

PROCEEDINGS OF THE
MERCHANT MARINE COUNCIL
UNITED STATES  COAST GUARD

Vol. 4

November 1947

No 11



MERCHANT MARINE COUNCIL

Published monthly at Coast Guard Headquarters, Washington 25, D. C., under the auspices of the Merchant Marine Council, in the interest of safety at sea. There are no restrictions on the republication of material appearing in this issue.

Mention of source will be appreciated.

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**Merchant Marine Council
of the United States
Coast Guard**

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For each meeting two District Commanders and three Marine Inspection Officers are designated as members by the Commandant.

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RADAR NAVIGATION

When radars were first installed on merchant vessels there was optimism that vessels so equipped would never become involved in collisions. There was a tendency to think that the radar itself would prevent such casualties. Seven collisions involving American ships equipped with radar emphasize that avoidance of a collision is solely dependent upon the action taken by the officer in charge of the navigation of a ship.

These seven collisions in fog consisted of two cases in which the radars were not in operation, two crossing situations, and three meeting situations. In one collision each of the vessels involved was operating her radar while in the other six only one of the vessels was fitted with radar. Of these seven collisions only one has reached the courts and a decision handed down. This was a case in which the radar was not being used. There is little precedent at this time on which to base any duties which may be laid upon radar equipped vessels, therefore it is necessary to speculate on what duties the courts are likely to require of radar equipped vessels.

But before tackling such speculation it will be well to consider just what are the capabilities and limitations of radar. First a radar will at its best supply a bearing and a range somewhat greater than the distance along the line of sight. It is necessary that the pulsations emitted by the radar transmitter hit some object and be reflected back to the receiver, which converts the elapsed time into distance. The effective range is dependent among other things upon (1) the height of the radar antenna, (2) the size and character of the target, and (3) the effective height of the target above water. Thus a ship the size of the *America* would be detected at a greater distance than would a trawler; a steel hull would be detected at a greater

range than would a wooden hull of the same size. We commonly think of a target as something to hit. As far as the radar is concerned the other vessel is a target because it has been hit; but as between vessels, although referred to as a target, it is a target in which the greatest satisfaction is received in missing it.

Dependent upon the three factors mentioned a radar will detect a target within its effective range and produce a pip on the scope. However, interference caused by rough sea conditions, rain, and snow can obscure the radar scope so that targets will not appear through the sea-return or rain and snow-clutter apparent on the screen. In a rough sea a small craft may not be detected if, at the time pulses are sent out along its line of bearing, the boat happens to be in the trough of the sea.

Knowing the information that radar can supply what use can be made of this information? A single range and bearing will merely give a point at which the target was located at a given time. If a series of points can be obtained we know from our study of geometry that a line can be produced. Thus, a series of radar ranges and bearings will, when plotted correctly, give the course and speed of the target. Continuous observation thereafter will indicate any changes in course or speed which the vessel may make. Having this knowledge the officer on watch, taking into consideration other factors such as sea room, depth of water, presence of other vessels, etc., can determine the best action to take to avoid the target.

The one court decision holds that in a fog a vessel equipped with radar must use it. In the case of the *Barry-Medford* (65 Fed. Supp. 622), the *Barry* sighted a fog bank dead ahead and entered it 12 minutes later without any reduction in its speed of 18 knots. During the interval and up to the time of collision 2 minutes after

entering the fog bank the radar was not operated. The court stated, "The failure of the Barry to use her radar is the most serious and sinister aspect of these cases. The perfection of that device is thought to have invoked a new concept of responsibilities attaching to vessels so equipped, touching their handling in or near a fog area * * *. I cannot so read that case [The Pennsylvania] as to find refuge for the Barry in its ample folds, for the stipulated proof here is that the offending ship could have informed herself of the presence and track of the Medford in abundant time to have avoided by a wide margin any danger whatever of striking her. Under such circumstances it is impossible to yield to the argument for the Barry, that her conduct is to be condoned to any extent, in view of her failure to employ the very device which was installed to prevent a collision * * *."

Here, then, is a duty laid upon radar equipped vessels to use the radar in or near a fog. Dictum in the opinion indicates that with a radar in operation the court would require further that a series of ranges and bearings be taken and plotted to determine the course and speed of the target in time to take avoiding action. The court said "for the stipulated proof here is that the offending ship could have informed herself of the presence and track of the Medford in abundant time to have avoided by a wide margin any danger whatever of striking her." (Italics added.)

At night in clear weather under normal conditions a radar can detect a vessel before its lights can be picked up with glasses. Also, under normal conditions the lights of a vessel can be picked up and bearings taken to determine if the vessel is on a collision course in sufficient time for the burdened vessel to take such avoiding action as may be necessary to enable her to keep out of the way of the other. The question arises whether radar will be required to be used on a dark night with a clear atmosphere. Ordinarily the answer will be in the negative. However, there are two situations where a vessel might be held at fault for failure to use her radar.

Oftentimes the lights of a vessel are sighted but the officer on watch is unable to determine until the vessels are close aboard whether his vessel is a burdened or a privileged vessel. Having the dictum that the track of a vessel can be determined by radar it may well be held, where a collision occurs by reason of a failure to interpret properly the sighted lights, that if such doubt could have been cleared up by using the radar a vessel will be held at fault for failure to do so.

The second situation in which a vessel may be held at fault for failure to use radar on a clear dark night is that of a fast vessel approaching waters in which it is reasonable to expect small craft fitted with lights which need not be visible for a distance greater than 2 miles. Here, because of the great speed of the vessel, the time permitted to estimate the situation and to determine what action on its part is required by the rules is relatively small. With radar in operation the small vessels could be picked up, under average conditions, at greater distances than the ranges of visibility of their lights, with a corresponding increase in time for study of the situation.

It is in running in reduced visibility that most problems will arise, as is proven by the seven collisions in fog. Article 16 of the International Rules provides, "Every vessel shall, in a fog, mist, falling snow, or heavy rainstorms, go at a moderate speed, having careful regard to the existing circumstances and conditions." In a fog a speed of 15 knots by a vessel with her radar in operation is moderate only so long as she is able to avoid collision by intelligent application of the information supplied by the radar. There is no doubt but that the courts will apply the present rule as to what is moderate speed in a fog even though one of the vessels involved in a collision had a radar in operation. The fact that a collision has occurred is indicative of a lack of careful regard to the existing circumstances and conditions. Careful regard to these would require a determination of the track of the other vessel plus proper avoiding action. If no action is taken to make a running plot, or if the target is first picked up at such a short range, either because of the character of the target or because of inattentive observation of the radar scope, that there is likely to be insufficient time to determine the track in time to take avoiding action, it is only reasonable to require a vessel to reduce to that speed which will enable her to be stopped in half the range of visibility. An instance of a case in which such a rule might be applied is that in which a ship running at 15 knots detected a target at 2½ miles slightly on the starboard bow. No plot was made and at such a short range it is unlikely that there would have been time enough to determine its track and to decide on avoiding action. Reduction in speed immediately upon detection of a close vessel will allow more time for determining track and at the same time will bring the vessel in compliance with the rule on speed in a fog. In two other cases the radars picked up the other ships at

ranges of 8 miles. Here there was no need of slowing down immediately but inasmuch as no plots were made the speeds being made are not likely to be held as moderate.

Reference has been made to certain conditions which may create such interference that targets will not appear through the sea-return or rain-clutter on the screen. Here, not only is the vessel fog bound but also the radar. A vessel in such a case should be considered as though she had no radar. It is true that pips may appear in some sectors on the scope but in those sectors which are obscured it is not reasonable to take a chance that no vessels are in those areas. In the event that the interference is marked a reduction to sighting speed will be necessary to avoid liability for running at excessive speed.

What of the case when in a fog a vessel forward of the beam is picked up by radar? Is the vessel required to stop her engines and then navigate with caution? If the pertinent rule is interpreted literally the answer is NO. The rule states: "A steam vessel hearing, apparently forward of her beam, the fog signal of a vessel the position of which is not ascertained shall, so far as the circumstances of the case admit, stop her engines, and then navigate with caution." Two elements are required (1) the hearing of a fog signal forward of the beam, and (2) the position of the other vessel is not ascertained.

Ordinarily a radar will detect a vessel long before its fog signal can be heard and usually there will be sufficient time to determine the track of the vessel and thus avoid her, with the chance that her fog signal will never be heard. Assuming that after avoiding action is taken its signal is heard, there is no requirement that the engines be stopped as her position is ascertained. However, if there is any doubt that the vessels will clear, common sense, which is another phrase for good seamanship, would dictate a strict compliance with the rules including a reduction of speed until all danger has passed.

Once action has been taken and it is apparent that the vessels will pass safely, the master still has the burden of running a continuous plot to insure that the other vessel makes no change in course or speed which will nullify the action previously taken. In this connection, although the stress has been on the avoidance of collision, the value of a record of an accurate plot might be mentioned in the event a collision does occur. With a log of ranges and bearings and times it is possible to show that the other vessel was not running at a moderate speed with the hope that divided damages will be the decision of the court.

The discussion up to this point has been directed to situations in which only one of the vessels was equipped with radar. These are relatively simple as compared with the problems involved where both vessels approaching in a fog are equipped with radar. Present day radars are not equipped to determine if another vessel within radar range has a radar in operation. That being so the vessels cannot be considered as being within sight of one another so that the burden can be placed on one or both vessels as it might in clear weather. Instead the case is one of good seamanship and each should assume that the other is not radar equipped.

In the approach of two radar equipped vessels in a fog there are five possible situations:

- (1) Neither vessel is using radar;
- (2) Both are using and neither is plotting the information;
- (3) Only one vessel is using radar;
- (4) Both are using but only one is plotting the information; and
- (5) Both are using and plotting.

