty (or Accident), CG–2692 (Rev. 11–50), and Report of Personal Accident Not Involving Death, CG–924E (Rev. 1–56) should be destroyed on the effective date.

c. The revised forms may be obtained from the nearest Marine Inspection Office.

Effective Date 1 September 1961.

[1] Title 46 of the Code of Federal Regulations 35.15–1(c), 78.07–1, 97.07–10, 136.05–1 and 167.65–65(c).

SPONTANEOUS COMBUSTION

The following article is quoted from the minutes of a meeting of the Ship Safety Committee of one of California's Shipping Co. vessels:

"We agree that spontaneous combustion is not a myth. During our last voyage an A.B. was given the job of applying linseed oil and turps to the wooden bridge wind dodgers.

"He applied one coat with a rag and then left his rag and can of linseed oil back in a corner under the ladder to the flying bridge with the intention of returning some time later to apply another coat.

"In less than 1 hour's time the rag started to smolder and was discovered by the third mate just as it burst into flames.

"He immediately extinguished the fire and disposed of the rag with no harm done.

"Fire checks are made periodically aboard this vessel during the night watches. The men are told to watch especially for oil-soaked rags and to dispose of them.

"The vessel was in the tropics. The rag was in the sun. The oil mixture was about 50 percent linseed oil and 50 percent turpentine. This incident illustrates the danger from spontaneous combustion. The sun hurried things up, but the same thing could have happened had the rag been thrown into a bucket in the paint locker."

WANTED

(*Continued from page 167*)

as made to follow the prescribed warm-up procedures, either with regard to removing the condensate in the cylinders or moving the HP piston off bottom dead center. Instead, the operator proceeded to crack the throttle and apply steam to the bottom side of the HP piston. Nothing happened, so he "gave her some more." No results. On the third application of steam the crank moved off "bottom dead center" and, with the great force of the rapidly expanding steam behind it, the HP piston whizzed upwards. The inevitable happened, the attempt to compress water failed, as it always has, and the operator was suddenly standing "out in the rain," valve reversing handle in hand, from the condensate that descended from the fractured engine head.

UNSCHEDULED TEST

Results of this unscheduled "Hydrotest" on the HP cylinder head are shown in the accompanying illustration. Figure 1 shows the chalked fracture in the foreground looking from the after side of the engine forward, and running from the cylinder steam port to the throttle valve flange on the right. The crack continued across the flange and inside, around the valve chest. Mathematical calculations of force due to steam pressure on the bottom of the piston are easily available from known quantities and in themselves are within the factor of safety calculated by the designer. However, when you add to this the movement caused by the many tons of metal in the propellor, thrust shaft, engine crankshaft, connecting rods, pistons, etc., and the speed of the piston travel against the condensate in the cylinder, you have a hammer blow of immense force never considered by a designer and never dreamed of by the operator.

Figure 2 shows the cylinder "relief valve," with a discharge of approximately 1½-inch diameter, alongside a conventional pencil sharpener. Clearly this "relief" is not designed for, nor intended to handle this type of situation.

The operator in our example was cognizant, through years of experience, of the proper warm-up procedures, the probable existence of condensate in the cylinder, and the need for using the condensate drains. Still, when asked how the "accident" happened, his first reaction was, "THE RELIEF VALVE DIDN'T OPEN."

MERCHANT MARINE PERSONNEL STATISTICS

MERCHANT MARINE OFFICER LICENSES ISSUED

QUARTER ENDING 30 JUNE 1961

DECK

Grade	Original	Renewal
Master:		
Ocean	36	412
Coastwise	3	21
Great Lakes	4	11
B. S. & L	19	147
Rivers	11	60
Radio Officer Licenses issued	14	81
Chief mate:		
Ocean	42	101
Coastwise	2	
Mate:		
Great Lakes		
B. S. & L	12	20
Rivers	5	48
Second mate:		
Ocean	36	80
Coastwise		3
Third mate:		
Ocean	55	67
Coastwise		
Pilots:		
Great Lakes	5	8
B. S. & L	137	71
Rivers	55	36
Master: Uninspected Vessels	27	21
Mate: Uninspected Vessels	5	2
Motorboat Operators	534	1,790
Total	**1,002**	**2,979**
Grand Total	**3,981**	

