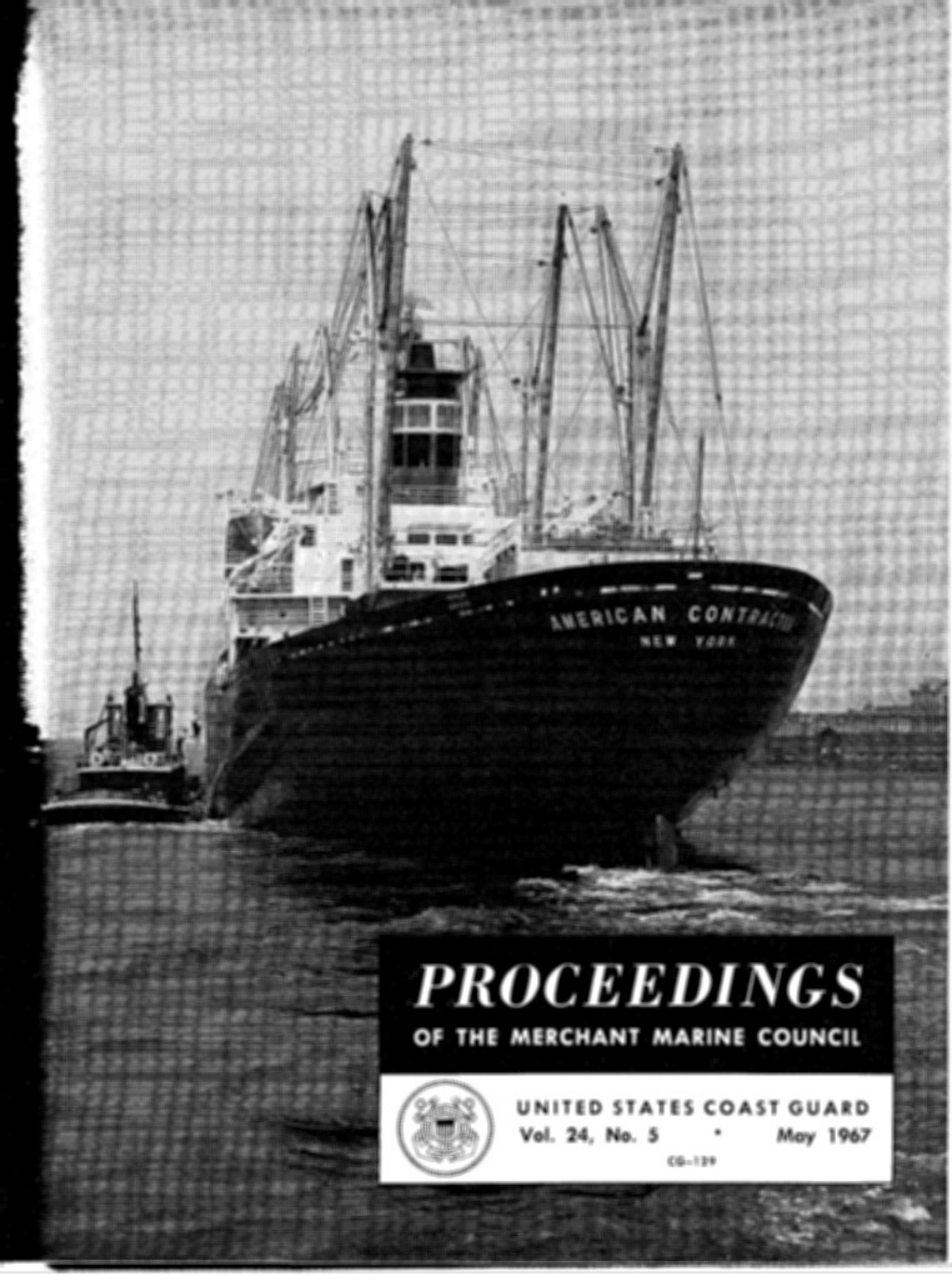

PROCEEDINGS

OF THE MERCHANT MARINE COUNCIL

UNITED STATES COAST GUARD

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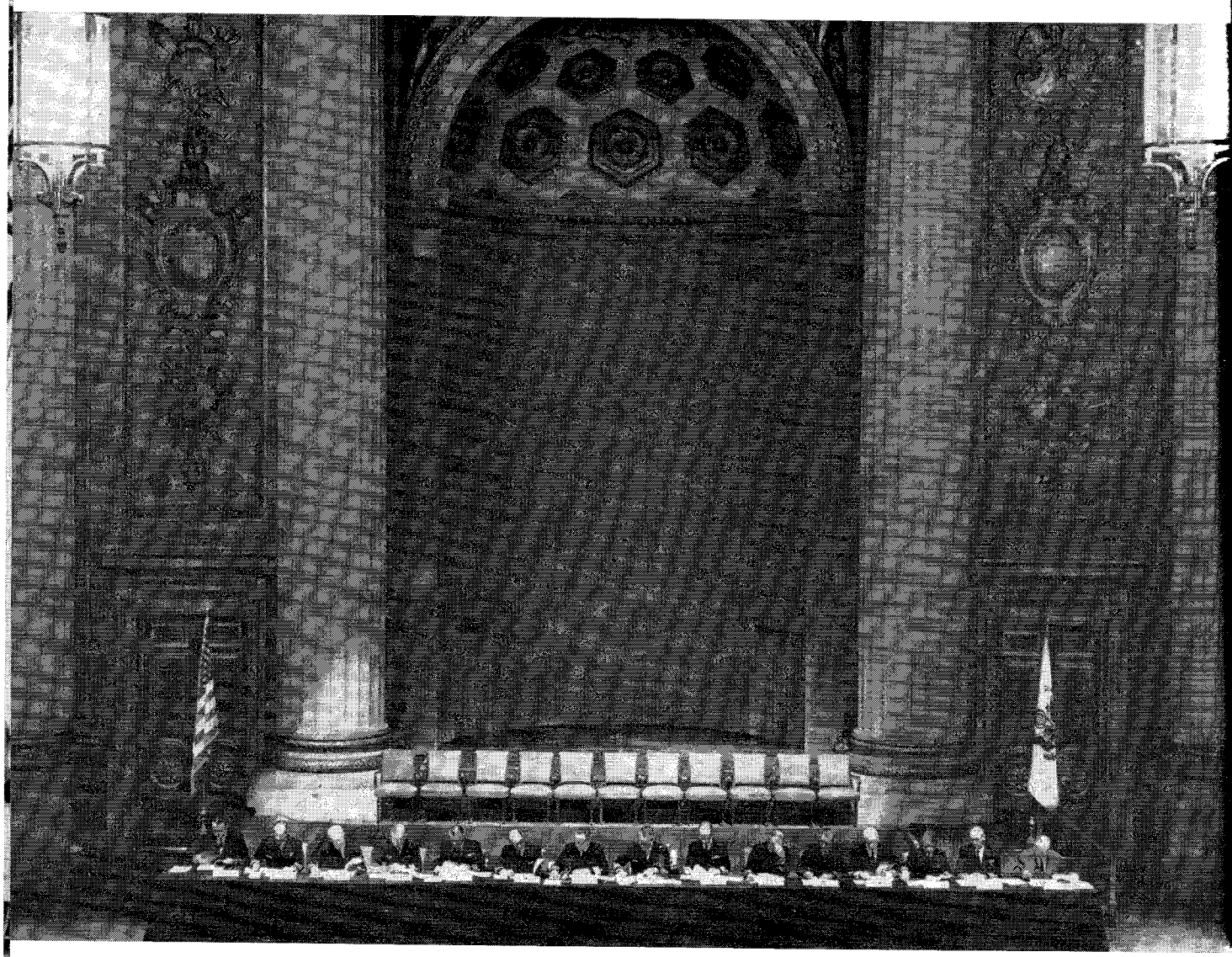
CG-129



The Merchant Marine Council in public session, March 20, 1967 at the Departmental Auditorium, Washington, D.C.

Public Hearing

The Commandant, U.S. Coast Guard, has accepted the recommendations of the Merchant Marine Council, regarding proposals revising the Navigation and Vessel Inspection Regulations. The Merchant Marine Council held its Annual Session on March 20 and 21, 1967.