In the event of a collision in any of the above situations it is likely that in the first two cases, where neither vessel is using radar or where no plotting is made, each vessel will be held at fault, if the ruling in the Barry case is followed. Where only one of the vessels is using radar or in the case where both are using but only one is plotting the same result is likely, although the conditions may be such that only one may be held at fault. Assuming that the vessel which is not using the radar, or is not using it effectively, is running at a moderate speed and otherwise complies with the rules it is possible that the other vessel will be held solely at fault on the theory of the "last clear chance" doctrine, and especially so if she maintains a speed which is high. Of course where both vessels are running at high speed there is no question but that divided damages would be the decision.

It is the last situation, where each vessel is tracking the other, that will offer difficult problems. With existing radars, neither can determine if the other is also operating a radar. Thus, in a crossing situation in fog it cannot be held that the vessel which has the other on her starboard shall keep clear. The case is more like one of special circumstances and each is bound to keep clear of the other. What avoiding action is to be taken is a matter of good seamanship. Assuming that the vessels are picked up at such ranges as will permit time

LESS VISIBILITY REQUIRES MORE CAUTION.

for tracking, normally the action to be taken should be that which would be taken if the vessels were in sight of each other. In what develops to be a meeting situation the normal action to be expected would be for each to change course to the right. In a crossing situation if the plot indicates that the vessels will pass well clear of each other, no action is required. If they are on collision or near collision courses, the safest procedure would be for the vessel with the other on her starboard hand to reduce to a speed which is moderate for the visibility, until such time as it is evident that danger of collision no longer exists. A continuous plotting will, of course, be required for determination of any changes in course or speed which increase the possibility of collision. And if the target is first detected at such a short range that there is little opportunity for accurate tracking, prudence would require a reduction to moderate speed and compliance with the other rules for navigation in reduced visibility.

In summation radar equipped vessels, in times of reduced visibility, should use the radar; determine the track of targets; run at sighting speed when (1) the target is first detected at a short range, (2) no plot is being made, or (3) rain, snow, or sea return obscure the radar screen; maintain a continuous plot to detect any changes of course or speed by other vessel; take such avoiding action as would be dictated by good seamanship and prudent navigation.

There is no intent to convey any thought of approval of radar equipped vessels running at immoderate speeds in thick weather. The records show that those involved in collisions have done so, and being realists, we anticipate others will also. The rules on fog navigation are still in effect. We do wish to emphasize, however, that, regardless of how helpful radar is, it takes a human being to take the action necessary for avoidance of a collision.

STATION BILLS FOR MERCHANT VESSELS

The Proceedings of the Merchant Marine Council for October 1947 outline the duty of the master in causing station bills and muster lists to be prepared and also the purpose of the station bill and signals to be used in connection with such drills. The Manual for Lifeboatmen and Able Seamen, Part V, gives a detailed explanation of how a standard station bill should be prepared and the signals used in calling the crew to their emergency stations. A very important duty of the master of a vessel is the organization and training of an

emergency squad, generally from 6 to 24 men, depending upon the size of the crew. The emergency squad should be picked men who are capable of quickly handling any emergency that may arise. They should be expert oarsmen and be proficient at man overboard drills. They should be thoroughly trained in the most effective method of combating and fighting fire and in lifesaving practice. They should be familiar with the functions of the emergency steering gear and its rapid shifting for use in the event of an emergency.

Part V of the Manual for Lifeboatmen and Able Seamen gives a detailed description of how the emergency squad should be organized and trained to carry out their duties. The inspectors should see that there is an ample supply of the manual on each inspected vessel and encourage those on board to become thoroughly familiar with the instructions contained therein.

The lifeboat davits on all vessels should be kept in good operating condition and clear at all times for swinging. The efficient use of the davits and lifeboat lowering equipment is of the utmost importance and only those trained men with lifeboat-handling experience should be assigned the duty of lowering the boats. On vessels having gravity-type davits, the crew should be thoroughly trained in the proper use of the tricing pendants and frapping lines. When lowering away, the lifeboat should be lowered only enough to allow the tricing pendant to haul the boat alongside the ship and then the frapping lines should be used. After frapping lines are set taut, the tricing pendant should be cast off. Care should be taken that at no time should the weight of the boat be allowed to hang on the tricing pendants or frapping lines. Reference is made to the section entitled Lifeboat Davits on page 19 and figure 4 on page 21 of Manual for Lifeboatmen and Able Seamen. Both the inspectors and the person in charge of a lifeboat should give special attention to this matter at lifeboat drills.

MERCHANT MARINE INVESTIGATING UNITS

Coast Guard Merchant Marine Investigating Units and Merchant Marine Details investigated a total of 1,406 cases during the month of August 1947. Of this number charges were preferred involving 15 licensed and 79 unlicensed men. No hearings were held because examiners were not available.

DAYDREAMING MAY END IN A NIGHTMARE.

NUMBERED AND UNDOCUMENTED VESSELS

The table below gives the cumulative total of numbered but undocumented vessels in each Coast Guard district by Customs ports for the quarter ending 30 September 1947. Generally speaking, undocumented vessels are those machinery-propelled vessels of less than 5 net tons engaged in trade which by reason of tonnage are exempt from documentation, and those motorboats or motor vessels of less than 16 gross tons which are not subject to documentation as yachts, together with motorboats and motor vessels used exclusively for pleasure purposes which are 16 gross tons or over and not so documented. These vessels are required to be numbered under the provisions of the Act of June 7, 1918, as amended (46 U. S. C. 288).

COAST GUARD DISTRICT	CUSTOMS PORT	TOTAL
1 (Boston)	(4) Boston	13,936
	(1) Portland, Maine	10,112
	(2) St. Albans	2,719
	(5) Providence	3,863
		30,630
2 (St. Louis)	(45) St. Louis	19,538
	(12) Pittsburgh	3,812
	(34) Pembina	76
	(35) Minneapolis	7,988
	(40) Indianapolis	5,014
	(42) Louisville	3,971
	(43) Memphis (part)	8,823
	(44) Vacant (Des Moines)	107
(46) Omaha (part)	465	
	49,794	
4 (New York)	(10) New York	44,047
	(6) Bridgeport	8,101
	(11) Philadelphia	20,376
	72,524	
1 (Norfolk)	(14) Norfolk	14,731
	(13) Baltimore	21,005
	(15) Wilmington, N. C.	7,854
	43,590	
7 (Miami)	(18) Tampa (part)	19,467
	(16) Charleston	1,707
	(17) Savannah	3,962
	25,136	
4 (New Orleans)	(20) New Orleans	17,839
	(18) Tampa (part)	846
	(19) Mobile	6,996
	(21) Port Arthur	3,755
	(22) Galveston	9,492
	(23) Laredo	1,787
	(24) El Paso	6
(43) Memphis (part)	76	
	40,797	
3 (Cleveland)	(41) Cleveland	13,975
	(7) Ogdensburg	6,534
	(8) Rochester	8,504
	(9) Buffalo	8,108
	(36) Duluth	3,980
	(37) Milwaukee	12,353
	(38) Detroit	27,006
	(39) Chicago	7,684
		88,744
15 (San Juan)	(49) San Juan	321
	(51) St. Thomas	64
	385	
11 (Long Beach)	(27) Los Angeles	7,724
	(25) San Diego	1,540
	(26) Nogales	71
	9,335	
12 (San Francisco)	(28) San Francisco	19,185
	(47) Denver	
	19,185	
10 (Seattle)	(30) Seattle	31,002
	(29) Portland, Oreg	9,588
	(31) Juneau	6,253
	(33) Great Falls	996
	(46) Omaha (part)	
	47,839	
14 (Honolulu)	(32) Honolulu	3,684
	3,684	
Grand total		431,643

EVERY MAN HAS TO BE HIS OWN SAFETY BOSS

AMERICAN MERCHANT MARINE CONFERENCE

The American Merchant Marine Conference was held at the Waldorf-Astoria, New York, on October 15, 16, and 17, 1947. During the Conference there were a number of Panel discussions under leadership of outstanding personalities in the Maritime Industry. The Panel on United States Coast Guard was held on October 16 and was presided over by Admiral J. F. Farley, Commandant, as Chairman, and Commodore H. C. Shephard, Chairman of the Merchant Marine Council as Cochairman.

The following papers were presented: Capt. R. L. Raney—"Developments in Legislation and Regulations Affecting Marine Safety;" Capt. C. H. Peterson—"Progress in Trends of the United States Aids to Navigation System;" Capt. J. A. Kerrins—"Effect of Radar on Collision Law;" Rear Admiral Merlin O'Neill—"Preventive Marine Safety—What Is the Coast Guard's Policy?"; and Capt. W. R. Richards, USCG, Chief of Staff of the Eastern Area, U. S. Coast Guard, spoke on "Air Sea Rescue in the North Atlantic," before the panel on Overseas Air Transport.

At the Panel on Maritime Safety held on October 15 Mr. William T. Butler, Chief of the Hazard Prevention Section, presented a paper entitled "The Texas City Disaster—Lessons Learned."

The substance of the material in the paper "Effect of Radar on Collision Law" is presented in the Article "Radar Navigation."

UNSAFE PRACTICES

- *To ignore warnings on the radar screen.
- *To forget usual safety precautions because of familiarity with job.
- *To pay no attention to the advice of those who know.
- *To work around grinding operations, scaling, etc., without wearing safety goggles.
- *To do highly specialized jobs with improper tools.
- *To neglect minor cuts and bruises.
- *To wear loose clothing when around moving equipment.
- *To carry sharp objects in hands or pockets without proper guards.
- *To use compressed air to remove inflammable liquids from tanks or drums.
- *To work on electrical appliances without proper equipment.
- *To ignore safety equipment provided for the job at hand.
- *To take long chances to save a few short steps.
- *To overlook instructions furnished with ships' stores.

