

27 August 1952
(RTO-107 - 2-6 101)

From: Chief, Merchant Vessel Inspection Division
To: Commandant
Via: Chief, Office of Merchant Marine Safety

Subj: Marine Board of Investigation; explosion and fire on gasoline
barge R.T.C. 107, Gulf Refining Company Dock, Gretna, La., on
11 May, 1952, with loss of life

1. Pursuant to the provisions of Title 46 C.F.R. Part 136, the record of the Marine Board convened to investigate subject casualty, together with its Findings of Fact, Opinions and Recommendations, has been reviewed and is forwarded herewith.

2. On the morning of 11 May 1952, the tank barge RTO-112 was moored singly and the tank barges RTO-107, RTO-109 and the motor tugboat JEBEL WARRICH alongside each other, were moored at the Gulf Refining Terminal at Gretna, Louisiana. The weather was clear with a northwesterly wind, slight chop, and good visibility. The RTO-112 was in the process of discharging its cargo of gasoline, the RTO-107 and RTO-109 were being prepared for the discharging of similar cargo. With the RTO-112 discharging into a common dock-discharging line to which, discharge connections, from the RTO-107 and RTO-109 had been made, the gate valve on the common dock discharge line was evidently cracked by the dockman, which permitted the gasoline being pumped from the RTO-112 to back up through the discharge lines on the RTO-107 and RTO-109. There was no valve or blind flange at the end of the discharge hockup on the RTO-109 so that the backed-up gasoline spilled traveled across the deck and its vapors were ignited by the fire in the galley stove of the tugboat moored alongside. Explosions and fire ensued, resulting in the deaths of three persons, serious injury to two persons, and estimated damage of approximately \$150,000.

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3. The Board made the following Findings of Fact:

"1. On 11 May 1952 at or about 0620 (CST) the tank barge RTC-109, while preparing to discharge a cargo of gasoline to the Gulf Refining Company Terminal at Gretna, Louisiana, suffered a vapor explosion as a result of which fire spread to the MV REBEL WARRIOR, the RTC-107, the RTC-112 and the terminal dock causing vapor explosion on the RTC-107, RTC-112 and considerable fire damage to the MV REBEL WARRIOR, the RTC-109 and to the terminal dock. Three men employed by the Black Warrior Towing Company, owners of the vessels, were lost and two other employees severely burned. Bodies of two of the persons have been recovered.

"2. The vessels involved were:

- (a) T/B RTC-107, official number 176463, built in 1942, steel hull, 9200 bbls., 619 gross tons, owned by Black Warrior Towing Co.
- (b) T/B RTC-109, official number 176465, built in 1942, steel hull, 9200 bbls., 619 gross tons, owned by Black Warrior Towing Co.
- (c) T/B RTC-112, official number 176468, built in 1942, steel hull, 9200 bbls., 619 gross tons, owned by Black Warrior Towing Co.
- (d) MV REBEL WARRIOR, official number 260893, Wilmington, Del., built in 1950, 68.01 gross tons, length 55', beam 20', depth 7', steel hull, pusher type towboat, crew 7, uninspected vessel, owned by Black Warrior Towing Co., New Orleans, La.

"3. At the time of the casualty the weather was clear with a Northerly wind of from 15 to 20 miles per hour, slight choppy water in river, visibility good.

"4. At about 0315 (CST) 11 May 1952 the REBEL WARRIOR, being piloted by [REDACTED], moored her tow at the Gulf Refinery Terminal at Gretna, Louisiana as follows: RTC-107 moored port side to the dock at the up river section. RTC-109 moored port side to the starboard side of the RTC-107. RTC-112 moored port side to the dock at its down river section approximately 150 feet astern of RTC-107. The tug REBEL WARRIOR secured bow to stern of RTC-112. All vessels headed up river.

"5. The refinery dock consists of four barges moored end to end and to pile clusters on the inshore side parallel to the levee. Numerous cargo lines are installed above dock and lengthwise of the barges consisting of steel pipe with steel reinforced flexible rubber sections spanning the gap between dock sections, one of which was identified by the terminal as the 'Good Gulf Line.' At approximately the mid length of each barge forming the dock a branch line leads from each cargo line ending in a gate valve to which hoses are bolted. Cut off valves are installed in the main cargo line between successive branch lines. A fused knife switch which is bonded to each cargo line and to a brass rod driven in the river bottom is located in the way of each set of branch lines for the purpose of electrically bonding tank vessels during cargo operations. A 6" x 6" timber guard piece runs the length of the dock approximately two feet above the water line and serves as a permanent fender. A catwalk leads to the levee from the up-river section of the dock. The deck of the dock is approximately seven feet above the water line.