The proposals to revise the Navigation and Vessel Inspection Regulations were set forth in two volumes of the Merchant Marine Council Hearing Agenda, CG–249, and carried in synopses in the February issue of the *Proceedings.*

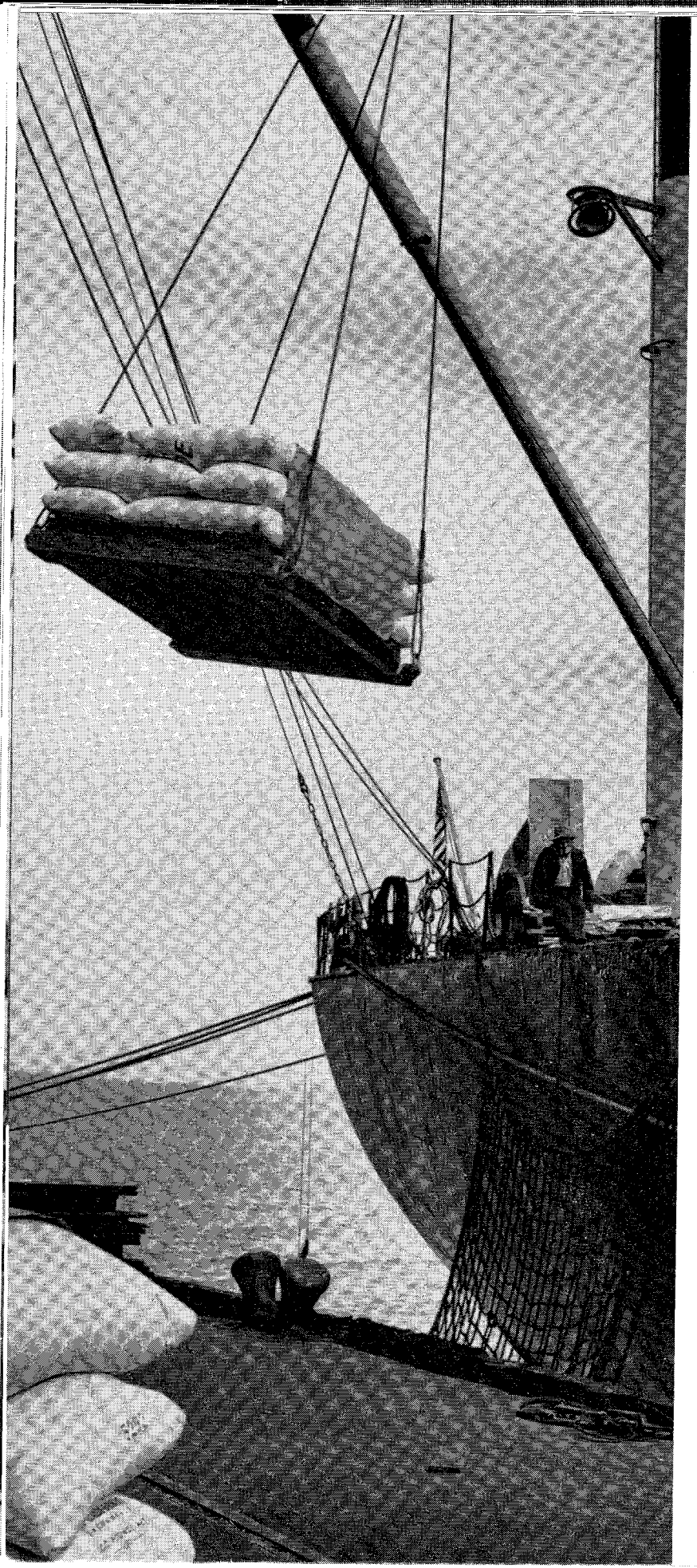
Indicative of the interest in the proposals was the attendance of 53 persons representing all facets of recreational boating, labor unions, and shipping interests. Over 220 written comments were received on various proposals under consideration.

The proposals considered concerned: (1) dangerous cargo regulations; (2) bulk dangerous cargo regulations; (3) port security and waterfront facilities; (4) navigation lights and shapes; (5) fire protection on both new and existing passenger vessels; (6) fire protection for tank vessels and cargo vessels; (7) gas freeing inspections prior to making alterations or repairs involving hotwork; (8) lifesaving equipment; (9) vessel inspections; (10) electrical engineering regulations; (11) operators or ocean operators of small passenger vessels, and motorboat operators; (12) Merchant Marine Officers and Seamen; and (13) disclosure of safety information concerning passenger vessels.

The Merchant Marine Council in Executive Session considered the oral and written comments, received at the Public Hearing March 20 and the additional 220 written comments submitted, containing suggestions for changes in the proposals. The proposals, as recommended by the Merchant Marine Council, were submitted to the Commandant for approval and publication in the Federal Register as soon as possible.

The Council's recommendations included carte blanche approval of some items as set forth in the agenda, approval of some items with adoption of certain changes, and, in some cases, referral of certain items for further study.

Substantial testimony was directed toward Agenda Item PH 13–67, Disclosure of Safety Standards of Passenger Vessels. The Merchant Marine Council accepted several changes in this proposal and recommended approval, as revised. ⚓



A Marine Section, National Safety Congress Paper

CARGO GEAR ABOARD modern ships is as safe as our naval architects can make it—limited as they are by the fact that the gear must be usable. While the gear is not foolproof, it certainly can be described as reasonably safe, with continuing efforts directed toward making it safer. But accidents are still caused with and by cargo gear.

Throughout the years, and particularly during the past quarter century, professionals have improved our cargo handling gear to a degree that allows safe operation with maximum dispatch and minimum casualties.

Important advances have been made in the construction of ships and in the character of their cargo gear facilities in promoting safer and speedier loading and discharging in order to reduce the ships' time in port.

We have imposed upon ourselves a multitude of rules, regulations, and standards to control and enforce participation in methods to prevent gear failure and to avoid bodily injury.

We have joined forces with each other in an alliance of safety standards to promote a full gamut of proved scientific principles.

We have been aided by our municipal, State, and Federal governments with assistance in coordinating these factors within our industry.

It would seem, when we attained maximum mechanical proficiency in our cargo gear, we would enjoy a

Cargo Gear Safety

Capt. E. B. Hendrix, Lykes Bros. Steamship Co.

marked reduction in accidents involving loading and discharging operations. But, contrary to our every effort, we still continue to suffer cargo gear accidents which cause personal injury and property damage.

Perhaps in our modern pushbutton generation, which demands efficiency and progress to survive, we should remind ourselves of George Bernard Shaw's sarcastic observation that "progress is merely the exchange of one inconvenience for another."

I am often tempted to place some credence in the remark when I review the never-ending flow of damage and injury reports attributed to cargo handling operations.

It is true that we have benefited by the many built-in safety features which have been introduced into our cargo gear arrangements. But thus far we have not accomplished the end of suffering and monetary losses in connection with the use of these devices.

The complete answer then lies in a combination of mechanical proficiency and human behavior; it is evident that we must pause occasionally to survey our trends lest we pay unquestioned homage to the technical developments in our ships, and forsake the individual motivation which must be present to capture the full potential of our progressive developments.

To clarify the mechanical and human behavior facets we must explore and compare the advantages derived by all concerned.

On general cargo ships, the term "cargo gear" is used to describe the ship's deck winches, its booms attached either to masts or kingposts, and the ropes or falls used in connection with booms and winches, in addition to loose gear used by stevedores for hoisting or lowering drafts of cargo.

General cargo is handled in U.S. ports chiefly by means of ship's gear, or by ship's gear in conjunction with floating derricks or lifting equipment on the dock.

In the economic objective of loading and discharging cargo, the operators, stevedores, and longshoremen have similar interests in the physical performance of this gear. The operators wish the greatest possible amount of cargo to be handled in the least possible time, because the transportation is paid by established rates, and any delay will cost them considerably. The stevedore's interest in performance is the same, because his worth to the operators is predicated on tons of cargo handled in a given period of time. The stevedore normally pays his longshoremen by the hour, and, therefore, he is dependent upon the uninterrupted functioning of the ship's equipment to do a good job.

The individual longshoreman's interest in the performance of the gear is not as easily defined. He is interested in rigs that provide the greatest ease and speed in handling his loads. He is concerned also with the reliability of the gear in that any extended breakdown would cause an unscheduled knockoff with loss of wages.

All parties, then, involved in the utilization of the ship's cargo gear have a related interest in the "mechanical" factors of performance.

Now we come to the matter of the relation of cargo gear to "safety" aboard ship.

Operators and stevedores are not merely joined by similar interests, but their motives are united and identical in their determination to protect their workers by requiring the absolute maximum safety of the gear. The operator has a legal and moral responsibility to maintain his vessel as "a safe place to work" and to provide "safe tools" with which to work. In the normal application of his safety duties and responsibilities the stevedore's actions are mutually beneficial, because he is compelled to confirm the adequacy of the ship's gear to insure the protection of his longshoremen, thereby fulfilling the obligations of all parties concerned.