LESSONS FROM CASUALTIES

BOTTLED DEATH

Not all marine casualties involving loss of life are caused by the dramatic circumstances of fire, explosion, collision, heavy weather, and other shipboard irregularities. There are other causes, much less complicated, which also bring death. Two recent reports have shown one of these causes can be "bottled death"—in CO₂ bottles. Under certain conditions, death by CO₂ can be immediate.

It is well-known in marine circles that one of the principal uses of CO₂ is for fire-fighting purposes aboard ship. It achieves this purpose by a very simple process of excluding oxygen from the material involved in the fire. It is particularly effective in closed compartments or in those in which openings are near the top so that the heavier-than-air CO₂ can settle downward without escaping to the atmosphere. Oxygen is as essential to a fire as it is to human life. Under compartmented conditions, CO₂ will deny oxygen to both. This ordinary fact is apparently not well-known to some crafts in marine circles. At least this is the belief fostered by two marine casualty cases on file at Coast Guard Headquarters involving six deaths "by asphyxiation."

The two casualties occurred in separate southern ship-repair yards. The accidents were recent and happened within 2 days of each other. The six dead were shipyard workers. The first incident took place aboard a C2 cargo combat type vessel while undergoing conversion to a merchant cargo vessel. The second incident occurred aboard a T2 tanker which had been withdrawn from the laid-up fleet and was undergoing general overhaul prior to operation.

In the case of the C2, the vessel was fitted with an independent CO₂ fire-fighting system to each cargo hold. The hold in question, No. 4, was fitted with a bank of 53 cylinders of 50 pounds each. The control station on the main deck had 2 wire-pulls, one pull operating a master valve between the gas bottles and the outlets to the hold, and the other pull was connected directly to rams to the cylinder banks. The glass front on the control station was missing and the master-valve pull was slack. Testimony of men working in the upper 'tween deck indicated that this condition existed for at least an hour before the gas was actually released into the hold. No one saw the master-valve control wire pulled out. The CO₂ room was located

in the lower 'tween deck space. The door was not locked.

At about 0130, CO₂ was released into No. 4 hold and 'tween deck spaces. Several men in the upper 'tween deck escaped, leaving 11 men in the lower hold who were cleaning the double bottom tanks. All 11 were overcome. They were later rescued by the local fire department using oxygen breathing apparatus and fresh air masks. Six of the 11 were revived by artificial respiration; 5 were not.

An examination of the CO₂ room after the casualty, indicated that the control wire to the cylinder banks had been pulled in the CO₂ room. This was evident since the wire was hanging in a tight between the conduit in the bulkhead and the release lever on the first bottle. There was no evidence adduced to incriminate or establish the identity of the person or persons who actually released the gas.

Inasmuch as the C2 was unmanned and no licensed or certificated personnel were involved, the Coast Guard was without jurisdiction in this case. It would appear, however, that as part of the shipyard conversion, proper precautions should have been taken to provide safe working conditions. The CO₂ control box should have been intact (glass in place) and the door to the CO₂ room should have been locked. The failure to do so contributed to the loss of five lives.

On the morning of the second casualty on the T2 tanker which had been laid-up for approximately a year, a pipefitter and two helpers were working in the after pumproom. At about 0840, a shipyard worker, in passing through the pumproom upper flat caught hold of the CO₂ wire-pull to boost himself through the door. When he put his weight on it, he accidentally released the CO₂ gas to the pumproom. After realizing what he had done, and seeing the men down in the pumproom, he rushed down the ladder into the pumproom to assist them. He was overcome before reaching the bottom of the ladder.

All four men were taken from the pumproom by shipyard workers using a fresh air breathing mask and oxygen breathing apparatus. Artificial respiration was applied to each person rescued. Three persons were revived. The pipefitter, the last man to be taken from the pumproom, was not revived and was pronounced dead at 1045.

Although the "bottled death" in the two incidences reported suggests a casualty rate of 40 percent (6 dead; 9 revived), a much stronger suggestion

is self-evident: When working in compartments fitted with CO₂ for fire-fighting, take every precaution to prevent the release of the gas; guard the control mechanisms. For if you don't, death may result. Sixty percent is not a guaranteed revival rate.

A most important factor to be remembered in accidents such as these is that CO₂ gas displaces the oxygen in the air. Several articles in the "Proceedings" dealing with the effect of insufficient oxygen have been published from time to time. This brings to mind the proper procedures to be followed.

On vessels equipped with oxygen-breathing apparatus or fresh-air hose masks, it is only common sense to take immediate steps to put such equipment to use for rescue purposes, that is, provided the equipment is in proper working condition. The need for a life line around the rescuer and person to be rescued should not be overlooked. Steps also should be taken to introduce fresh air by all or any of several methods, such as the placing of windsails in the hatches and use of fans or blowers. It may even be possible to rig a tarpaulin by the corners in the form of a square sail which will guide currents of air into the hold.

On vessels not provided with the equipment mentioned, steps should be taken to get air into the compartment and seek further assistance elsewhere. In no case should one, in a heroic state of frenzy, attempt to enter such compartment without proper equipment. In the case of the above-mentioned C₂ vessel several lengths of air hose were immediately led into the hatch and the local fire department was called, which indicates that someone kept a cool head and knew what to do.

The question of proper rescue-breathing apparatus should also be borne in mind. It cannot be too strongly emphasized that the canister type, so-called all purpose mask will not protect the wearer when there is a deficiency of oxygen and the only types of breathing apparatus which should be used under these conditions are the self-contained oxygen-breathing apparatus and the fresh-air hose mask. To determine the sufficiency of oxygen, the flame safety lamp should be used.

STORAGE BATTERY EXPLOSIONS

Two recent cases of storage battery explosions have come to the attention of Coast Guard headquarters. Although the explosions were relatively

minor in nature, they could have led to more serious consequences.

The precautionary attitude taken in avoiding even a minor explosion is automatically transformed into mental exercise and drill which is the necessary prelude to the prevention of major explosions.

In one case, the entire bank of fourteen 4-cell lead-acid type batteries aboard a Pacific Coast tanker in Alaskan waters, "blew up." The explosion was heard and felt throughout the ship. No one was injured and the property damage (as vessel casualty damages go) was nominal. The tops of all the batteries were blown off, including the top of the special box containing the batteries.

In the second case, an emergency lifeboat radio transmitter battery exploded when tested with a "dummy antenna." In this case, specific precautions were taken to ventilate the set for a period of 5 minutes before testing it. While so doing, the antenna had a loose connection which caused a spark which, in turn, caused an explosion. There was no damage other than to the transmitter itself.

In view of the habitually chain-reaction effect of explosive mixtures, it would be possible for a minor storage battery explosion to set off a major disaster. This is not likely to occur under ordinary conditions, but it could happen if storage batteries were located in an area where inflammable

vapors were present or when such vapors could be swept towards it by air currents.

The prevention of storage battery explosions is primarily one of adequate ventilation—not just ventilation, but *adequate ventilation*. In the case of the tanker, it was claimed that the battery box had ventilation louvers in its top, and this seemed plausible inasmuch as the box was 7 years old, had no alterations and no previous record of an explosion. In the case of the transmitter, it was clearly evident that ventilation had been considered. Yet, explosions occurred in both cases.

The reason adequate ventilation is so necessary to the safety of shipboard storage battery operations is that, during working of the battery, especially charging, bubbles of hydrogen gas are liberated at the negative terminal. Since these bubbles do not combine chemically with the lead plates (whereas the oxygen bubbles do combine at the positive terminal to form lead peroxide), they escape to the atmosphere, the total amount depending essentially upon the length and rate of charging.

The most dangerous characteristic of hydrogen gas is its wide explosive range. It is highly inflammable over a range of 4 percent to 75 percent admixture with air. Gasoline vapor, for example, has an explosive range of only 1.4 percent to 6 percent.

Hydrogen gas is very much lighter than air which means that if storage batteries are located well up on a vessel and adequate facilities for overhead ventilation are provided, there should be little concern for dangerous concentrations of the gas. In contrast to this, gasoline vapors are (three to four times) heavier than air which means that a more complex and positive system of ventilation must be provided to avoid accumulations in the lower portions of the vessel.

In addition to adequate ventilation, which of course, is designed to remove all hydrogen gases, the prevention of storage battery explosions requires the elimination of all sources of ignition. Smoking, loose terminal connections, shorts across terminals or cell connectors, open lights and other obvious sources of ignition should be prohibited. If necessary, company placards to this effect should be posted in the area of storage batteries.

Under normal circumstances, it is unlikely that a storage battery explosion would cause fire or death. However, if personnel should be in the vicinity, the force of the explosion in dispersing the electrolyte would quite likely cause injury to eyes, mucous membrane, skin surfaces and clothing. Such injuries can be prevented if proper precautionary measures are taken at all times.

APPENDIX

TITLE 46—SHIPPING

Chapter I—Coast Guard: Inspection and Navigation

SUBCHAPTER K—SEAMEN

[CGFR 47-50]

PROMULGATION OF REGULATIONS

A notice regarding proposed changes in the regulations for casualty and accident investigations and suspension and revocation proceedings was published in the Federal Register dated February 18, 1947 (12 F. R. 1109), and a public hearing was held by the Merchant Marine Council March 27, 1947, at Washington, D. C.

The purpose of the regulations for casualty and accident investigations and suspension and revocation proceedings is to carry out the intent of R. S. 4450, as amended (46 U. S. C. 239), and the Administrative Procedure Act (Public Law 404, 79th Congress, 60 Stat. 238), and to obtain the correct and uniform administration of the statutes. All the written and oral comments and suggestions sub-

mitted were considered by the Merchant Marine Council and where practicable were incorporated into the regulations.