"6. As soon as the barges were spotted the dock crew, consisting of [redacted], Yard Foreman; [redacted] and [redacted], and the tugboat crew with W. R. Lacey, Port Engineer for Black Warrior Towing Co., Inc., commenced connecting hoses from the 107 to the dock Good Gulf Line. RTC-107 was electrically bonded to the dock but no bond was made between 107 and 109 and no fenders were in place between these barges. The crew then proceeded to the 112, secured the bonding cable, connected her discharge to the Good Gulf Line, started her pump and commenced discharging cargo at about 0515. At that time the REBEL WARRIOR moved up alongside the starboard quarter of the 109 and charged the starting air tank of the 107, then shifted the air hose to the starting air accumulator on the 109 and made the flexible cargo hose connection between the RTC-107 and RTC-109. There was no electrical bond nor fenders between the REBEL WARRIOR and the 109. The position of the REBEL WARRIOR was such that the galley door on its port side was approximately seven feet forward and four feet outboard of the starboard end of the athwartship discharge line on the RTC-109. The starboard end of this discharge line was fitted with a 45-degree elbow and was unblanked. There was no closure device on this pipe and the open end pointed in the direction of the galley door. The cargo discharge line from the RTC-107 and the RTC-109 to the gate valve at the dock connection was a continuous line with no intervening valves or restrictions.

"7. At approximately 0615, Mr. [redacted], Mr. [redacted] and Mr. [redacted] departed from the dock area leaving Mr. [redacted] in attendance of the dock valve. Mr. [redacted] and Mr. [redacted] occupied with opening cargo valves on the 107, and [redacted] attending to the air hose. Thomas and Easterling, deckhands, and Marisette, the Cook were in the galley eating breakfast. The galley steam door was open but the port door was closed. The galley stove, a gravity feed oil burning stove, was in operation. Thomas, having finished breakfast, opened the galley door and saw gasoline spilling from the open starboard end of the discharge line of the 100-109. At the same instant, [redacted] and [redacted] were proceeding off on the 100-109 in that order and were in the vicinity of the No. 3 tanks. Neither the pump on the 107 or the 109 had been started at this time. [redacted] saw the gasoline spilling from the discharge line. At this instant Mr. [redacted] was on the dock near the valve to which the cargo hose from the 107 was connected. The inshore side of this gate valve was under pressure of approximately 50 p.s.i. created by the pumping of gasoline from the RTC-112 into this Good Gulf Line. All intervening valves were in the open position. Approximately 2000 barrels of gasoline had been discharged from the RTC-112.

"8. At approximately 0615, shortly after the gasoline commenced spilling from the 109, ignition took place, followed by explosion and fire in the vicinity of the tugboat and the stern of the 109. Within an instant a second explosion, which blew off the deck and starboard side of the 107's aft rake compartment occurred. Fire enveloped the 109, 107 and the dock. This was later followed by explosion of the forward tanks on the 112, which had been partially discharged.

"9. With the first two explosions [redacted] and [redacted] were knocked down and considerably burned but escaped to the levee. [redacted] managed to get to the levee unharmed. [redacted] Marisette and Easterling disappeared and the bodies of the latter two have since been recovered. [redacted] is still missing and presumed dead. [redacted] escaped to the levee with slight burns. [redacted] and [redacted], who were on board the tug at the time of the explosion, got the REBEL WARRIOR underway and extinguished the fire which had been confined to her port side in the vicinity of the galley door. The RTC-112 was taken in tow by salvage craft and pulled out into the stream, her pump still discharging gasoline overboard.

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"10. Examination of the deck revealed that all flexible connections in cargo lines between the dock barges were turned off. The cargo hose from the 107 was still secured to the dock valve with its outboard end lying across the cargo lines and a broken flange bolted to that end. The valve was closed and seat which had been left on its parts by the fire was undisturbed indicating the valve to be as it was during the fire. That portion of the valve body outboard of its gate contained gasoline and upon disconnecting the hose from the valve a small quantity of gasoline spilled from the connection. Examination of the barges revealed that the RTC-109 suffered fire damage only, no explosion occurred within any of its compartments. Pump engine controls were in the 'off' position. The starting air accumulator valve was in the 'off' position and an air hose connection, from which the hose had parted, was connected to the starboard end of the accumulator. RTC-107 suffered explosion and fire damage. Entire deck over aft rake compartment missing and pumping unit and discharge lines blown adrift and destroyed. RTC-112, forward tanks badly ruptured. The REBEL WARRIOR suffered minor fire damage on the port side and very slight fire damage within the galley proper. Estimates of damage are as follows:

MV REBEL WARRIOR	\$ 650.00	
T/B RTC-107	23,835.00	
T/B RTC-109	650.00	
T/B RTC-112	19,725.00	
Cargo lost or destroyed (7000 bbls. @ \$5.00)	<u>35,000.00</u>	\$79,910.00
GULF REFINING COMPANY		
Piping	\$50,000.00	
Pontoon Barges	35,000.00	
Pile clusters & fenders	<u>15,000.00</u>	\$100,000.00
Combined Total -		\$179,910.00

"11. The following personnel casualties are attributed to the explosion:

WILLIAM R. LAMAY, [REDACTED]
Port Engineer for Black Warrior Towing Co., Inc.
License No. [REDACTED] Chief Engineer, Motor Vessels not
over 1000 gross tons. Missing, Presumed dead.

HOLAN MARISSETTE, [REDACTED]
Cook on MV REBEL WARRIOR. Killed, body recovered.

BLANCH EASTERLING, [REDACTED]
Killed, body recovered.

[REDACTED]
Relief Engineer, MV REBEL WARRIOR. First and Second
degree burns.

[REDACTED]
Deckhand on MV REBEL WARRIOR. First and Second
degree burns."

[REDACTED]
Dockman for Gulf Refining Company. Shock."

4.

The Board expressed the following Opinions:

"1. From the testimony at hand it is evident that the 107 and 109 were not ready to discharge cargo, the inspection of condition of piping, valves, electrical board, etc., having not been completed, and with the exception of the testimony of Mr. [REDACTED] all witnesses agree that neither of the pumps on the 107 nor 109 had been started, and condition of the equipment after the explosion seems to bear out this point. Considering the presence of gasoline in the valve body onto which the 107 had been connected and the relatively small amount of gasoline which was seen to spill from the open end of the discharge line by [REDACTED] and [REDACTED] it is unreasonable to assume that this gasoline was delivered by the pump on the RTC-109. Bearing in mind that the valve body in question is at least seven feet higher than the pump on the RTC-109 and that the same line has an 8-inch open end at pump level, any pump pressure capable of delivering gasoline seven feet uphill to the valve would have dumped a tremendous quantity of gasoline from the open end of the discharge line and with considerable force of discharge. Yet, the testimony of witnesses and the actual damage incurred on the REBEL WARRIOR definitely negates any such assumption. It is the opinion of the Board that Devine's testimony concerning these points was both evasive and mechanically unsound. The Board was present and personally examined the liquid in the valve body and found no evidence of water mixed with the gasoline or of a leaky valve. Therefore, the only reasonable explanation for the presence of gasoline in the discharge line from the 109 and 107 is that the valve on the Good Gulf Line was momentarily opened at a time when it was subject to the discharge pressure from the RTC-112, and though Mr. [REDACTED]

denial even to such as having touched the valve these physical aspects, coupled with Texas' statement that he saw LeBlanc close the valve greatly discredit LeBlanc and therefore indicate that such did happen. In addition to this, LeBlanc's explanation as to why he was positive the pump on the 109 was operating is extremely flimsy. He insists he was an exhaust, that no machinery was operating on the tug (though he later agrees that the compressor was running) and that he could hear the pump and could see its operator. However, from his description of the location of the pump operator both verbally and by sketch the location given is far remote from the position at which a person must be to start and operate the pump. Further, the preponderance of testimony conclusively shows that there was no person in the immediate vicinity of the pumping machinery at this time.

"2. An examination of the fire damage to the RTC-109 and to the REBEL WARRIOR showed a burned path, believed to be that taken by the gasoline, which extends from a point beneath the starboard end of the discharge line forward and outboard for a distance of approximately ten feet at which point it ends at the barge's deck edge. From the description of the position in which the REBEL WARRIOR was moored alongside the RTC-109 this point is believed to have been ahead of the galley door. Inasmuch as the top of the bulwark rail of the tug slopes inward from the guard rail, the gasoline did not flow over onto the deck of that vessel but ran into the river between the two hulls. [redacted] testimony and the disposition of fire damage on the tug bear this out. It is reasonable to presume that eddy air currents on the lee side of the boat, caused by a moderate northerly breeze striking her starboard side, wafted the vapors from this spill into the galley where they were ignited by the galley fire and flashed back to the spill which then exploded. During this time the galley screen door was held open by [redacted] and the Cook, and even though there is a strong indication that the Cook shut off the fuel to the galley stove, it being a gravity feed burner, continued to burn and thus must be considered as the most probable source of ignition. There is no indication of there having been a vapor explosion within the galley and fire damage to the REBEL WARRIOR appears to have resulted from the flash of the first explosion.