Individual longshoremen, with their limited technical knowledge, cannot be entirely relied upon to discipline themselves in matters of safety. They must have guidance. For example, experienced longshoremen know that if the married falls are

lightlined with little or no load on the hook, the pulling power of the winches will part a guy or tear down a boom. They also know that if a lift is close to the safe working load, the gear seems to be under excessive stress and in danger of failure. These conclusions are the result of their experienced judgment but they seldom understand the reasons for these conditions.

When safety was being designed into ship's gear and equipment, special consideration was given to human factors. Almost every piece of equipment requires a worker to operate it, and the mechanisms of some have become too complex to be understood by the average worker. Therefore, human limitations and capabilities, both mental and physical are salient problems in the safety of the gear.

A good illustration of the principle of designing safety into mechanism is provided by the automatic coupler used on railroad cars.

The automatic coupler is a great improvement over the old link and pin coupler, which required a man to go between the cars to drop a pin and thus expose himself to a crushing hazard when the cars came together. But this device is not the final answer to railroading injuries. The brakeman must be compelled to practice safe methods and not to rely entirely upon built-in safety.

On new vessels constructed during the past 6 years, we have been able to eliminate two major hazards that caused many serious injuries and several deaths, that is, the elimination of the old-fashioned wooden hatch board and beams with the new modern self-closing hatch covers.

In this industry we have long had a problem with longshoremen and crew stepping on broken or loose hatch boards and falling onto the deck below. These hatch boards were placed on beams, which when not secured could be pulled out by cargo whip, the beam falling and allowing hatch boards to collapse.

The securing of these beams is a very simple matter and can be handled with a small bolt or clip. However, it was impossible to keep them properly secured, as the longshoremen when switching from one deck to another would not replace these bolts or clamps.

We have been able to build safety into our cargo booms. These are now raised and lowered with small electric winches so the raising and lowering has become a safer operation than in former years when the topping lift had to be removed and put on the gypsy head of the winch. Invariably the longshoreman or seaman did not properly secure this wire and the next thing we knew the boom was dropped. It is indeed good to feel that these problems are now solved on our modern-day vessels and these are no longer problems with us.

Failure of conventional ship's cargo gear occurs infrequently when it is utilized within the capacities for which it was designed. Usually a gear failure can be traced to improper rigging or lack of knowledge regarding the practices and conditions which are likely to result in failures.

From this we can see that cargo gear accident control is largely dependent upon the skill of the ships' officers and the stevedores. Casualties can be avoided if supervisory personnel, who are thoroughly familiar with the various mechanical features, enforce labor-safe methods for handling the equipment. It is of paramount importance that effective restraint is directed toward the longshoremen, particularly winch operators and riggers, to insure that these members of the working force will devote their attentions to the proper use of the gear.

A "duffer" on a golf course, for example, with the finest, most expensive bag of clubs, will practice poor habits unless he is shown the correct methods by someone who knows. It is the same way with a worker on a job. A "pro" must insist not only on good equipment but also on correct methods.

The pertinent question to be asked is, "Have we been successful in our endeavors to promote mechanical perfection and simultaneously effect accident control?" The answer obviously cannot be a 100-percent "Yes." However, definite and considerable progress has been made and it is clear that more fruitful accomplishments will be attained in future years, to a degree that maximum efficiency in preventing accidental injuries attributed to cargo gear will become a reality. ⚓

Cedarville—Topdalsfjord Collision

The Commandant has announced his Action on the Marine Board of Investigation convened to investigate the collision of the SS *Cedarville* and Norwegian MV *Topdalsfjord* on 7 May 1965, in the Straits of Mackinac with loss of life.

The record of the Marine Board of Investigation convened to investigate subject casualty has been reviewed and the record, including the Findings of Fact, Conclusions and Recommendations, is approved subject to the following comments.

COMMANDANT'S REMARKS

1. Concurring with the Board, it is concluded that the cause of the casualty was the failure of the Master of the SS *Cedarville* to navigate his vessel in a period of reduced visibility in compliance with the Statutory Rules of the Road. Despite the presence of radar, radiotelephone and recommended track lines, the primary anticollision deterrent must continue to be compliance with the Rules of the Road. The prudent mariner must not allow habit, familiarity with route, frequency of passage or the presence of various navigational aids to lessen his duty to comply with the Rules of the Road.

2. Great Lakes bulk carriers are not generally capable of withstanding unrestricted flooding of any main cargo space. When the collision occurred and the flooding could not be controlled the vessel was in danger of eventual sinking.

3. In arriving at a determination as to the speed changes and maneuvers of the SS *Cedarville* prior to the collision, the Board accepted the testimony of the Wheelsman in lieu of that of the Master. Although the Third Mate who was also in the wheelhouse and the engineer on watch did not survive the casualty, this conclusion is supported by the record of testimony. It is recognized that in periods of crises the witness' recollection of facts is often at variance with the situation as subsequently determined to have existed. Accordingly, no further action concerning this conclusion will be taken.

4. During the final minutes prior to the casualty, Mr. Charles H. Cook, missing Third Mate of the SS *Cedarville* was at the radar scope advising the Master. Records indicate that the license of Mr. Cook was endorsed as "radar observer."

5. Action concerning the evidence of violations of the Rules of the Road on the part of Captain Martin E. Joppich of the SS *Cedarville* has been taken under the Suspension and Revocation Proceedings.

6. The Secretary of Commerce with the concurrence of the Secretary of the Treasury has approved the award of a Gallant Ship Citation and Plaque to the German SS *Weissenburg* with ribbon bars to each member of the crew for their part in the rescue of the survivors.

W. J. SMITH,
Admiral, U.S. Coast Guard,
Commandant.

6 February 1967.

BOARD'S FINDINGS OF FACT

1. At approximately 0945R (e.s.t.) on 7 May 1965, the American SS *Cedarville* and the Norwegian MV *Topdalsfjord* collided in fog in the Straits of Mackinac, Mich. As a result the SS *Cedarville* sank at approximately 1025R on the same day with the loss of seven lives thereon. In addition, there are three more crewmembers still missing. 16 other crewmembers of the SS *Cedarville* were injured, while nine were rescued uninjured. The loss of the *Cedarville* was estimated at $3,500,000 with an additional cargo loss of $21,000. There were no injuries or loss of life on the MV *Topdalsfjord* and the damage, confined to the bow section was estimated at $30,000.

2. (Technical details of vessels deleted here.)

3. (Names of deceased crewmembers of *Cedarville* deleted here.)

4. (Names of missing crewmembers of *Cedarville* deleted here.)

5. (Names of injured crewmembers of *Cedarville* deleted here.)

6. The weather condition at the time and place of the casualty was dense fog with visibility estimated to be 300 to 600 feet. The winds were light from the southwest, the barometer 30.24 and the air temperature 41° F. There were indications of electrical weather disturbances in the Straits of Mackinac area. The water temperature was estimated at 36° F.

7. The *Cedarville* departed Calcite, Mich., at 0501R on 7 May 1965, en route to Gary, Ind., with 14,411 tons of open hearth limestone and a crew including the master of 35. The draft of the *Cedarville* was 22 feet, 1 inch forward and 22 feet 5 inches aft.

8. The *Cedarville* proceeded to the Straits of Mackinac under the supervision and navigation of the master. The master, in conjunction with the officers on watch, Chief Officer H. Piechan to 0800R and Third Officer C. Cook, thereafter, was utilizing the RCA (3 centimeter) radar and the radio direction finder to establish their position. The radar gave readings relative to the vessel's head and had five scales—1½, 4, 8, 20, and 40 statute miles. The vessel was equipped with a gyrocompass that was also being used. The gyro had been checked on the range leaving Calcite, Mich., and had indicated no error. The vessel was also equipped with the usual Great Lakes AM and FM radiotelephones, which were manned by the master. All navigation, communication and operating equipment or machinery was in satisfactory working condition prior to the casualty.

9. On the morning of the casualty, the deck watch officers were noting some of the pertinent operating data in the Bridge Log Book, and were using Lake Survey Chart No. 6 (Straits of Mackinac) or No. 60 (Lake Huron—Straits of Mackinac). The vessel's engineroom policy was to record engine speed orders in the Engine Bell Book and pertinent operating data in the Engine Log Book. Of the vessel's records only the Bridge Log Book has been recovered to date. At the time of the collision Third Assistant Engineer R. Radtke was on watch in the engineroom, L. Gabrysiak was helmsman and I. Trafelet was on the port wing of the bridge as lookout. Communication between the lookout and bridge personnel was by direct word of mouth. The bridge wing was 25 feet aft of the stem of the vessel.