The regulations for casualty and accident investigations and suspension and revocation proceedings had to be revised to comply with the changes in the statutes made by Reorganization Plan No. 3 of 1946 (11 F. R. 7875), and the Administrative Procedure Act. The regulations separate insofar as possible procedural requirements from substantive requirements and provide definite procedures to be followed in investigations and suspension and revocation proceedings. To accomplish the required changes it was necessary to cancel the regulations in 46 CFR Parts 136 and 137 suspended by the Commandant, United States Coast Guard, on August 26, 1942 (7 F. R. 6778), and the temporary wartime rules published in 46 CFR 136.100 and 136.112, inclusive.

By virtue of the authority vested in me by Reorganization Plan No. 3 of 1946, 11 F. R. 7875, the following amendments to the regulations are

prescribed which shall become effective thirty-one days after date of publication of this document in the Federal Register:

PART 136—MARINE INVESTIGATION REGULATIONS

The regulations in Part 136 which were suspended by the Commandant, U. S. Coast Guard, on August 26, 1942 (7 F. R. 6778, 46 CFR, Cum. Supp., Part 136, note), are canceled. The temporary wartime rules in § 136.100 to 136.112, inclusive, are canceled on the effective date of this document, except for all proceedings in process of disposition which shall be concluded in accordance with the rules in §§ 136.100 to 136.112, inclusive. Following regulations are prescribed which shall be effective 31 days after date of publication of this document in the Federal Register:

SUBPART 136.01—AUTHORITY AND SCOPE OF REGULATIONS

Sec.

136.01-1 Authority and scope of regulations.

SUBPART 136.03—DEFINITIONS

Sec.	
136.03-1	Marine casualty or accident.
136.03-5	Major marine casualty.
136.03-10	Party in interest.
136.03-15	Commandant.
136.03-20	Coast Guard district.
136.03-25	District Commander.
136.03-30	Investigating officer.
136.03-35	Examiner.
136.03-40	Public vessels.

SUBPART 136.05—NOTICE OF MARINE CASUALTY AND VOYAGE RECORDS

136.05-1	Notice of marine casualty.
136.05-5	Substance of marine casualty notice.
136.05-10	Report by officer in charge of vessel in person.
136.05-15	Voyage records, retention of.
136.05-20	Report of accident to aid to navigation.

SUBPART 136.07—INVESTIGATIONS

136.07-1	Commandant or District Commander to order investigation.
136.07-5	Investigating officers, powers of.
136.07-7	Opening statement.
136.07-10	Report of investigation.
136.07-15	Recommendations, action on.
136.07-20	Transfer of jurisdiction.
136.07-25	Testimony of witnesses in other districts, depositions.
136.07-30	Testimony of witnesses under oath.
136.07-35	Counsel for witnesses and parties in interest.
136.07-40	Coast Guard vessels involved in marine casualties.
136.07-42	Marine casualties occurring within the scope of Coast Guard rescue operations.
136.07-45	Foreign units of Coast Guard, investigation by.
136.07-50	Marine Board of Investigation, recommendations for.
136.07-55	Information to be furnished Marine Board of Investigation.

SUBPART 136.09—MARINE BOARD OF INVESTIGATION

136.09-1	Commandant to designate.
136.09-5	Powers of Marine Board of Investigation.
136.09-10	Witnesses, payment of.
136.09-15	Time and place of investigation, notice of; rights of witnesses, etc.
136.09-20	Record of proceedings.
136.09-25	U. S. Attorney to be notified.

Sec.	
136.09-30	Action on report.
136.09-35	Preferment of charges.
SUBPART 136.11—WITNESSES AND WITNESS FEES	
136.11-1	Employees of vessels controlled by Army or Navy as witnesses.
136.11-5	Coercion of witnesses.
136.11-10	Witness fees, subsistence, and mileage.

SUBPART 136.12—TESTIMONY BY INTERROGATORIES AND DEPOSITIONS

136.12-1	Application, procedure, and admissibility.
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SUBPART 136.13—DISCLOSURE OF RECORDS

136.13-1	Record of investigation.
136.13-5	Records held confidential.
136.13-10	Production upon subpoena.

SUBPART 136.15—PERSONS IN SERVICE OF COAST GUARD

136.15-1	Persons in service of Coast Guard.
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SUBPART 136.19—CONSTRUCTION OF REGULATIONS AND RULES OF EVIDENCE

136.19-1	Construction of regulations.
136.19-5	Adherence to rules of evidence.

SUBPART 136.21—COMPUTATION OF TIME

136.21-1	Computation of time.
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SUBPART 136.23—EVIDENCE OF CRIMINAL LIABILITY

136.23-1	Evidence of criminal liability.
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NOTE—The text of these regulations are not printed herein due to the shortage of space but may be obtained in their entirety in Federal Register, Vol. 12, No. 201, dated Tuesday, October 14, 1947, from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., at 30¢ per copy.

PART 137—SUSPENSION AND REVOCATION PROCEEDINGS

The regulations in Part 137 which were suspended by the Commandant, U. S. Coast Guard, on August 26, 1942 (7 F. R. 6778, 46 CFR, Cum. Supp., Part 137, note), are canceled and the following regulations are prescribed which shall be effective 31 days after date of publication of this document in the Federal Register:

SUBPART 137.01—AUTHORITY AND SCOPE OF REGULATIONS

137.01-1	Authority.
137.01-5	Disciplinary proceedings.

SUBPART 137.05—INVESTIGATING OFFICERS AND INVESTIGATIONS

137.05-1	Designations.
137.05-5	Investigating procedures.

Sec.	
137.05-7	Voluntary surrender of licenses and certificates to avoid hearings.
137.05-10	Instituting proceedings.
137.05-15	Service of charges, specifications, etc.

SUBPART 137.07—EXAMINERS

137.07-1	Designations.
137.07-5	Responsibilities.

SUBPART 137.09—HEARINGS

137.09-1	Procedures for conduct of hearings.
137.09-5	General.
137.09-10	Examiner's opening statement.
137.09-15	Production of documents.
137.09-20	Advising person charged of right to counsel, witnesses, etc.
137.09-25	Appearances.
137.09-30	Removal of witnesses from hearing room.
173.09-35	Arraignment and plea.
137.09-40	Opening statement of investigating officer.
137.09-45	Opening statement by or on behalf of person charged.
137.09-50	Witnesses.
137.09-52	Testimony by interrogatories and depositions.
137.09-55	Argument.
137.09-60	Submission of briefs, proposed findings and conclusions.
137.09-65	Findings.
137.09-70	Prior record.
137.09-75	Decision.
137.09-80	Service of original findings and order.
137.09-85	Notification of right to appeal.
137.09-90	Declaration that hearing is closed.

SUBPART 137.11—APPEALS

137.11-1	Time for filing, contents, etc.
137.11-5	Record for decision on appeal.
137.11-10	Action on appeal.
137.11-15	Temporary documents.

SUBPART 137.13—WITNESSES AND WITNESS FEES

137.13-1	Witnesses and witness fees.
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SUBPART 137.15—EVIDENCE OF CRIMINAL LIABILITY

137.15-1	Referral to Attorney General.
137.15-5	Use of judgments of convictions.

SUBPART 137.17—DISCLOSURE OF RECORDS

137.17-1	Statements of witnesses and exhibits.
137.17-5	Final opinions and orders.
137.17-10	Records held confidential.

- Sec.
 137.17-15 Transcripts of disciplinary records.
 137.17-20 Production upon subpoena.
 137.17-25 Testimony by Coast Guard personnel.

SUBPART 137.21—CONSTRUCTION OF REGULATIONS AND RULES OF EVIDENCE

- 137.21-1 Construction of regulations.
 137.21-5 Adherence to rules of evidence.

Authority: §§ 137.01-1 to 137.21-5, inclusive, issued under R. S. 4450, as amended, 49 Stat. 1544, sec. 5 (e), 55 Stat. 244, and Public Law 404, 79th Cong., 60 Stat. 238, 5 U. S. C. Sup., 1001 et seq., 46 U. S. C. 239, 367, 50 U. S. C. 1275, and sec. 101, Reorganization Plan No. 3 of 1946 11 F. R. 7875.

SUBPART 137.01—AUTHORITY AND SCOPE OF REGULATIONS

§ 137.01-1 *Authority.* The regulations in this part are issued in accordance with the authority in Title 46 U. S. Code section 239 (R. S. 4450), and Public Law 404, 79th Cong. (60 Stat. 238, 5 U. S. C. 1001 et seq.).

§ 137.01-5 *Disciplinary proceedings.* Suspension or revocation proceedings shall be instituted by an investigating officer in any case in which it appears, as a result of any investigation made under Part 136 of this subchapter, or otherwise, that there are reasonable grounds to believe that a licensed or staff officer or holder of a certificate of service is incompetent or has been guilty of misbehavior, negligence, or unskillfulness or has endangered life or has wilfully violated any of the provisions of Title 46 U. S. Code sections 170, 214, 215, 222, 224, 224a, 226, 228-234, 239, 340, 361, 362, 364, 367, 371-373, 375-382, 384, 385, 391, 391a, 392, 393, 399, 400, 402-416, 435-440, 451-452, 460-463, 464, 467, 470-481, 482, 489-498, or Title 50 U. S. Code section 1275, or any of the regulations issued thereunder.

SUBPART 137.05—INVESTIGATING OFFICERS AND INVESTIGATIONS

§ 137.05-1 *Designations.* An investigating officer is designated in writing by the District Commander in domestic units and by the Commandant in foreign ports.