ENGINEER

Grade	Original	Renewal
STEAM		
Chief engineer:		
Unlimited	23	561
Limited	2	95
First assistant engineer:		
Unlimited	39	200
Limited	1	13
Second assistant engineer:		
Unlimited	50	232
Limited		
Third assistant engineer:		
Unlimited	53	326
Limited		
MOTOR		
Chief engineer:		
Unlimited	5	125
Limited	32	161
First assistant engineer:		
Unlimited	2	21
Limited	15	23
Second assistant engineer:		
Unlimited	4	28
Limited	3	1
Third assistant engineer:		
Unlimited	37	346
Limited	2	4
Chief engineer: Uninspected Vessels	9	19
Assistant engineer: Uninspected Vessels	10	5
Total	**287**	**2,160**
Grand Total	**2,447**	

WAIVER OF MANNING REQUIREMENTS

Waivers	Atlantic Coast	Gulf Coast	Pacific Coast	Great Lakes	Total
Deck officers substituted for higher ratings					
Engineer officers substituted for higher ratings					
Ordinary Seamen for Able Seamen					
Wiper or coalpassers for qualified member engine dept	3				3
Total Waivers	3				3
Number of vessels	3				3

ORIGINAL SEAMEN'S DOCUMENTS ISSUED

Type of document	Atlantic Coast	Gulf Coast	Pacific Coast	Great Lakes and Rivers	Total
Staff Officer	42	8	22	2	74
Continuous Discharge Book		17			17
Merchant Mariner's Documents	1,427	621	934	777	3,759
AB any Waters unlimited	136	43	62	62	303
AB any waters, 12 months	34	21	30	41	126
AB Great Lakes, 18 months	2		7	37	46
AB Tugs and Towboats, any Waters		2	10		12
AB Bays and Sounds			1		1
AB Seagoing Barges					0
Lifeboatman	103	6	81	6	196
QMED	163	39	56	49	307
Radio Officer	4		2	2	8
Certificate of Service	1,302	550	883	686	3,421
Tankerman	22	104	12	78	216
Total	3,235	1,411	2,100	1,740	8,486

INVESTIGATING UNITS

Coast Guard Merchant Marine Investigating Units and Merchant Marine Details investigated a total of 3,575 cases during the second quarter of 1961. From this number, hearings before Examiners resulted involving 54 officers and 262 unlicensed men. In the case of officers, 1 license was revoked, 5 were suspended without probation granted, 14 were suspended with probation granted, 7 cases were dismissed after hearing, and 3 hearings were closed with admonition. Of the unlicensed personnel, 19 documents were revoked, 14 were suspended without probation granted, 100 were suspended with probation granted, 25 cases were dismissed after hearing, and 24 hearings were closed with admonition. Twelve licenses and 111 documents were voluntarily surrendered.

LARGE SHIP

(*Continued from page 171*)

anchored for any length of time and the tide changed directions, it will be only necessary to pay out the bow anchor and heave in a sufficient amount of stern anchor chain. In this manner, vessel's stern can be kept steady when anchored with a head current or tide.

An unrelated accident can sometimes reveal a vessel's excellent maneuverability. Such a situation occurred three years ago when a barge was in collision and sank in the center of the Arthur Kill just below the Goethal's Bridge in New York Harbor. The loaded 37,800 dwt *Esso Gettysburg* was proceeding to Bayway and was just north of the old B & O Bridge when the barge sank. With the assistance of tugs, vessel was backed 1¾ miles through the narrow channel to Newark Bay South Reach for turning. We considered this quite a feat of navigation.

Incidentally, the Suez Canal model navigation tests, referred to previously, indicate that our 83,000 dwt tankers will be able to safely navigate the Suez Canal at drafts expected to be obtainable when these vessels are completed. We believe the excellent maneuvering characteristics indicated by the model tests may be attributed to the large rudder/lateral plane ratio and the efficient after lines, which give a good water flow to the propeller and rudder.

Eternal vigilance, care, precision and planning would appear to be the basic requirements for safely maneuvering these large vessels in restricted channels.