10. After clearing the harbor at Calcite the *Cedarville* proceeded toward the Straits of Mackinac in light fog at full speed (88 r.p.m.s—approximately 12.3 m.p.h.). Great Lakes fog signals were being sounded utilizing the automatic fog signal device. With Forty Mile Point abeam at 0558R, 2 statute miles off, a new course of 305° gyro was set. Visibility was approximately 1 mile. The 305° course, which generally follows the indicated track line on the Lake Survey Chart No. 60 was continued to 0748R when the course was altered to 261° gyro using Poe Reef Light radio beacon (LL No. 1513–1965) and a radar range as a position fix. At 0812R with Poe Reef Light visible and abeam to starboard, approximately one-half mile off, the course was changed to 285° gyro. At 0842R the Cheboygan Traffic Lighted Bell Buoy (LL No. 1524–1965) was abeam close aboard to port. Visibility, at this time, had decreased to about one-half mile. No alterations of the engine speed orders had been given; however, the engine r.p.m.s at 0759R and thereafter were noted in the Bridge Log Book as having decreased to 84 r.p.m.'s, caused by less deep water and not by personnel action. The average speed of the *Cedarville* from Forty Mile Point to Cheboygan Traffic Buoy was 11.7 statute miles per hour.

11. At Cheboygan Traffic Buoy, a course of 302° T 302° gyro) was set for the Mackinac Bridge Lighted Bell Buoy No. 1 (LL No. 1562–1965). As on previous changes of course, the master of the *Cedarville* transmitted a security call on Channel 16 (156.8 Mc/s) and Channel 51 (2182 Kc/s) announcing the new course and position of his vessel.

12. Approximately 5 minutes after assuming the new 302° gyro course, radiotelephone communications were established with the SS *Benson Ford* downbound from Mackinac Bridge to Cheboygan Traffic Buoy. A passing arrangement was agreed upon verbally by both vessels and one-blast sound passing signals were initially exchanged for a port-to-port passing, while the vessels were still 2 miles apart. The *Cedarville*'s course was modified to 305° gyro to facilitate the meeting situation. The vessels passed each other without incident at a distance of one-half mile apart. The *Cedarville* did not see the *Benson Ford* visually. Although the master of the *Cedarville* stated he had reduced his speed to half ahead (50 r.p.m.'s) at this time there are no other records, testimony, or indications of any change in the engine speed orders to this point.

13. The *Cedarville* continued its 305° gyro course to keep clear of expected downbound vessels. Approximately 3 or 4 miles from the Mackinac Bridge, the *Cedarville* established radiotelephone communications on Channel 51 with the German Vessel *Weissenburg,* which was approaching east in the Mackinac Bridge channel. When the *Weissenburg* indicated an intention to go down the South Channel, a port-to-port passing arrangement was agreed upon verbally by both vessels. The course of the *Cedarville* was altered to 310° gyro to facilitate the meeting. Confirming sound signals were not exchanged between the two vessels. Visibility was estimated to be 1,200 feet at this time. The *Cedarville* continued to sound fog signals. The lookout then reported underway fog signals from the relative direction of Mackinac Bridge. They were also heard by the master from his position in the front window in the pilothouse. Although the master of the *Cedarville* stated he had reduced speed to slow ahead (25 to 30 r.p.m.'s) upon communicating with the *Weissenburg,* there are no other records, testimony or indications of any engine speed order changes from full ahead to this point.

14. The *Weissenburg* passed under the Mackinac Bridge at 0938R and about that time the German master told the *Cedarville* that there was a Norwegian vessel ahead of the *Weissenburg.* The master of the *Cedarville* attempted to communicate with the "Norwegian vessel" and arrange for a passing agreement; however, no contact was made.

15. The master of the *Cedarville* continued to get radar reports of a target—later identified as the *Topdalsfjord*—from Third Officer Cook on the radar. Under the master's instructions, the range scale settings were alternately changed between the 1½-, 4-, and 8-mile scales. As the range between the vessels decreased two different versions of the events were related.

a. According to the Wheelsman, L. Gabrysiak, the course was changed to the right and steadied on 325° gyro and the speed of the vessel was then reduced to half-speed ahead (50 r.p.m.'s). The third mate then reported to the master that the other vessel was closing in on the *Cedarville* and the bearing was not changing. One-blast passing signals in accordance with the Great Lakes Rules were then sounded on the *Cedarville* in between the fog signals using the manual whistle controls. The last one-blast signal was a very long blast. Shortly thereafter the *Topdalsfjord* was observed coming out of the fog at an estimated 100 feet. The engines were then placed on slow ahead (25 to 30 r.p.m.'s). As the vessels converged, the master placed the engines on full ahead and ordered hard left.

b. According to the Master, M. Joppich, the *Cedarville* was proceeding at slow ahead (25 to 30 r.p.m.'s) on course 310 gyro with the third mate keeping him informed of the other vessel's bearing and range on the radar. Within the 2-mile range no precise ranges or bearings were reported; however, the tendency of the other vessel to be "widening out to port" was reported. One-blast passing signals in accordance with the Great Lakes Rules were then sounded on the *Cedarville* in between the fog signals using the manual controls. After several unsuccessful attempts to make radio contact with the "Norwegian vessel" and with the range decreasing, the vessel's course was changed to the right gradually as recommended by the third mate. The *Topdalsfjord* was then noted looming out of the fog at an estimated 900 feet. The helm was ordered immediately to hard right

and full ahead was rung up on the engines. When the *Cedarville*'s bow passed ahead of the *Topdalsfjord*'s bow, the helm was ordered hard left in an effort to swing the stern clear.

16. The *Topdalsfjord* was on a steady heading and at right angles to the *Cedarville*'s general approach. The *Topdalsfjord*'s bow collided with the *Cedarville* at 0945R abreast of No. 7 hatch on the portside at a near perpendicular angle with only moderate impact felt. There was no danger signal sounded on the *Cedarville* at or prior to the collision.

17. The *Topdalsfjord* departed Milwaukee, Wis., at 1830R on 6 May 1965, en route to Fort William, Ontario, via the St. Marys Falls Canal at Sault Ste. Marie, Mich., with 1,800 tons of general cargo. The draft of the *Topdalsfjord* was 14 feet, 4 inches forward and 18 feet, 6 inches aft. The bow on the vessel is ice strengthened and rakes forward.

18. The *Topdalsfjord* proceeded to the Straits of Mackinac from Milwaukee without incident. As the vessel approached the Mackinac Bridge, the master assumed the supervision of the navigation of the vessel. The master was assisted on the bridge after 0800 by the Chief Officer, K. Fagerli, the Second Officer, J. Gronstol, on the radar and the Radio Officer, A. Mellberg, on the AM and FM radiotelephones. The watch also consisted of wheelsman K. Oskarsen, and due to the estimated one-half mile visibility, a lookout, A. Bergkvist, was stationed on the bow. Communications between the bridge and the bow was by an intercom loudspeaker located 20 feet aft of the extreme bow. The bridge was approximately 200 feet from the bow.

19. The *Topdalsfjord*'s radar was being used for navigational purposes. The Decca radar gave readings relative to the vessel's head and had range scales of 0.75, 1½, 3, 6, 12, 24, and 48 miles (nautical). The vessel was also equipped with a gyrocompass, which had no error when last checked on the present Great Lakes trip. All navigation, communication and operating equipment was in satisfactory working condition on the day of the casualty.

20. After clearing Grays Reef Passage on 7 May 1965, the *Topdalsfjord* proceeded at full speed (average 118 r.p.m.'s) with standby on the engine telegraph due to the restricted visibility. Fog signals in accordance with the Great Lakes Rules were being sounded. At 0818R a radar position 094° from White Shoal Lt., 3.1 statute miles off was plotted. Inasmuch as the position was 0.7 miles north of the Lake Survey Chart 093° track line from White Shoals to the Mackinac Bridge, a new course to make 095° good was set for the Mackinac Bridge. At 0850R the western edge of St. Helena Island was abeam with the intended course made good. An average speed of 17.4 statute miles per hour was attained between 0818 and 0850.

21. At 0903R the *Topdalsfjord*'s speed was reduced to various maneuvering speed engine orders including stop as the vessel was navigated in respect to an unidentified vessel westbound from the Mackinac Bridge. The *Topdalsfjord* informed the German Vessel *Weissenburg* following closely behind her of the various speed changes being made up until the time of collision. Although security information was sent by radiotelephone from both meeting vessels, no mutual passing agreements were arranged, nor were sound passing signals exchanged. The vessels passed each other port-to-port at approximately 0927R, 2 miles west of the Mackinac Bridge without incident. The *Topdalsfjord* continued at reduced maneuvering speeds with visibility steadily decreasing. In the vicinity of the Mackinac Bridge an additional bow lookout, Stale Gule, was posted.