§ 137.05-5 *Investigating procedures.* (a) The investigating officer shall investigate marine casualties and inquire into complaints of misconduct, incompetence, unskillfulness, negligence, endangering of life, or wilful violation of law, which if substantiated could serve as the basis for charges under Title 46 U. S. Code section 239 against any person who is serving under a license or certificate of service issued by the Coast Guard, or issued by any predecessor authority. Upon the completion of such in-

vestigation or inquiry the investigating officer has five alternative courses:

(1) If he finds that there is no basis for the complaint; that there is no jurisdiction; that the case is of trivial importance; that there is no reasonable expectation of obtaining necessary witnesses, or that the accused is not or probably will not be available, he may take no action and recommend closing the case.

(2) If he finds there is basis for the complaint but the violation is not of a serious character, or that it is of a serious character but with extenuating circumstances, or where the ends of justice will be best served, or where the exigencies of the situation are such that formal proceedings would be impracticable, he may orally admonish the person and shall subsequently advise him of the facts or conduct found to be the basis for the complaint and which will be made a matter of record.

(3) If the investigating officer finds adequate basis for a complaint and the person under investigation, or witnesses are not then available, the case may be referred to the Commandant or to any other port or district for completion of action.

(4) If the investigating officer finds evidence of physical incompetence he may accept voluntary surrender of a license or certificate until such time as the person concerned produces a certificate of medical fitness from the United States Public Health Service or other competent medical authority.

(5) If the investigating officer finds reasonable ground to believe that a licensed or certificated person is incompetent or has committed some act or failed to perform some duty which would be the basis for revocation or suspension of a license or certificate, he may prefer charges.

(b) In the conduct of an investigation, the investigating officer shall have the power to administer oaths, subpoena witnesses, require persons having knowledge of the subject matter of the investigation to answer questionnaires, and require the production of relevant books, papers, documents, licenses, certificates, or other records. The investigating officer conducting such investigation shall, where the licensed officer or certificated man whose conduct is being investigated is available, advise such person informally of the substance of the complaint against him and afford him an opportunity at that time to make such comment in refutation of such complaint as he may desire.

(c) Having concluded that there is reasonable ground to believe that there is basis for action, the investigating officer shall institute an appropriate proceeding against the license(s) and/or certificate(s) and

present the evidence acquired to an examiner.

§ 137.05-7 *Voluntary surrender of licenses and certificates to avoid hearing.* (a) Except as provided in § 137.05-5, any person whose conduct is under investigation or who has been served with charges and specifications may voluntarily surrender to the investigating officer his licenses and/or certificates in preference to appearing at a hearing under Title 46 U. S. Code section 239 to answer charges against him.

(b) In such cases the person surrendering the licenses or certificates shall sign a statement containing the following stipulations:

(1) That the licenses or certificates are voluntarily surrendered in preference to appearing at a hearing to answer charges against him;

(2) That all title to such documents is permanently relinquished; and,

(3) That the right to a hearing, appeal, and judicial review are waived.

§ 137.05-10 *Instituting proceedings.* (a) To institute such proceedings the investigating officer shall prepare charges and specifications and serve the same upon the holder of the license(s) and/or certificate(s) involved, and at the same time he shall furnish the appropriate examiner with a copy of such charges and specifications and transmit the case for hearing by the examiner. The examiner shall fix the time and place of the hearing and furnish information thereof to the investigating officer who shall summon the person charged, subpoena witnesses, and otherwise prosecute the case.

(b) A charge is a designation of an offense in general terms. The offense must be one within the purview of Title 46 U. S. Code section 239 and of the regulations promulgated thereunder. It is permissible to prefer as many charges as may be necessary to provide for every possible contingency in the evidence. Under no circumstances does a charge constitute evidence of guilt, nor may any inference of guilt be drawn from the fact that licensed or certificated personnel have been charged. A specification sets forth the facts which form the basis of the charge, and any charge may be supported by one or more specifications. Its purpose is to enable the person charged to identify the offense so that he will be in a position to prepare his defense. The specification shall state:

(1) Legal authority and jurisdiction;

(2) Time and place of offense;

(3) Ultimate facts; and,

(4) Only one offense in any one specification.

§ 137.05-15 *Service of charges, specifications, etc.* A notice of the time and place of hearing and a copy of the charges and specifications shall be served upon the person charged either by personal service or by registered mail with return receipt required, sufficiently in advance of the time set to give such person a reasonable opportunity to prepare his defense. When personal service is made upon the person charged, the officer or employee making service shall exhibit the original of the notice to the person charged, read it to such person if he cannot read, and give him a copy thereof and of the charges and specifications. The person charged will be advised by the investigating officer at the time he is issued Notice of Hearing (Form CG 2639) that he has a right to have counsel represent him at the hearing, and that "counsel" may be a lawyer or any other person the accused desires to represent him. The person charged will be apprised of the nature of the proceedings and the possible penalties applicable and be afforded an opportunity of having witnesses subpoenaed to testify in his behalf.

SUBPART 137.07—EXAMINERS

§ 137.07-1 *Designations.* The examiners are designated in writing by the Commandant to conduct hearings necessary in the adjudication of disciplinary cases arising under Title 46 U. S. Code section 239 and are under the administrative control of that officer.

§ 137.07-5 *Responsibilities.* (a) The examiners are responsible for the conduct of hearings and shall observe all rules and regulations promulgated by the Commandant. The examiners shall render their decisions without undue delay after all evidence is in and after the parties have been afforded a reasonable opportunity to submit proposed findings and conclusions.

(b) The examiners shall be responsible for the preparation and forwarding of reports of hearings and the administrative work relating thereto, and shall have access to facilities and temporary use of personnel at such times and places as are needed in the prompt dispatch of official business.

(c) The examiners shall perform no duties inconsistent with or which will interfere with their duties and responsibilities as examiners. Any additional duties for examiners shall be assigned by the Commandant, or pursuant to instructions issued by the Commandant, to the District Commander.

(d) Save to the extent as required for the disposition of ex parte matters as provided by law, an examiner is prohibited from consulting with any-

one concerning "any fact in issue," unless after notice, all parties are permitted to participate. If, as the hearing develops, the examiner realizes that the evidence adduced must be analyzed by experts, he may request the holder of the license or certificate involved, or the investigating officer, to produce the necessary experts to give their views as witnesses. He may not informally obtain advice or opinions from the parties or their counsel or from any officer or employee of the Coast Guard as to the facts or the weight or the interpretation to be given to the evidence. The examiner may, however, informally obtain advice on matters of law or agency policy from officers or employees of the Coast Guard who were not "engaged in the performance of investigative or prosecuting functions" in that or a factually related case. This limitation does not apply to the Commandant, and the examiner may at any time consult with and obtain instructions from him on questions of law and policy.

SUBPART 137.09—HEARINGS

§ 137.09-1 *Procedures for conduct of hearings.* The procedures outlined in this subpart shall be followed in the conduct of hearings.

§ 137.09-5 *General.* (a) The examiner shall open the hearing at the time and place specified in the notice, administer all necessary oaths, cause a complete record of the proceedings to be kept, regulate and conduct the hearing in such a manner as to bring out all the relevant and material facts, and insure the accused a fair and impartial hearing on the charges made against him. The investigating officer shall aid in the orderly presentation of evidence and may examine and cross-examine witnesses and introduce documentary evidence into the record. The person charged shall have the right to have counsel present at the hearing and shall be permitted to call, examine and cross-examine witnesses and to introduce relevant documentary evidence into the record. Should the person charged desire counsel and has no means of obtaining one, the examiner will secure an officer, if one is available, to act in his defense. Any witness may, if he so desires, have personal counsel present during the time he is being examined to advise him as to his rights, privileges, and immunities under the Constitution, but such counsel may not otherwise participate in the hearing.

(b) The examiner shall have authority either on his own motion or upon the request of the parties to issue subpoenas summoning witnesses or requiring the production of any

relevant books, papers, documents, or other evidence. Applications for subpoenas may be filed with the examiner in writing by any party prior to or during the hearing. Such applications shall be timely, and specify the name of the witness and show the general relevance and reasonable scope of the evidence sought, and, if calling for documents, shall specify the same with such particularity as will enable them to be identified for purpose of production.

(c) The examiner may, at the outset of the hearing, during its progress, or at its conclusion, either on his own motion or on the motion of the investigating officer, cause or permit the amendment of the charges and specifications to correct clerical errors or errors of form.

(d) The examiner may, for good cause shown, either on his own motion or on the motion of the investigating officer or person charged, continue the hearing from day to day or adjourn such hearing to a later date or to a different place by announcement at the hearing or by other appropriate notice. In making such determination, consistent with the rights of the person charged to a fair and impartial hearing, the examiner shall give careful consideration to the future availability of witnesses and to the prompt dispatch of the vessel(s).

(e) In any disciplinary proceeding conducted under this part, the examiner may withdraw from the case when he deems himself disqualified. In such event he shall immediately notify the Commandant of his withdrawal and his reasons therefor. Any party may, in good faith, request the examiner to withdraw on the grounds of personal bias or other disqualification. The party seeking disqualification shall file with the examiner a timely affidavit setting forth in detail the facts alleged to constitute grounds for disqualification and the examiner may file a response thereto. If the examiner believes himself not disqualified he shall so rule and proceed with the hearing. If the party seeking disqualification excepts to the ruling of the examiner, such exception and evidence relating to the claim of disqualification shall be presented to the examiner. All matters relating to such claims of disqualification shall affirmatively appear in, and form part of the record.

(f) In any case in which the person charged, after having been duly served with notice of a hearing fails to appear, a notation to that effect shall be made in the record and the hearing shall proceed. The examiner shall cause to be placed in the record all facts concerning the issuance and service of summons, setting the manner, date and place of service. In "in

absentia" proceedings it is not necessary to introduce formally into the record all evidence bearing on the guilt of the person charged. However, it is necessary that prima facie evidence of guilt be established.