"3. None of the witnesses were able to testify as to the condition of the manhole to the aft rake compartment of the RTC-107 but evidence was given that a considerable period of time had

Report since the interior of this compartment was inspected. The physical appearance of this compartment as viewed after the explosion definitely shows that a tremendous explosion occurred there. The entire deck and a portion of the starboard side bounding this tank was blown off and all the remaining bounding plating is badly bulged. Machinery which had been installed on the deck over this compartment was catapulted into the air and the pump and engine assembly landed on deck a considerable distance away. Therefore, the atmosphere within this compartment must have been of a highly explosive consistency. The presence of a small amount of gasoline in this compartment coupled with the fact that except for one 2-1/2" goose-neck vent the compartment was cut off from any outside ventilation could have easily generated such an explosive mixture and the board is of the opinion that this actually happened and that the heat of the explosion and fire alongside the KTC-109 and on the surface of the water around both barges caused this mixture to flow from the goose-neck vent, become ignited and fuse back through the vent. Similarly, the discharging of 2,000 barrels of cargo from the forward tanks of the 112 produced an explosive atmosphere within these tanks which was ignited in a like manner.

"4. A major contributing factor in this casualty was the absence of a blind flange on the starboard end of the discharge line on the barge KTC-109. Although the tanker regulation 46 CFR 32.50-15(d), which requires blind flanges or valves to be fitted on cargo loading and discharging connections, does not apply to this barge by reason of its having been constructed prior to July 1, 1951, it has for years been a practice both on board barges and at cargo terminals to drain and blank off such connections at the completion of loading or discharge operations and failure on the part of responsible persons to carry out this safety precaution at the termination of her previous cargo discharging operation constitutes an act of neglect. Furthermore, the failure of any person responsible for the safe operation of these barges to detect this act of omission or if detected to install blanks over the connections constitutes even greater neglect.

"5. The Board is also of the opinion that the complete lack of understanding between the personnel of the terminal and of the carrier as to overlapping responsibilities for effecting required safeguards and as to what particular person was in a supervisory capacity is an extremely unhealthy condition. In addition to this,

the act on the part of the individual of leaving only one man, this man being unqualified as a tankerman and whose employment is not in a supervisory capacity but rather as a 'dock man,' in attendance on the dock at a time when three tank barges were to discharge their cargo into a common line, cannot by any stretch of the imagination be considered a safe practice. It is felt that both of these conditions contributed directly to the casualty.

"6. The presence of the RUMEL WARRIOR alongside the barge 109 during its preparation for unloading, although not a very safe and satisfactory condition, was necessary in that it was required to provide starting air to the pump engine on this barge. Nevertheless, the presence of fire in her galley stove at a time when the entrance to the galley was within close proximity of the cargo tanks, vents and pumping equipment and while free communication of atmosphere to and from the galley through its open door existed, is considered to have been an unnecessary hazard which would have been eliminated had provisions of 46 CFR 35.35-20 and 46 CFR 35.35-42 been properly and prudently complied with by responsible persons.

"7. The Board is also of the opinion that the act of [REDACTED], while employed under his duly issued tankerman certificate, of leaving the barge RFG-112 unattended at a time when her pumps were discharging cargo to the dock is unpardonable and though there is little evidence of this having increased the amount of damage incurred, the potential hazard created by a burning unmanned barge adrift and pumping gasoline into the harbor is considered to be of the greatest peril.

"8. In the opinion of the Board Mr. [REDACTED] as Port Engineer for the Black Warrior Towing Company, was in charge of the operation on the barges and was acting under the authority of his duly issued license.

"9. The Board is of the opinion that the estimates of damage to the terminal facilities as submitted by the Gulf Refining Company are excessive.