22. At 0935R the *Topdalsfjord* passed under the Mackinac Bridge to the left of the center of the main span. The radar was operated then on the 1½ mile scale. The course was altered to 108° gyro as the master then decided to take the South Channel route instead of Round Island Passage because of the restricted visibility. Two security calls denoting the position and new course were sent by Radio Officer Mellberg on the radiotelephone on Channels 16 and 51 with no reply. Shortly thereafter a radar target 20° relative on the starboard bow was reported at a range of 1.5 miles (nautical). Fog signals of a vessel underway were also heard from the same general direction. The fog signal of a vessel at anchor, later identified as the *J. E. Upson*, was also heard 60° relative on the starboard bow as well as that of the *Weissenburg* underway astern of the *Topdalsfjord*. In view of the relative position of the approaching vessel, the 108° gyrocourse was maintained on the *Topdalsfjord* and the engines placed on dead slow ahead (approxi-

mately 40 r.p.m.'s, 3 to 4 knots) at 0940R. The radar bearings of the approaching vessel changed from 20° to 29° relative on the starboard bow as the range decreased to 0.5 mile as reported by the second mate. The engines were placed on slow ahead (50 to 55 r.p.m.'s, 6.5 knots) at 0942R. As the range continued to decrease the second mate reported to the master that the radar target was so large, accurate bearings or ranges could not be taken. The engines were then placed on stop at 0943R. The visibility at this time was estimated to be approximately 600 feet.

23. The master of the *Topdalsfjord,* standing outside the wheelhouse door on the starboard bridge wing, then heard one very long blast on a ship's steam whistle close at hand broad on his starboard bow. As the whistle continued sounding the *Cedarville* was then sighted by personnel from the bridge and bow simultaneously looming out of the fog at a distance estimated to be 250 feet from the *Topdalsfjord*'s bow. The *Topdalsfjord*'s engines were placed on emergency full astern at 0945R by double rings on the engineroom telegraph. 105 to 110 r.p.m.'s were attained on the engines in reverse prior to the collision. The helm was placed on hard right to augment stopping the vessel. The *Cedarville*'s course was nearly perpendicular to the *Topdalsfjord*'s course. The *Cedarville*'s speed was estimated by the *Topdalsfjord*'s bridge personnel at 6 to 8 m.p.h as it passed in front of the bow. The master of the *Topdalsfjord* stated he noted his own prop wash advancing up the *Topdalsfjord's* side before impact. At 0945R plus the *Topdalsfjord*'s bow struck the *Cedarville* amidship at near right angles on the portside with only a moderate impact felt. The *Topdalsfjord* was embedded in the *Cedarville* only briefly as the forward motion of the *Cedarville* swept the *Topdalsfjord*'s bow around to a heading of approximately 37° gyro. The *Cedarville* continued on and disappeared in the fog. The engines on the *Topdalsfjord* were stopped at 0946R. There were no danger signals or passing signals sounded by the *Topdalsfjord* at or during the events leading to the collision. The master of the *Topdalsfjord* stated he was poised to sound a danger signal at the conclusion of the very long blast that was being heard, but since the *Cedarville* loomed out of the fog still sounding the long blast, Captain Haaland then considered a collision inevitable.

24. Following the collision, the *Topdalsfjord* drifted in the dense fog in the immediate area of the collision. The vessel's two lifeboats (one motor equipped) were prepared for launching. The boats were dispatched to search for survivors when the sinking of the *Cedarville* became known. The vessel drifted to 1115R and then proceeded to an anchorage near Mackinac City. The lifeboats returned to the *Topdalsfjord* at about 1600R without having located any personnel from the *Cedarville.*

25. The approximate position of the collision was 078° T, 6,600 feet distant from the south tower of the Mackinac Bridge. The average speed of the *Topdalsfjord* from the Mackinac Bridge to the collision was approximately 7 statute miles per hour. The full speed of the *Topdalsfjord* is about 17.5 statute miles per hour. The average speed of the *Cedarville* from Cheboygan Traffic Buoy to the collision was approximately 12.4 statute miles per hour. The full speed of the *Cedarville* fully loaded was approximately 12.4 statute miles per hour.

26. There were no reported injuries to personnel of either vessel as a direct result of the collision impact.

27. No radar plot or computations were made prior to the collision by either vessel so that their respective target speeds, courses, or closest points of approach could be determined. The *Cedarville*'s personnel did not record the engine speed changes or course alterations made prior to the collision in the Bridge Log Book.

28. The *Topdalsfjord* was damaged extensively at the bow section extending back 11 feet. Flooding was confined to the forepeak area inasmuch as the collision bulkhead was not broached. The vessel was able to proceed on her voyage via Sault Ste. Marie, Mich., to Port Arthur, Ontario, for repairs, and left the area of the collision at 1730R on 7 May 1965. The starboard bow plating of the *Topdalsfjord* was folded across the damaged bow to the portside.

29. The effect of the collision to the *Cedarville* was holing of the vessel at No. 7 hatch on the portside, above and below the waterline. The damage was in the way of No. 4 portside and double bottom tank in the vicinity of frame No. 100. Progressive flooding commenced immediately into No. 2 cargo hold with only the stone cargo as a deterrent. The *Cedarville,* after impact, took an immediate deep list to port.

30. The collision and engineroom watertight bulkheads are located at frames Nos. 19 and 171 respectively. The area between the bulkheads, in addition to the three cargo holds, consists of the tunnel space with the unloading conveyor system and seven side and double bottom ballast tanks on each side of the vessel. The ballast tanks were numbered from forward, No. 1 through No. 7, with the individual side and double bottom tank as a unit. Tanks Nos. 6 and 7 had trimming tanks that extended to the spar deck. In the collision contact area, the top of the side tank was approximately 3 feet below the deep load waterline. The bulkheads to the adjacent cargo holds and the hopper gates from the holds to the conveyor system in the tunnel space were not watertight. The design of the *Cedarville* is such that uncontrolled flooding in the cargo spaces will ultimately result in the vessel's sinking.

31. Immediately following the collision, the *Cedarville* stopped her engines, sounded the general alarm, broadcast a MAYDAY message, and dropped the port anchor. Chief Officer Piechan went aft to assess the damages sustained in the collision. Captain Joppich radioed the *Weissenburg* asking for the name of the Norwegian vessel. The collision was reported to the Mackinac Island Coast Guard Station at 0950R by radiotelephone. No tank soundings were taken. The chief mate reported by telephone later to the master that the *Cedarville* was taking a tremendous amount of water in No. 2 hold over the cargo and that an attempt to cover the hole with the emergency collision tarpaulin had been unsuccessful due to the size of the hole.

32. The *Cedarville*'s two lifeboats located port and starboard on the after house were swung out and lowered to the spar deck bulwark. The crew, excluding those on watch and those assisting in the engineroom, mustered in their life preservers on the spar deck and stood by awaiting further orders. The *Cedarville* was also equipped with a 15-person liferaft forward and a 25-person liferaft aft, both of which would float free. There was no panic, confusion or delay in preparing the lifeboats for use. The order to abandon ship was never given. Three lifejackets were brought to the pilothouse, but only helmsman Gabrysiak had put his on before the capsizing.

33. As soon as the extent of the damage and its visible effects were realized, the master of the *Cedarville* commenced operations to raise the anchor and to beach the vessel. At 1010R the Mackinac Island Coast Guard Station heard the *Cedarville* radio she was attempting to beach the vessel at Mackinaw City. The vessel came hard left, full speed ahead taking the Mackinac Bridge Lighted Gong Buoy No. 2 (LL No. 1563–1965) close aboard to starboard. A course of 140° gyro was set, as furnished by Third Mate Cook, to clear the SS *J. E. Upson* anchored off Old Mackinac Point. However, the position of this anchored vessel was never accurately determined. The master transmitted several MAYDAY messages and also instructed the *Weissenburg* to keep out of his way. At approximately 1025R the *Cedarville* with little freeboard remaining rolled over suddenly to starboard and sank 120° T, 17,000 feet from the south tower of the Mackinac Bridge. The distance traveled from the point of collision to where the vessel sank was approximately 2.3 miles. The distance remaining to the beach was approximately 2 miles. The *Cedarville* sank in an approximate heading of 140°.

34. The distance from the point of collision to Graham Shoal was 1 mile and to Old Mackinac Point 2.2 miles. The course from the point of collision to the nearest land at Old Mackinac Point is 215° T.