(g) The examiner may take official notice of facts at any stage in a proceeding, but the matters thus noticed shall be announced in open hearing and either party shall be afforded an opportunity to show the contrary, which shall also be recorded.

§ 137.09-10 *Examiner's opening statement.* The examiner shall open the hearing by announcing the statutory jurisdiction and by informing the person charged that the proceedings are not directed against his person or property but are solely concerned with his right to hold a license or certificate or indorsement thereon issued by the Coast Guard, or issued by any predecessor authority.

§ 137.09-15 *Production of documents.* The examiner shall require the person charged to produce all currently valid licenses or certificates issued to him by the Coast Guard or issued by any predecessor authority, and in the event the person charged alleges that he has lost any such license or certificate, the examiner will require the execution of a lost document affidavit (Form CG-719-E). The person charged shall be warned that the misstatement of any material item in such affidavit is punishable as a violation of a federal criminal statute.

§ 137.09-20 *Advising person charged of right to counsel, witnesses, etc.* The examiner shall advise the person charged of his right to be represented by counsel and inquire of the investigating officer whether the person charged has been afforded the right to have witnesses subpoenaed to testify in his behalf. The examiner shall also advise the person charged of his right to cross-examine witnesses testifying against him. All matters set out herein shall affirmatively appear in the record.

§ 137.09-25 *Appearances.* The appearances of persons at the hearing shall be entered in the following order:

- (a) The investigating officer;
- (b) The person charged;
- (c) Counsel for the person charged, if any; and,
- (d) Witnesses' personal counsel who may in the course of the hearing advise such witnesses of their constitutional rights, privileges and immunities, but who will not be allowed to examine or cross-examine the person charged or other witnesses or otherwise participate in the hearing.

§ 137.09-30 *Removal of witnesses from hearing room.* All witnesses

shall be excluded from the hearing room prior to the taking of their testimony and the examiner may segregate Government witnesses if he deems it desirable.

§ 137.09-35 *Arraignment and plea.* The examiner shall read the charge and specification to the person charged and shall obtain a definite plea to each and every specification. If the person charged is unwilling or unable to make a definite plea the examiner shall enter a plea of "not guilty" and if the person charged fails to appear at the hearing after due and sufficient notice a plea of "not guilty" shall likewise be entered in his behalf by the examiner.

§ 137.09-40 *Opening statement of investigating officer.* After arraignment and plea, the investigating officer shall make a brief statement outlining the basis for the preferment of the charge and all particulars incident to the substance of the complaint; notification to the accused of right to counsel; notification to accused of right to have witnesses subpoenaed; particulars incident to the service of original charge and specification; and the nature of the proceedings. The statement shall also contain a summary of the investigation made when a plea of "guilty" is entered, and a summary of matters expected to be proved by testimony, when a plea of "not guilty" is entered.

§ 137.09-45 *Opening statement by or on behalf of person charged.* The person charged or his counsel shall be afforded an opportunity of stating to the examiner what he intends to establish by his evidence. This may be waived or deferred at the option of the person charged or his counsel. Where the person charged has entered a plea of "guilty" he or his counsel may present to the examiner any and all mitigating circumstances believed material. Should this presentation be inconsistent with a "guilty" plea the examiner shall reject the plea and shall enter a plea of "not guilty" in lieu thereof.

§ 137.09-50 *Witnesses.* (a) The investigating officer has the burden of proof and therefore presents his witnesses first. All witnesses shall be sworn, duly examined, and may be cross-examined. They may be questioned by the examiner. The investigating officer shall begin his direct examination by properly identifying the witnesses. The witness shall be required to identify the person charged. The examiner may order withdrawn improper questions by the investigating officer or by the person charged or his counsel even though not objected to by the adversary party, in order that improper evidence may not be

introduced into the record. Either party shall have the right to recall for re-examination or cross-examination a witness who has previously testified. Upon conclusion of cross-examination by the parties, the parties may question the witness further on re-direct examination and the parties shall have the right of re-cross examination. The examiner may at any time ask any question of a witness which he believes will tend to clarify the issue before the hearing.

(b) In cases where a guilty plea has been entered the investigating officer may call witnesses to establish matters of aggravation and likewise the person charged or his counsel may call witnesses to establish matters in mitigation. An investigating officer shall not call witnesses when a guilty plea is entered unless he feels that the conduct of the person charged cannot be adequately presented without the testimony of such witnesses.

§ 137.09-52 *Testimony by interrogatories and depositions.* (a) Witnesses shall be examined orally, except that for good cause shown, testimony may be taken by deposition upon application of any party in interest or upon the initiative of the examiner.

(b) Applications to take depositions shall be in writing setting forth the reasons why such deposition should be taken, the name and address of the witness, the matters concerning which it is expected the witness will testify, and the time and place proposed for the taking of the deposition. Such application shall be made to an examiner prior to or during the course of the hearing.

(c) The examiner, shall, upon receipt of the application, if good cause is shown, make and serve upon the parties an order which will specify the name of the witness whose deposition is to be taken, the time and place of the taking of such deposition and shall contain a designation of the officer before whom the witness is to testify. Such deposition may be taken before any officer authorized to administer oaths by the laws of the United States.

(d) The party desiring the deposition may submit a list of interrogatories to be propounded to the absent witness; then the opposite party after he has been allowed a reasonable time for this purpose, may submit a list of cross-interrogatories. If either party objects to any question of the adversary party, the matter shall be presented to the examiner for a ruling. Upon agreement of the parties on a list of interrogatories and cross-interrogatories (if any) the examiner may propound such additional questions as may be necessary to clarify the testimony given by the witness.

(e) The subpoena referred to in § 137.09-5 (b) together with the list of interrogatories and cross-interrogatories (if any) shall be forwarded to the officer designated to take such deposition. This officer will cause the subpoena to be served personally on the witness, and the subpoena after service shall be endorsed and returned to the examiner.

(f) When the deposition has been duly executed it shall be returned to the examiner who then becomes the official custodian thereof. As soon as practicable after the receipt of the deposition the examiner shall present it to the parties for their examination. The examiner shall rule on the admissibility of the deposition or any part thereof and of any objection offered by either party thereto.

§ 137.09-55 *Argument.* (a) Both the investigating officer and the person charged or his counsel may present argument in the following order:

- (1) Opening argument by the investigating officer;
- (2) Argument by the person charged or his counsel; and
- (3) Closing argument by the investigating officer.

(b) The examiner may limit the amount of time to be allotted to the investigating officer and the person charged or his counsel.

§ 137.09-60 *Submission of briefs, proposed findings and conclusions.*

(a) Prior to a decision the examiner shall afford both parties reasonable opportunity to submit, either orally or in writing, proposed findings and conclusions together with supporting reasons therefor. The record shall show the ruling of the examiner upon each such proposed finding and conclusion presented. The examiner shall fix the time within which the parties shall file such proposed findings and conclusions. Failure to comply within the time so fixed by the examiner shall be regarded as a waiver of the right.

(b) Pending decision by the examiner on the proposed findings and conclusions, the licenses or certificates produced at the outset of the hearing shall remain in the custody of the examiner.

§ 137.09-65 *Findings.* A separate finding shall be made by the examiner on each charge and specification; such findings shall be based on the evidence adduced at the hearing and after rulings have been made upon each proposed finding and conclusion submitted. Specifications may alternatively be found "not proved," "proved in part," or "proved." In the event of a guilty plea the finding shall be specification "proved by plea." If any specification under a charge is found proved or proved in part in substantiation of the charge, the charge must

be found proved. The charge may alternatively be proved or dismissed. All decisions of the examiner shall become part of the record and include a statement of findings and conclusions as well as the reasons or basis therefor, upon all material issues of fact, law or discretion presented on the record, and the appropriate order.

§ 137.09-70 *Prior record.* The prior record of the person charged shall not be revealed to the examiner until at least one charge has been found proved. After announcing such a finding the examiner shall ascertain from the investigating officer if the person charged has any previous commendatory or disciplinary record. If the prior record is not readily available, the person charged may be questioned under oath as to his prior record.

§ 137.09-75 *Decision.* (a) After considering all of the evidence, arguments, briefs, proposed findings, proposed conclusions and the prior record (if any) of the person charged, the examiner shall make and announce his decision. If no charge is found proved in the findings, the decision shall state that the charge or charges are dismissed.

(b) If any charge is found proved, the decision of an examiner in a domestic port shall clearly state that the license or certificate of the person charged is:

- (1) Revoked; or,
- (2) Suspended for a specified period from a specific date; or,
- (3) Suspended for a specific period but not from a specified date, subject to a specified period of probation running from a specified date.

(c) The order of an examiner in a foreign port shall clearly state that the license or certificate of the person charged is:

- (1) Revoked; or,
- (2) Suspended for a period beginning with date of first arrival in continental United States and ending after a specified date on which report of arrival is made to the Coast Guard; or,
- (3) Suspended for a specific period but not from a specified date, subject to a specified period of probation running from a specified date.

(d) Any examiner may, if the circumstances of a particular case admit, admonish the person charged and advise him that such admonition will be made a matter of his official record.

(e) In the absence of an appeal as provided in Subpart 137.11, the decision of the examiner shall be final and binding on the person charged for all purposes.

(f) No person whose license or certificate has been revoked, or is under suspension, or is being proceeded

against shall be issued any other license or certificate except upon approval of the Commandant. However, when an examiner decides that the person charged is incompetent in the grade of license or certificate he holds, but would be competent in a lower grade, he may revoke the license or certificate and, without requiring a formal examination, may provide for the issuance of another license or certificate of a grade for which the person charged would be competent.

§ 137.09-80 *Service of original findings and order.* The examiner shall prepare in writing his findings and decision in triplicate and deliver the original thereof to the person charged at the time he announces the order. Should the hearing result in a probationary suspension or dismissal of charges the license(s) or certificate(s) shall be returned to the person charged and a notation to that effect made in the record.