AMENDMENTS TO REGULATIONS

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

TITLE 46—SHIPPING

Chapter I—Coast Guard, Department of the Treasury

[CGFR 61–26]

REPORTS OF CASUALTIES AND ACCIDENTS

Miscellaneous Amendments to Chapter

Reports of casualties or accidents occuring on or to vessels are required by Title 33, U.S. Code, section 361, or Title 46, U.S. Code, subsection 526L (c), and vessel inspection regulations in 46 CFR Subparts 35.15, 78.07, 97.07, and 136.05 and § 167.65–65, precedent to an investigation under Title 46, U.S. Code, section 239. A written report is required whenever any vessel is involved in a casualty or accident involving loss of life, material loss of property, serious injury to any person, damage affecting the seaworthiness or efficiency of a vessel, stranding or grounding. Whenever a vessel collides with an aid to navigation under the jurisdiction of the Coast Guard, the officer in charge shall report such collision to the nearest Officer in Charge, Marine Inspection; however, no report on Form CG–2692 is required unless it is a reportable marine casualty.

A paper work survey within the Coast Guard has been conducted and specialists from the General Services Administration were consulted. One of the recommendations from this project dealt with the reporting of vessel casualties and personal accidents. A new casualty classification system was devised and the forms used in submitting casualty reports have been rewritten. The major change in the forms is to have all deaths and serious injuries to persons reported on Form CG–924E (Report of Personal Injury or Loss of Life) while the reports involving vessels will continue to be reported on a revised Form CG–2692 (Report of Vessel Casualty or Accident). In addition the Coast Guard endorsements have been removed from both forms. The format and information required to be reported on Forms CG–924E and CG–2692 have been expanded to provide a better understanding of the accident and revised to agree with the new casualty classification system. Where possible the format of the new forms are alike, individual questions use the same wording, and where possible "check blocks" are utilized.

In order to augment the use of the revised Forms CG–924E and CG–2692 minor changes to various vessel inspection regulations are necessary and are set forth in this document as amendments to 46 CFR 2.20–60, 35.15–1, 78.07–5, 78.07–10, 97.07–5, 97.07–10, 136.05–10, and 167.65–65. These changes are considered to be administrative and editorial in nature and do not alter the requirements for reporting marine casualties and accidents. Therefore, it is found that the Coast Guard is exempt from compliance with the Administrative Procedure Act (respecting notice of proposed rule making, public rule making procedures thereon, and effective date requirements thereof).

SUBCHAPTER O—REGULATIONS APPLICABLE TO CERTAIN VESSELS DURING EMERGENCY

[CGFR 61–29]

PART 154—WAIVERS OF NAVIGATION AND VESSEL INSPECTION LAWS AND REGULATIONS [1]

Vessels Operated by Pacific Micronesian Lines, Inc.

[1] This is also codified as 33 CFR Part 1[illegible]

(Federal Register Document No. 61–62[illegible]
Filed July 3, 1961, and printed July [illegible] 1961.)

EQUIPMENT APPROVED BY THE COMMANDANT

[EDITOR'S NOTE.—Due to space limitations, it is not possible to publish the documents regarding approvals and terminations of approvals of equipment published in the Federal Register dated July 21, 1961 (CGFR 61–28), and Federal Register dated July 27, 1961 (CGFR 61–81). Copies of these documents may be obtained from the Superintendent of Documents, Washington 25, D.C.]

AFFIDAVIT

The following affidavit was accepted during the period from 15 June 1961 to 15 July 1961:

Dynex, Inc., 448 W. Sunrise Hwy., Valley Stream, N.Y., VALVES.

NOTE: The name Zurn Industries, Inc., should be added for valves and fittings.