35. The *Cedarville* is presently lying deck down in 102 feet of water on her starboard rail in two sections broken at No. 7 hatch. The forward section is lying deck down about a 15 to 20° angle to the horizontal and the after section is lying with its deck down at a 45° angle to the horizontal. The vessel and cargo have been surveyed and determined as unsalvageable.

36. The Chief Engineer F. Lamp and First Assistant Engineer W. Tulgetske went to the engineroom after the collision. Inasmuch as there were no pumping orders from the bridge at this time, the first assistant went on deck and made a visual check of the collision damage and returned to the engineroom. Upon his return to the engineroom and based on his observations pumping was commenced on No. 4 portside and bottom tank. The main ballast pump used was a recently installed 16- x 14-inch new electric pump rated at 5,250 gallons per minute. Each side and bottom ballast tank unit on the *Cedarville* was provided with one 8-inch ballast line located 6 feet above the vessel's bottom. Approximately 4 minutes after the pumping was commenced, telephone orders from the bridge to the chief engineer ordered

ballasting of the starboard side. The electric pump was stopped and the ballast manifold valves were adjusted to utilize the electric ballast pump to ballast one of the starboard tanks. The tank number is not known as the chief engineer, Lamp, and oiler, H. Wingo, involved in the operation did not survive the casualty. After the electric pump commenced pumping into a starboard tank, a centrifugal steam pump rated at 3,600 gallons per minute resumed pumping out of No. 4 port tank. Two horizontal steam drag auxiliary ballast pumps each rated at 2,000 gallons per minute were then placed on the tunnel space sump well. The pumps being utilized all indicated they had suction and were operating properly. Second Assistant H. Bey assisted in lining up the two auxiliary ballast pumps. The Nos. 3, 4, and 5 side and double bottom tanks each have a capacity of 1,042 short tons of fresh water—port and starboard sides inclusive.

37. With the pumps all in operation, the first assistant and second assistant left the engineroom. The first assistant stopped briefly on the fantail and further tightened some leaking dogs on the gangway side port. Upon departing the engineroom he noted the inclinometer at 6 inches to port (1°). Shortly after arriving on the spar deck, the vessel heeled over to starboard suddenly and sank.

38. At some undetermined time but before capsizing, the master telephoned the engineroom to cease the ballasting operations, as the *Cedarville* had assumed an even keel.

39. As the *Cedarville* turned over to starboard, the crew standing by the lifeboats made last minute attempts to launch them. The No. 1 lifeboat was never released and sank with the *Cedarville*. The No. 2 lifeboat with several crewmembers aboard was released from the falls as the *Cedarville* sank beneath it. Both liferafts floated free. The majority of the crew were thrown into the cold water.

40. Third Mate Charles Cook was last seen attempting to don a life preserver in the wheelhouse as the vessel heeled over. His body has not been recovered to date. Captain Joppich was rescued clinging to his life jacket. He had never put it on.

41. Eugene Jones, Stokerman, and Hugh Wingo, Oiler, were both on the 8 to 12 watch in the engineroom and had been seen attending to their duties just prior to the vessel's sinking. Their bodies have not been recovered to date.

42. The *Weissenburg*, under the command of Captain Werner May, made both lifeboats ready for immediate launching and followed behind the *Cedarville* as she proceeded on course 140°. At about 1030R the bow lookout of the *Weissenburg* reported hearing men crying out from the water ahead. At approximately 1033R the first man was seen swimming in the water. Shortly thereafter both lifeboats were launched from the *Weissenburg*. Six survivors were taken from the water. The *Cedarville*'s No. 2 lifeboat and after liferaft with 21 survivors were found and towed back to the *Weissenburg*. On board the *Weissenburg*, the survivors were wrapped in blankets and given stimulants.

43. Paul Jungman, Deckwatchman, one of the survivors, was dead from asphyxiation by drowning and shock when taken aboard the *Weissenburg*.

44. Stanley Haske, Wheelsman, one of the survivors died on board the *Weissenburg* an hour later from shock and exposure.

45. At 0955R the CG–40527 departed Mackinac Island Coast Guard Station (5 miles from the point of collision) in dense fog and arrived on scene at 1030R, joined later by the CG–36499. Immediate search operations were initiated; however, no survivors of the *Cedarville* were rescued by CG craft as all survivors were picked up by the *Weissenburg*. At 1115R the CG–40527 found the forward liferaft drifting and empty.

46. At 1042R the USCGC *Mackinaw* (WAGB–83) departed Cheboygan, Mich., some 18 miles from the point of collision. Upon arriving in the vicinity at 1204R, it assumed command of the search and rescue operation. At 1248R the *Mackinaw* moored alongside the *Weissenburg* and took on board the survivors for transfer ashore at Mackinaw City, Mich. Search operations continued to 12 May 1965, with aircraft from Coast Guard Air Station, Traverse City, Mich., USCGC *Naugatuck* (WYTM–92), USCGC *Sundew* (WLB–404), and units from Coast Guard Group, Charlevoix also participating with negative results.

47. Commercial divers provided by the United States Steel Corp. from 10 May to 12 May 1965, recovered five

bodies found trapped on the *Cedarville*. The bodies recovered were as follows:

Donald Lamp, Chief Engineer.
Reinhold Radtke, Third Assistant Engineer.
Wilbert Bredow, Chief Steward.
William Asam, Wheelsman.
Arthur Fuhrman, Deckwatchman.

CONCLUSIONS

1. The SS *Cedarville* and the MV *Topdalsfjord* collided on nearly perpendicular headings in the Straits of Mackinac at approximately 0945 e.s.t. on 7 May 1965. The collision occurred with the *Topdalsfjord* on a course and heading of 108° T.

2. The collision occurred in approximate position 078° T, 6,600 feet from the south tower of the Mackinac Bridge in dense fog.

3. As a result of the damage sustained in the collision, the *Cedarville* sank in 102 feet of water 120° T, 17,000 feet from the south tower of the Mackinac Bridge at about 1025 e.s.t. on the day of the collision. The vessel is resting on her starboard rail, deck down, in two sections, and is considered to be, with her cargo, a total loss.

4. The three men listed as missing; namely, Charles Cook, Third Mate; Eugene Jones, Stokerman; and Hugh Wingo, Oiler, are presumed dead as a result of the casualty. There has been no trace of them since the sinking.

5. The testimony of Helmsman Gabrysiak and Captain Joppich differs in several vital respects as to speeds and maneuvers before collision. The version as related by Gabrysiak is considered correct and that as related by Captain Joppich is considered self-serving and false and is accordingly rejected. Hence it is concluded that the *Cedarville* was operated at full speed almost up to the jaws of collision.

6. There is evidence that the master of the *Cedarville* failed to navigate his vessel at a moderate speed in fog and restricted visibility as required by Rule 15 of the Great Lakes Rules (33 U.S.C. 272). The speed averaged under reduced visibility from Cheboygan Traffic Buoy to the point of collision coincided closely with the maximum speed potential of the *Cedarville* loaded. The *Cedarville* was allowed to proceed at full speed to the time of her evasive maneuvers taken in close proximity to the *Topdalsfjord,* ignoring the considerable momentum of the heavily laden and comparatively low-powered vessel. The *Cedarville* had adequate advance notice of vessel traffic approaching from the Mackinac Bridge from information provided by the radar, radiotelephone communications and later the sound fog signals heard. A moderate speed under the circumstances would have provided more time to study the situation and react to the collision pattern that was developing. The operation of the *Cedarville* just prior to the collision, relative to meeting and passing the *Benson Ford* at full speed after radiotelephone passing agreements followed by sound passing signals, would seem to indicate the intent of the *Cedarville*'s master to do likewise with the vessel traffic approaching from under the Mackinac Bridge.

7. There is evidence that the master of the *Cedarville* was timely informed and aware of the sound fog signals of a vessel not more than four points from right ahead and accordingly failed to reduce his vessel's speed to bare steerageway as required by Rule 15 of the Great Lakes Rules (33 U.S.C. 272) for vessels in fog or restricted visibility.

8. There is evidence that the master of the *Cedarville* failed to sound the danger signal when there was no reply from the approaching *Topdalsfjord* to his one-blast passing signals, as required by Rule 26 of the Great Lakes Rules (33 U.S.C. 291). However, as the *Topdalsfjord* had already initiated action to stop his vessel, this failure is not considered to have materially contributed to the collision.

9. There is evidence that the master of the *Cedarville* was in doubt as to the intentions of the approaching *Topdalsfjord* and failed to reduce speed to bare steerageway, or as was necessary in this case, to stop and reverse when within one-half mile radar range of the other vessel, in violation of Rule 26 of the Great Lakes Rules (33 U.S.C. 291).