§ 137.09-85 *Notification of right to appeal.* The person charged shall be fully advised by the examiner of his right to appeal in accordance with the regulations in Subpart 137.11. The examiner shall also advise the person charged that if such appeal is not taken within the time limits specified in Subpart 137.11 it will not be thereafter permitted.

§ 137.09-90 *Declaration that hearing is closed.* Upon completion of the procedure outlined in this subpart, and where any person against whom charges have been proved has been informed of his right to appeal, the hearing shall be declared closed by the examiner.

SUBPART 137.11—APPEALS

§ 137.11-1 *Time for filing, contents, etc.* (a) A person whose license or certificate is revoked, suspended, suspended on probation or admonished by an examiner in a Coast Guard District may any time within 30 days after the decision of the examiner take an appeal to the Commandant. This appeal to the Commandant shall be taken by filing a notice of appeal with the District Commander of the district in which the hearing was held.

(b) A person whose license or certificate is revoked, suspended, suspended on probation or admonished by an examiner in a foreign port may, within thirty days after the date of his arrival in the continental United States or thirty days after the date of the decision, whichever is later, take an appeal to the Commandant. This appeal to the Commandant shall be taken by filing a notice of appeal with the Commandant or the District Commander of the district in which the person first arrived in the continental United States.

(c) The notice may be prepared by the appellant or appellant's counsel. The notice shall:

(1) Be typewritten or written in a legible hand; and,

(2) Be addressed to the Commandant; and,

(3) Set forth as briefly as possible the name of the appellant, the nature of the charge, the substance of the decision of the examiner, the name of the examiner who made the decision; and,

(4) Contain a statement of each separate ground for such appeal, together with a certificate from the appellant that the appeal is not taken for the purposes of delay.

(d) The appellant may file exceptions to the decision of the examiner supported by a brief or memorandum with his notice of appeal in elaboration of the matters set forth. The District Commander shall immediately transmit such notice of appeal, exceptions, brief or memorandum, if any, to the Commandant together with a complete transcript of the record in the case, if in his possession.

§ 137.11-5 *Record for decision on appeal.* The transcript of testimony together with all papers and exhibits filed in the proceedings shall constitute the exclusive record for decision on appeal.

§ 137.11-10 *Action on appeal.* The Commandant on appeal may alter or modify any finding of the examiner and may affirm, reverse or modify the order of the examiner, or he may remand the case for further hearing, but the Commandant will not consider evidence which is not a part of the record. The decision of the Commandant on appeal shall be final.

§ 137.11-15 *Temporary documents.* Any person intending to appeal from the decision of the examiner to the Commandant may file with the examiner who rendered the decision or the Commander of the Coast Guard district in which the hearing was held a written request for a temporary license or certificate of the same type and character as that suspended or revoked by his decision. If this request is filed with the District Commander he shall immediately transmit such request to the examiner who heard the case in the event the case has not been forwarded to the Commandant, otherwise the request shall be forwarded to the Commandant. Except in the case of willfulness, or that in which public health, interest, or safety requires otherwise, the examiner or the Commandant may issue a temporary license or certificate of the same character and legal effect as that suspended or revoked but subject to such terms and conditions as he may prescribe except that it shall be effective for a definite period of time,

which may be extended from time to time, or until the final determination of the appeal is made. The request for a temporary license or certificate and the action of the examiner or the Commandant on the request shall be a part of the record.

SUBPART 137.13—WITNESSES AND WITNESS FEES

§ 137.13-1 *Witnesses and witness fees.* The regulations regarding witnesses and witness fees are set forth in Subpart 136.11 of this subchapter.

SUBPART 137.15—EVIDENCE OF CRIMINAL LIABILITY

§ 137.15-1 *Referral to Attorney General.* (a) If as a result of any investigation or other proceeding conducted hereunder, evidence of criminal liability on the part of any licensed officer or holder of certificate of service or any other person is found, such evidence shall be referred to the Attorney General.

(b) Investigating officers shall determine whether proceedings under Title 46 U. S. Code section 239 should be instituted or concluded before criminal action is initiated or completed or whether action should be deferred pending outcome of the criminal action in Federal or State courts. One controlling factor will be whether the witnesses will be available if the hearing is delayed.

§ 137.15-5 *Use of judgments of conviction.* (a) The judgment of conviction by a Federal court is res judicata of the issues decided by that judgment. Where acts forming the basis of the charges in a Federal court are the same as those involved in proceedings under Title 46 U. S. Code section 239, the said judgment of conviction is conclusive in the latter proceedings. The person charged may not challenge the jurisdiction of a Federal court in proceedings under Title 46 U. S. Code section 239 and evidence offered to challenge such jurisdiction will not be admitted.

(b) Where the acts involved in a judgment of conviction of a State court are the same as those involved in proceedings under Title 46 U. S. Code section 239 the judgment of conviction is not res judicata of the issues decided. However, where the acts involved in the State court judgment of conviction are the same as those involved in proceedings under Title 46 U. S. Code section 239, such judgment of conviction is admissible in evidence in the latter proceedings and of itself constitutes substantial evidence adverse to the person charged. It is, however, rebuttable.

SUBPART 137.17—DISCLOSURE OF RECORDS

§ 137.17-1 *Statements of witnesses and exhibits.* Except as provided in

§ 137.17-10, recorded statements of witnesses and exhibits taken in the course of a disciplinary investigation shall be made available for inspection and examination during usual business hours at the appropriate Coast Guard district office or at Coast Guard Headquarters, Washington, D. C. Copies of these records will be made available on written request to the District Commander or the Commandant. If extra copies of the records are available they will be furnished without cost to parties in interest. If sufficient copies are not available, extra or photostatic copies will be made at the expense of the parties in interest requesting such copies.

§ 137.17-5 *Final opinions and orders.* There shall be maintained at Coast Guard Headquarters, Washington, D. C., a file of final opinions and orders in the adjudication of disciplinary proceedings, which file in its complete form is held to be confidential for the reason that disclosure would be prejudicial to the individual or vessel to which it relates without furthering the public interest, however, such file may be inspected or examined after the names or other identifying data has been deleted.

§ 137.17-10 *Records held confidential.* Administrative reports of investigating officers or examiners contained in any disciplinary record, or the investigation or disposition of charges during an investigative non-public stage and before the institution of formal proceedings; documents, memoranda or correspondence of an internal administrative nature; and testimony, documents and other data which should for security reasons not be disclosed; are held confidential because disclosure of information would be prejudicial to the individuals to whom it relates without furthering the public interest and therefore will not be made available for public inspection or release.

§ 137.17-15 *Transcript of disciplinary record.* (a) A complete transcript of a disciplinary record will be made available to any person whose license or certificate is revoked or suspended for the purpose of taking an appeal pursuant to the regulations in Subpart 137.11, or, upon specific request and for good cause shown by the person immediately concerned. Except as provided in this part, transcripts of records in disciplinary proceedings are matters of a confidential nature and are not to be made available for public inspection or release.

(b) The eligible person requesting a transcript, other than for purposes of appeal, where no extra copy is available, shall pay the costs for having it

photostated, copied, or transcribed at the commercial rates charged for such work within the locality where the record is kept.

(c) Subject to the payment of costs, as provided in paragraph (b) of this section, the transcript of testimony taken in such disciplinary proceedings will be furnished to any firm, person or agency upon a showing satisfactory to the Commandant that the applicant has a real founded interest in such transcript in that such material is desired for the purpose of assisting in the prosecution or defense of litigation, or prospective litigation, involving civil rights growing out of the incident or incidents under investigation.

§ 137.17-20 *Production upon subpoena.* Where requests for information or material are denied for any reason, the applicant will be advised that the document or material may be produced upon service of a subpoena duces tecum from a court of competent jurisdiction, provided such material is not affected by security considerations.

§ 137.17-25 *Testimony by Coast Guard personnel.* (a) No person in the service of the Coast Guard shall, without the prior approval of the Commandant, give any testimony with respect to any investigation or any other official proceedings in any suit or action in the courts.

(b) An affidavit by the litigant or his attorney, setting forth the interest of the litigant and the information with respect to which the testimony of such officer or employee is desired, must be submitted before permission to testify will be granted. Permission to testify will, in all cases, be limited to the information set forth in the affidavit, or to such portions thereof as may be deemed proper.

SUBPART 137.21—CONSTRUCTION OF REGULATIONS AND RULES OF EVIDENCE

§ 137.21-1 *Construction of regulations.* The regulations in this part shall be liberally construed to insure just, speedy and inexpensive determination of the issues presented.

§ 137.21-5 *Adherence to rules of evidence.* As hearings under this part are administrative in character, strict adherence to formal rules of evidence is not imperative. However, in the interest of orderly presentation of the facts of a case, the rules of evidence should be observed as closely as possible. Considerable latitude should be extended to the person charged who does not have legal counsel but investigating officers should be required to conform more strictly to the rules of evidence. However, the examiner shall exclude from the record, insofar as practicable, irrelevant, immaterial,

and unduly repetitious evidence. The decision of the examiner must be supported by reliable, probative and substantial evidence.

Dated October 7, 1947.

[SEAL] MERLIN O'NEILL,
Rear Admiral, U. S. Coast Guard,
Acting Commandant.

[F. R. Doc. 47-9210; Filed, Oct. 13, 1947;
8:53 a. m.; 12 F. R. 6737, October 14, 1947]

AFFIDAVITS

The following affidavit was accepted during the period from September 15, 1947, to October 15, 1947:

Pioneer Alloy Products Co., Inc.,
16601—11 Euclid Ave., Cleveland,
Ohio. Valves.