MERCHANT MARINE SAFETY PUBLICATIONS

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

CG No.	TITLE OF PUBLICATION
101	Speciment Examination for Merchant Marine Deck Officers (7–1–58).
108	Rules and Regulations for Military Explosives and Hazardous Munitions (8–1–58).
115	Marine Engineering Regulations and Material Specifications (2–1–61).
123	Rules and Regulations for Tank Vessels (12–1–59). F.R. 3–30–60, 10–25–60, 11–5–60, 12–8–60, 7–4–61.
129	Proceedings of the Merchant Marine Council (Monthly).
169	Rules of the Road—International—Inland (5–1–59). F.R. 5–21–59, 6–6–59, 5–20–60, 9–21–60, 4–14–61, 4–25–61.
172	Rules of the Road—Great Lakes (5–1–59). F.R. 1–7–60, 3–17–60, 5–20–60, 9–21–60.
174	A Manual for the Safe Handling of Inflammable and Combustible Liquids (7–2–51).
175	Manual for Lifeboatman, Able Seamen, and qualified Members of Engine Department (9–1–60).
176	Load Line Regulation (9–2–58). F.R. 9–5–59, 8–2–60, 11–17–60.
182	Specimen Examinations for Merchant Marine Engineer Licenses (12–1–59).
184	Rules of the Road—Western Rivers (5–1–59). F.R. 6–6–59, 5–20–60, 9–21–60, 10–8–60, 12–23–60, 4–14–61, 4–25–61.
190	Equipment Lists (4–1–60). F.R. 6–21–60, 8–16–60, 8–25–60, 8–31–60, 9–21–60, 9–28–60, 10–25–60, 11–17–60, 12–23–60, 12–24–60, 5–2–61, 6–2–61, 6–8–61, 7–21–61, 7–27–61.
191	Rules and Regulations for Licensing and Certificating of Merchant Marine Personnel (11–1–60). F.R. 11–30–60, 1–4–61, 4–19–61.
200	Marine Investigation Regulations and Suspension and Revocation Proceedings (7–1–58). F.R. 3–30–60, 5–6–60, 12–8–60, 7–4–61.
220	Specimen Examination Questions for Licenses as Master, Mate, and Pilot of Central Western Rivers Vessels (4–1–57). 1–8–60, 5–6–60, 8–18–60, 10–25–60, 11–5–60, 11–17–60, 12–8–60, 12–24–60, 12–29–60, 4–19–61, 7–4–61.
227	Laws Governing Marine Inspection (7–3–50).
239	Security of Vessels and Waterfront Facilities (7–1–58). F.R. 11–1–58, 12–18–58, 12–30–58, 9–19–59, 2–24–60, 3–30–60, 7–29–60, 3–18–61.
249	Merchant Marine Council Public Hearing Agenda (Annually).
256	Rules and regulations for Passenger Vessels (3–2–59). F.R. 4–25–59, 6–18–59, 6–20–59, 7–9–59, 7–21–59, 9–5–59.
257	Rules and Regulations for Cargo and Miscellaneous Vessels (3–2–59). F.R. 4–25–59, 6–18–59, 6–20–59, 7–9–59, 7–21–59, 9–5–59, 5–6–60, 5–12–60, 10–25–60, 11–5–60, 11–17–60, 12–8–60, 12–24–60, 7–4–61.
259	Electrical Engineering Regulations (12–1–60).
266	Rules and Regulations for Bulk Grain Cargoes (5–1–59).
268	Rules and Regulations for Manning of Vessels (9–1–60). F.R. 5–5–61, 6–28–61.
269	Rules and Regulations for Nautical Schools (3–1–60). F.R. 3–30–60, 8–18–60, 11–5–60, 7–4–61.
270	Rules and Regulations for Marine Engineering Installations Contracted for Prior to July 1, 1935 (11–19–52). F.R. 12–5–53, 12–28–55, 6–20–59, 3–17–60.
293	Miscellaneous Electrical Equipment List (3–7–60).
320	Rules and Regulations for Artificial Islands and Fixed Structures on the Outer Continental Shelf (10–1–59). F.R. 10–25–60.
323	Rules and Regulations for Small Passenger Vessels (Not More Than 65 feet in Length) (6–1–58). F.R. 9–29–60, 4–19–61, 5–5–61.
329	Fire Fighting Manual for Tank Vessels (4–1–58).

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

CHANGES PUBLISHED DURING JULY 1961

The following have been modified by Federal Registers:

CG–123, CG–200, CG–256, CG–257, and CG–269 Federal Register, July 4, 1961.

CG–190 Federal Registers July 21, and July 27, 1961.

U.S. GOVERNMENT PRINTING OFFICE: 1961