10. The *Topdalsfjord* was being navigated with reasonable caution under the circumstances and commensurate with the speed and power potential of the vessel. There were adequate bridge and lookout personnel assigned on the *Topdalsfjord* for its operation in restricted visibility. At the time of the collision, the *Topdalsfjord* was practically stopped.

11. In view of the radar information available to the master of the *Topdalsfjord,* his decision to remain on course 108° T past the normal turning point for entry into the South Channel is considered reasonable and consistent with the established principles of prudent navigation.

12. It is further concluded that no fault can be attached to either vessel for failure to maintain a radar plot as the various speeds employed by the *Topdalsfjord* would have rendered a meaningful plot impossible.

13. The absence of a danger signal on the part of the *Topdalsfjord* prior to the collision is understandable under the circumstances of the case. The master of the *Topdalsfjord* first considered the approaching vessel to be passing him safely as determined by the changing radar bearings. When the radar later indicated otherwise, the master of the *Topdalsfjord* was precluded from blowing the danger signal although poised to do so by the very long one-blast sound signal from the *Cedarville*. At the end of the long one-blast signal, the *Cedarville* was in view and the collision was inevitable, hence a danger signal then would have been meaningless.

14. The *Cedarville* sank as a direct result of the large ingress of water through the damaged portion of the hull sustained in the collision. Progressive flooding of the cargo holds and tunnel space could not be controlled due to the design of the vessel and the capability of bilge and ballast system. In view of the *Topdalsfjord*'s forward draft and the rake of her bow it is considered that the collision damage did not involve the *Cedarville*'s ballast piping in No. 4 side and bottom tank, consequently there was no progessive flooding through the ballast system.

15. Since the vertical extent of the damage could not be determined, the action taken by the master to remove the port list by counterflooding is considered reasonable under the circumstances, as the ingress of water may possibly have been thereby lessened.

16. Since the master knew that, with the particular design of the vessel involved, any sizable hole into the cargo holds at deep draft would denote a sinking situation, his action taken of attempting to beach his vessel is considered proper. The master, however, judged poorly the peril to his crew and vessel and the time remaining for him to beach his ship. He should have beached his vessel on the nearest shoal or deciding against that he should have steered the correct course for the nearest land. The beaching course furnished by the third mate was incorrect and the master should have immediately realized this. It is tragic that the *Cedarville* steamed enough miles following her fatal wound to have made the beach at Mackinaw City.

17. There are no readily apparent or conclusive reasons why radiotelephone communications were not established between the *Cedarville* and the *Topdalsfjord*. There are several factors, however, that may have contributed to this.

a. The electrical disturbances present may have adversely affected Channel 51 at critical times of call.

b. The radio contacts between the *Cedarville* and the *Weissenburg* may have monopolized air time.

c. The late recognition on the part of the *Cedarville*'s master that a "Norwegian" vessel was ahead of the *Weissenburg* coupled with the late awareness by the *Topdalsfjord* of the approach of the *Cedarville* as it appeared on the radar at only 1½-mile range left little time for radio messages.

18. The Coast Guard units which were ordered to the scene of the collision responded in a timely manner; however, they were greatly hampered in their operations by the dense fog which covered the area.

19. The master and the crew of the German MV *Weissenburg* conducted rescue operations following the sinking of the *Cedarville* with dispatch and efficiency in the best traditions of the sea. It is considered that more *Cedarville* crewmembers would have perished in the frigid waters had not the *Weissenburg*'s personnel performed so well.

20. There is evidence of considerable false optimism on the *Cedarville* that the vessel would be successful in its beaching operation. Due to this a plan for minimizing personnel in the engineroom or abandoning ship was never initiated. The unexpected and rapid heeling of the vessel to starboard precluded any final abandon ship order. The conduct of the crewmembers of the *Cedarville* as they performed their assigned duties notably in the engineroom and in preparing the lifeboats was commendable in that there was no confusion or panic.

RECOMMENDATIONS

1. It is recommended that further action under the Suspension and Revocation Proceedings of R.S. 4450, as amended, be initiated in the case of Captain Martin E. Joppich of the SS *Cedarville* concerning conclusions 6, 7, 8, and 9.

2. It is recommended that the Commandant recognize the gallant rescue operations of the German MV *Weissenburg* following the collision between the *Cedarville* and the *Topdalsfjord*.

3. It is further recommended that the case be closed. ⚓

DECK

Q. What is a devil's claw and how is it used?

A. A devil's claw is a heavy bifurcated steel hook shaped to fit over the anchor chain. It is usually made fast to the chain, then secured to a padeye on deck by a chain and turnbuckle.

The devil's claw is used as a safety stopper to hold the anchor and cable at sea in addition to the windlass brake and riding pawl. The turnbuckle can be set up so that any slack between the wildcat and the anchor is removed. Any movement of the anchor or its flukes might be dangerous to the plating or hawse pipe casting when buffeted by the sea.

Q. What is the purpose of the stream and kedge anchors, which are smaller than the bowers, that are carried by seagoing vessels?

A. Stream anchors are designed primarily for use when moored in an anchorage such as a stream, where the arc described by the vessel in swinging to the tide or current must be limited.

Kedge anchors are designed primarily for use by a vessel in shifting by taking the kedge out with boats, dropping it, and then heaving the vessel up to it with cable. The process of moving vessels about in this manner is known as kedging.

Light anchors are handy for emergency use, such as for heaving a grounded vessel into deep water, holding a vessel away from a dock where she is being battered by wind or sea, etc.

Q. (a) What is the minimum thickness of wood to be used for hatch boards on weather deck hatches?

(b) What is the minimum number of tarpaulins required for covering hatches, and what is the minimum grade of the material to be used?

A. (a) Two and three-eighths inches.

(b) Two tarpaulins, thoroughly waterproofed and of ample strength; guaranteed free from jute. They shall be not less than No. 4 cotton canvas or No. 6 hemp canvas before waterproofing.

Q. What official log entry is required to be made by the Master of a passenger vessel when cargo sideports are opened in port?

A. There shall be entered in the official log the time of opening and the time of closing in port portable plates, gangways, cargo ports, coaling ports, and other openings in the vessel's hull below the margin line which are required by the regulations to be kept closed at sea.

ENGINE

Q. Describe a steam chest and valve arrangement for admitting steam to the nozzle block chamber of a steam turbine.

A. Steam is admitted to the steam chest through a throttle valve direct from the main steam line. The nozzles for the first stage are arranged in groups, each being controlled by an individual hand nozzle valve. By opening or closing the hand nozzle valve, steam is either shut off or admitted to the group of nozzles which it controls. With a given pressure in the steam chest, the amount of steam flowing through the turbine depends upon the number of hand nozzles opened which are usually arranged radially on the upper half of the steam chest. Speed may be controlled by varying the pressure in the main steam chest by use of the main throttle and additional speed control is given by hand nozzles. These valves are either fully closed or fully opened during operation.

Q. Describe the construction of turbine casings in regards to material, supports, and expansion.

A. Turbine casings are usually made of cast steel or cast iron, cast in sections and bolted or welded together. The casing is split longitudinally along its horizontal axis and the interior is machined to receive blades, diaphragms, nozzles, etc. Structural foundations are built up from the hull of the ship to support the turbine. The usual practice is to secure the after end of the turbine rigidly to the foundation using body-bound bolts and to allow the forward end a slight freedom of movement for expansion. Freedom of movement at the forward end is accomplished by two methods. Elongated bolt holes or grooved sliding seats which permit the turbine to slide fore-and-aft a small amount as expansion and contraction take place, or the forward end is secured to a very deep flexible I-beam installed with its longitudinal axis athwartships.

Q. Why are flexible couplings installed on main turbines? Describe the jaw or claw type coupling.

A. Flexible couplings are installed between the turbine shaft and the pinion shaft to provide for any slight misalinement due to bearing wear and to permit axial adjustment of the turbine. The claw type coupling consists of two sleeves, connected by a distance piece, and two hubs. Each sleeve has internal claws, machined inside its outer end, which engage with external claws cut around the outer end of the corresponding hub. Hubs are secured by means of keys and a hub nut to the end of each of the two shafts to be connected. The distance piece is bolted between the flanges of the two sleeves.

AMENDMENTS TO REGULATIONS

STORES AND SUPPLIES

Articles of ships' stores and supplies certificated and canceled from March 1, to March 31, 1967, inclusive, for use on board vessels in accordance with the provisions of Part 147 of the regulations governing "Explosives or Other Dangerous Articles On Board Vessels" are as follows:

CERTIFIED

Associated Chemists, Inc., 4401 Southeast Johnson Creek Boulevard, Portland, Oreg. 97206: Certificate No. 715, dated March 10, 1967, "Blue Zip".