FUSIBLE PLUGS

The Marine Engineering Regulations and Material Specifications require that manufacturers submit samples from each heat of fusible plugs to the Commandant for test prior to plugs manufactured from the heat being used on vessels subject to inspection by the Coast Guard. A list of approved heats which have been tested and found acceptable during the period from July 15 to October 15, 1947, is as follows:

Walworth Co., Inc., Greensburg, Pa.
Heat No. 124.

ELECTRICAL APPLIANCES

The following list supplements that published by the United States Coast Guard under date of May 15, 1943, entitled "Miscellaneous Electrical Equipment Satisfactory for Use on Merchant Vessels," as well as subsequently published list, and is for the use of Coast Guard personnel in their work of inspecting merchant vessels. Other electrical items not contained in this pamphlet and subsequent listings may also be satisfactory for marine use but should not be so considered until the item is examined and listed by Coast Guard Headquarters. Before listings of electrical appliances are made, it is necessary for the manufacturer to submit to The Commandant (MMT), United States Coast Guard, Washington 25, D. C., duplicate copies of a detail assembly drawing, including a material list with finishes of each corrosive part of each item.

Manufacturer and description of equipment	Location apparatus may be used				Date of action
	Passenger and crew quarters and public spaces	Machinery cargo and work spaces	Open decks	Pump rooms of tank vessels	
Murlin Manufacturing Co., Philadelphia, Pa.: Bulkhead lighting fixture, nonwatertight, 1 40-watt lamp maximum, drawing No. 940-1, Alt. 0	x				9/16/47
Ceiling lighting fixture, nonwatertight, 8 60-watt lamps maximum, drawing No. 1239, Alt. 0	x				9/26/47
Pilot Marine Corp., New York, N. Y.: Engine Order Telegraph Equipment, 115 volts, D. C.: Bridge instrument, D. F. S. E., model 9BT5D, drawing Nos. PM-7000D, Alt. 3 and PM-7001D, Alt. 2	x	x			9/26/47
Engine room instrument, S. F. S. E., model 9ET8D, drawing Nos. PM-7050D, Alt. 0 and PM-7051D, Alt. 0	x	x			9/26/47
The Dayton Manufacturing Co., Dayton, Ohio: Vanity light fixture Nos. 5620 and 5621, nonwatertight, 1 30-watt lamp maximum, drawing No. X46G1771, change B	x				10/10/47

ARTICLES OF SHIPS' STORES AND SUPPLIES

Articles of ships' stores and supplies certificated from September 25, 1947, to October 25, 1947, inclusive, for use on board vessels in accordance with the provisions of part 147 of the regulations governing "Explosives and Other Dangerous Articles on Board Vessels."

Xzit Sales Co., 158 14th Street Hoboken, N. J., dated October 1947. Certification No. 233, "Xzit Bilge Cleaner;" Certification No. 234, "Xzit Soot and Sludge Remover" and Certification No. 235 "Evapo De-Scaler."

FLASHLIGHT BATTERIES

The following dry cells have been found to comply with paragraph E-4 of "United States Coast Guard Specification for Flashlights, Electric, Hand," dated May 11, 1945. This list supersedes previously published lists of flashlight batteries:

Name of manufacturer	Trade name and type number
Bright Star Battery Co., Clifton, N. J.	Bright Star No. 754.
General Dry Batteries, Inc., Cleveland, Ohio.	General Size D, Heavy Duty.
National Carbon Co., Cleveland, Ohio.	Eveready No. 1050.
U. S. Electric Mfg. Corp., New York, N. Y.	Usalite 1065.

Merchant Marine Personnel Statistics

MERCHANT MARINE LICENCES ISSUED DURING SEPTEMBER 1947

DECK OFFICERS

Region	Master										Chief mate										Second mate									
	Ocean		Coast-wise		Great Lakes		B. S. & L.		Rivers		Ocean		Coast-wise		Great Lakes		B. S. & L.		Rivers		Ocean		Coast-wise		Great Lakes		B. S. & L.		Rivers	
	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R
Atlantic coast.....	27	61	1	7			5	37	2	2	22	6					1	5		1	24	19		1						
Gulf coast.....	10	27		6			2	9			6	6	1		1			1		1	7	2								
Great Lakes and rivers.....		2			1	7			1	14									4	7										
Pacific coast.....	30	51					5	15			9	6					3	3			14	7								
Total.....	67	141	1	13	1	7	12	61	3	22	37	14		1			4	9	4	9	45	28		1						

Region	Third mate										Pilots						Master mate				Total					
	Ocean		Coast-wise		Great Lakes		B. S. & L.		Rivers		Great Lakes		B. S. & L.		Rivers		Uninspected vessels, high seas				Original	Re-newal	Grand total			
	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R						
Atlantic coast.....	77	19												30	118	3	6	1	1					193	283	476
Gulf coast.....	6	2												4	36	3	9							38	101	139
Great Lakes and rivers.....		2									6	17			10	18								22	68	90
Pacific coast.....	3	5												17	52			4	2	2				87	141	228
Total.....	86	28									6	17		51	206	16	33	5	3	2			340	593	933	

ENGINEER OFFICERS

Region	Chief engineer, steam				First assistant engineer, steam				Second assistant engineer, steam				Third assistant engineer, steam				Uninspected vessels								
	Unlimited		Limited		Unlimited		Limited		Unlimited		Limited		Unlimited		Limited		Chief engineer		Assistant engineer						
	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R					
Atlantic coast.....	12	46	5	37	7	6			1	13	29			71	16										
Gulf coast.....	2	32		14	2	1			1	11	6			6	2										
Great Lakes and rivers.....		9	4	45	2	7			4	2	1			4	2										
Pacific coast.....	5	28	1	8	5	13	1	2	12	12				15	5										
Total.....	19	115	10	104	16	27	1	8	38	48		4	94	25											

Region	Chief engineer, motor				First assistant engineer, motor				Second assistant engineer, motor				Third assistant engineer, motor				Totals		
	Unlimited		Limited		Unlimited		Limited		Unlimited		Limited		Unlimited		Limited		Original	Re-newal	Grand total
	O	R	O	R	O	R	O	R	O	R	O	R	O	R					
Atlantic coast.....	1	14	3	17		1		2	1	1			63	8		176	178	354	
Gulf coast.....	1	9	1	11			2			1			1	2	1	27	79	106	
Great Lakes and rivers.....		3	3	8				3					1	4		14	90	104	
Pacific coast.....	2	12	9	18	1		1	1	3	1			5	8		60	108	168	
Total.....	4	38	16	54	1	1	3	6	4	3			70	22	1	277	455	732	

ORIGINAL SEAMAN'S DOCUMENTS ISSUED DURING SEPTEMBER 1947

Region	(1) Staff officer	(2) Continuous discharge book	(3) U. S. Merchant mariner's documents	(4) AB any waters unlimited	(5) AB any waters 12 months	(6) AB Great Lakes 18 months	(7) AB tugs and tow-boats any waters	(8) AB* bays and sounds	(9) AB sea-going barges	(10) Life-boatman	(11) Q. M. E. D.	(12) Radio operators	(13) Certificate of service	(14) Tanker-man
Atlantic coast.....	112	0	1,685	73	152	12	1	0	1	264	251	34	1,410	17
Gulf coast.....	18	20	753	17	60	7	0	0	0	82	77	7	701	19
Pacific coast.....	37	36	605	22	76	1	0	0	6	219	100	7	508	3
Great Lakes and rivers.....	4	0	851	12	57	21	0	0	0	73	58	1	781	32
Total.....	171	56	3,894	124	345	41	1	0	7	668	486	49	3,400	62

*12 months, vessels 500 gross tons or under not carrying passengers.

NOTE.—Columns 4 through 14 indicate endorsements made on U. S. Merchant Mariner's Documents.

WAIVERS OF MANNING REQUIREMENTS FROM SEPTEMBER 1 TO SEPTEMBER 30, 1947

Authority for These Waivers Contained in Navigation and Vessel Inspection Circular No. 2-47, Dated May 20, 1947

REGION	Number of vessels	Deck officers substituted for higher ratings	Engineer officers substituted for higher ratings	Able seamen substituted for deck officers	Ordinary seamen substituted for able seamen	Qualified members of engine department substituted for engineer officers	Wipers or coal passers substituted for qualified members of engine department	Wipers, coal passers or cadets substituted for engineer officers	Ordinary seamen or cadets substituted for deck officers	Total
Atlantic coast.....	514	6	51	1	864	13	284	2	-----	1,221
Gulf coast.....	234	4	21	-----	431	11	133	-----	-----	600
Pacific coast.....	114	1	9	2	133	3	72	1	5	226
Great Lakes.....	177	9	3	-----	152	3	237	-----	-----	401
Total.....	1,039	20	84	3	1,580	30	726	3	5	2,451

CREW SHORTAGE REPORTS FROM SEPTEMBER 1 TO SEPTEMBER 30, 1947

These Reports Submitted in Accordance With Navigation and Vessel Inspection Circular No. 2-47, Dated May 20, 1947

REGION	Number of vessels	Ratings in which shortages occurred											Total	
		Chief mate	Second mate	Third mate	Radio	Able seamen	Ordinary seamen	Chief engineer	First engineer	Second engineer	Third engineer	Qualified member engine department		Wiper or coal passer
Atlantic coast.....	21	-----	-----	-----	1	1	7	-----	-----	1	4	13	3	30
Gulf coast.....	10	-----	-----	-----	-----	2	7	-----	-----	1	1	6	1	18
Pacific coast.....	9	-----	-----	-----	-----	2	5	-----	-----	-----	-----	2	-----	9
Great Lakes.....	196	4	7	36	-----	77	10	1	6	23	65	95	27	351
Total.....	236	4	7	36	1	82	29	1	6	25	70	116	31	468