Permatex Co., Inc., Post Office Box 1350, West Palm Beach, Fla. 33402: Certificate No. 716, dated March 15, 1967, PERMATEX FORM-A-GASKET NO. 1; Certificate No. 717, dated March 15, 1967, PERMATEX FORM-A-GASKET NO. 2; Certificate No. 718, dated March 15, 1967, PERMATEX AVIATION FORM-A-GASKET; Certificate No. 719, dated March 15, 1967, PERMATEX PENETRATING OIL; Certificate No. 720, dated March 15, 1967, PERMATEX PIPE JOINT COMPOUND, NEW & IMPROVED.

Penetone Chemical Division, Amerace Corp., 74 Hudson Avenue, Tenafly, N.J. 07670: Certificate No. 721, dated March 22, 1967, FORMULA 925; Certificate No. 722, dated March 22, 1967, FORMULA 990; Certificate No. 723, dated March 22, 1967, FORMULA 991; Certificate No. 724, dated March 22, 1967, C-Foam.

Fuels Research Corp., 2114 Curtis Street, Denver, Colo. 80205: Certificate No. 461, dated November 16, 1960, BSC–1000.

Axion Chemical Co., Inc., 223 Erie Street, Buffalo, N.Y. 14202: Certificate No. 133, dated May 27, 1957, AXION BOILER WATER TREATMENT; Certificate No. 136, dated May 27, 1957, AXION DUAL TREATMENT; Certificate No. 129, dated May 27, 1957, AXION SMOKE TREATMENT; Certificate No. 202, dated February 6, 1958, AXION FUEL OIL TREATMENT; Certificate No. 204, dated February 6, 1958, AXION DIESEL FUEL OIL TREATMENT; Certificate No. 210, dated February 6, 1958, AXION ELECTRICAL CLEANING SOLVENT NO. 500; Certificate No. 261, dated March 19, 1958, AXION DEGREASING SOLVENT NO. 701 SALT WATER; Certificate No. 265, dated March 19, 1958, AXION DEGREASING SOLVENT NO. 702 FRESH WATER.

Virginia Smelting Co., West Norfolk, Va. 23703: Certificate No. 206, dated October 25, 1946, LETHALAIRE R–10; Certificate No. 230, dated December 27, 1955, LETHALAIRE V–23; Certificate No. 266, dated February 7, 1949, LETHALAIRE V–21 FORMULA; Certificate No. 342, dated February 7, 1952, LETHALAIRE AERO DEODORANT FORMULA R–15; Certificate No. 416, dated January 15, 1960, LETHALAIRE V–24; Certificate No. 417, dated January 15, 1960, LETHALAIRE JR–4.

CANCELED

Enequist Chemical Co., Inc., 100 Varick Avenue, Brooklyn, N.Y. 10037: Certificate No. 442, dated August 23, 1960, B–C–6.

FUSIBLE PLUGS

The regulations prescribed in Subpart 162.014, Subchapter Q, Specifications require that manufacturers submit samples from each heat of fusible plugs for test prior to plugs manufactured from the heat used on vessels subject to inspection by the Coast Guard. A list of approved heats which have been tested and found acceptable during the period from February 15, 1967, to March 15, 1967, is as follows:

Lunkenheimer Corp., Cincinnati, Ohio 45214, HEAT NOS. 680 through 732, inclusive; except for HEAT 691.

H. B. Sherman Co., Battle Creek, Mich. 49015, HEAT NOS. 834 and 835.

AFFIDAVITS

The following affidavits were accepted during the period from February 15, 1967, to March 15, 1967:

Moeller Instrument Co., Inc., 132d Street and 89th Avenue, Richmond Hill, N.Y. 11418, FITTINGS.[1]

OPW, division of Dover Corp., 2735 Colerain Avenue, Cincinnati, Ohio 45225, VALVES.

Cabot Piping Systems, Plastics Division, Cabot Corp., 13th and Magazine Streets, Post Office Box 1032, Louisville, Ky. 40201, VALVES, FITTINGS & FLANGES.[2]

Production Machine Co., Post Office Box 252, Galveston, Tex. 77550, VALVES.[3]

[1] Thermometer socket wells only.
[2] PVC valves fittings and flanges only.
[3] Inverted vent check valves only.

MERCHANT MARINE SAFETY PUBLICATIONS

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

The Federal Register may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Subscription rate is $1.50 per month or $15 per year, payable in advance. Individual copies may be purchased so long as they are available. The charge for individual copies of the Federal Register varies in proportion to the size of the issue but will be 15 cents unless otherwise noted in the table of changes below. Regulations for Dangerous Cargoes, 46 CFR 146 and 147 (Subchapter N), dated January 1, 1967, are now available from the Superintendent of Documents, price: $2.50.

CG No.	TITLE OF PUBLICATION
101	Specimen Examination for Merchant Marine Deck Officers (7–1–63).
108	Rules and Regulations for Military Explosives and Hazardous Munitions (8–1–62).
115	Marine Engineering Regulations and Material Specifications (3–1–66). F.R. 12–6–66.
123	Rules and Regulations for Tank Vessels (5–2–66). F.R. 12–6–66.
129	Proceedings of the Merchant Marine Council (Monthly).
169	Rules of the Road—International—Inland (9–1–65). F.R. 12–8–65, 12–22–65, 2–5–66, 3–15–66, 7–30–66, 8–2–66, 9–7–66, 10–22–66.
172	Rules of the Road—Great Lakes (9–1–66).
174	A Manual for the Safe Handling of Inflammable and Combustible Liquids (3–2–64).
175	Manual for Lifeboatmen, Able Seamen, and Qualified Members of Engine Department (3–1–65).
176	Load Line Regulations (1–3–66). F.R. 12–6–66, 1–6–67.
182	Specimen Examinations for Merchant Marine Engineer Licenses (7–1–63).
184	Rules of the Road—Western Rivers (9–1–66). F.R. 9–7–66.
190	Equipment lists (8–1–66). F.R. 9–8–66, 11–18–66.
191	Rules and Regulations for Licensing and Certificating of Merchant Marine Personnel (2–1–65). F.R. 2–13–65, 8–21–65, 3–17–66, 10–22–66, 12–6–66, 12–13–66.
200	Marine Investigation Regulations and Suspension and Revocation Proceedings (10–1–63). F.R. 11–5–64, 5–18–65.
220	Specimen Examination Questions for Licenses as Master, Mate, and Pilot of Central Western Rivers Vessels (4–1–57).
227	Laws Governing Marine Inspection (3–1–65).
239	Security of Vessels and Waterfront Facilities (7–1–64). F.R. 6–3–65, 7–10–65, 10–9–65, 10–13–65, 3–22–66, 7–30–66, 8–2–66, 3–29–67.
249	Merchant Marine Council Public Hearing Agenda (Annually).
256	Rules and Regulations for Passenger Vessels (5–2–66). F.R. 12–6–66, 1–13–67.
257	Rules and Regulations for Cargo and Miscellaneous Vessels (1–3–66). F.R. 4–16–66, 12–6–66, 1–13–67.
258	Rules and Regulations for Uninspected Vessels (1–2–64). F.R. 6–5–64, 6–6–64, 9–1–64, 5–12–65, 8–18–65, 9–8–65, 12–6–66.
259	Electrical Engineering Regulations (7–1–64). F.R. 2–13–65, 9–8–65, 12–6–66, 12–31–66.
266	Rules and Regulations for Bulk Grain Cargoes (11–1–66).
268	Rules and Regulations for Manning of Vessels (2–1–63). F.R. 2–13–65, 8–21–65, 12–6–66.
270	Rules and Regulations for Marine Engineering Installations Contracted for Prior to July 1, 1935 (11–19–52). F.R. 12–5–53, 12–28–55, 6–20–59, 3–17–60, 9–8–65.
293	Miscellaneous Electrical Equipment List (4–1–66).
320	Rules and Regulations for Artificial Islands and Fixed Structures on the Outer Continental Shelf (10–1–59). F.R. 10–25–60, 11–3–61, 4–10–62, 4–24–63, 10–27–64, 8–9–66.
323	Rules and Regulations for Small Passenger Vessels (Under 100 Gross Tons) (1–3–66). F.R. 12–6–66, 1–13–67.
329	Fire Fighting Manual for Tank Vessels (4–1–58).

CHANGES PUBLISHED DURING MARCH 1967

The following have been modified by Federal Registers:
CG 239 Federal Register, March 29, 1967.

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BACK COVER: A new Moore-McCormack Cargo-Lines poises its 75-ton boom at a fitting-out dock. *Courtesy Moore-McCormack Lines.*

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