"10. Finally, the Board agrees that there was no failure of equipment, machinery or material that contributed in any way to the casualty; that no personnel of the Coast Guard or any other Government employee were connected directly or indirectly or contributed in any manner to the casualty; that no Government property of any character was damaged or destroyed and that the rescue and fire fighting operations carried out by the salvors and the Coast Guard were highly efficient and praiseworthy.

the Board take the following recommendations:

- "1. That consideration be given to the need for broadening existing regulations for the Security of Vessels and Waterfront Facilities to require all waterfront terminals through which cargoes of inflammable or combustible liquids are handled to exercise complete jurisdiction over the enforcement of existing safety requirements both with respect to their own facilities and to all vessels moored at the facility or contiguous thereto.
- "2. That section 32.50-15(d) of Title 46 CFR, Tank Vessel Regulations, be changed to require both a valve and a blind flange on cargo loading and discharge connections and that this be made applicable to all installations regardless of date of construction or conversion.
- "3. That Article 35.35-30, 46 CFR, Tank Vessel Regulations, be amended to read 'TB/ALL' in lieu of 'T/ALL' as presently indicated, inasmuch as Article 35.35-23 is not clear as to requirement of execution of a Declaration of Inspection on tank barges.
- "4. That action under the provisions of R. S. 4450 be taken against the document held by [REDACTED], certificated tankerman.
- "5. That inasmuch as [REDACTED] Port Engineer for Black Warrior Towing Company, has been missing since May 11, 1952 and is presumed dead, no action under R. S. 4450 is recommended."
- "6. That no further action be taken and the case be closed."

REMARKS

6. Opinion 4 of the Board, in effect, states that the failure on the part of responsible persons to drain and blank off the discharge line on the RTC-109 at the termination of a previous cargo-discharging operation and the failure of persons responsible for the safe operation of subject barges to detect such failures, constitutes negligence. The evidence in the record indicates that the outboard end of the discharge line of the RTC-109 was not blanked off at the time she was being prepared to discharge her cargo of gasoline. There is no evidence in the record which indicates definitely whether or not such line was drained or blanked off at the termination of previous loading operations. This opinion of the Board, therefore, is not sustained by the evidence in the record.

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7. Recommendation 1 of the Board states as follows:

"That consideration be given to the need for broadening existing regulations for the Security of Vessels and Waterfront facilities to require all waterfront terminals through which cargoes of inflammable or combustible liquids are handled to exercise complete jurisdiction over the enforcement of existing safety requirements both with respect to their own facilities and to all vessels moored at the facility or contiguous thereto."

This recommendation is understood to mean that the Coast Guard should establish regulations covering the safety of waterfront terminals handling inflammable or combustible liquid cargoes, and that additional regulations be established covering the safety of tank vessels while engaged in transfer operations at terminals. Under the new regulations it is proposed that the terminals will exercise complete control of the terminals and all vessels alongside or contiguous thereto. The precise conditions, operations, organization, personnel, or material to be covered by the regulations are not indicated in the Board's recommendations.

8. The Act of 23 June 1936, R. S. 4417a (46 USC 391a) provides that every vessel that shall have on board any inflammable or combustible liquid cargo in bulk, shall be considered a steam vessel and subject to all marine safety statutes, regulations and requirements thereunder. This Act further provides that in order to secure effective provision against the hazards of life and property created by any vessels having on board inflammable or combustible liquid cargoes in bulk, the Commandant of the Coast Guard shall establish such additional rules and regulations as may be necessary with respect to the design and construction, alteration, or repair of such vessels including the superstructures, hulls, places for stowing and carrying such liquid cargo, fittings, equipment, appliances, propulsive machinery, auxiliary machinery, and boilers thereof; and with respect to all materials used in such construction, alteration, or repair; and with respect to the handling and stowage of such liquid cargo; the manner of such handling or stowage, and the machinery and appliances used in such handling and stowage; and with respect to equipment and appliances for lifesaving and fire protection and with respect to the operation of such vessels; and with respect to the requirements of the manning of such vessels and the duties and qualifications of the officers and crews thereof; and with respect to the inspection of all of the foregoing.

9. Comprehensive regulations covering all phases of tank vessel safety including transfer operations at terminals have been established immediately following the enactment of the above Federal Tanker Act. These regulations are progressively revised when experience is gained through marine casualties, new safety techniques or devices are developed or when otherwise indicated in the interest of safety.

10. Under the United States Constitution, power to regulate foreign and inter-state commerce is vested in the Federal Government. Although the Federal and State Governments may regulate the safety of vessels on the navigable waters of the United States, the states are excluded from this field when the Federal Government by statute and regulation comprehensively covers any phase of marine safety. The states, by the Constitution, are precluded from exercising any jurisdiction which is covered by or in conflict with the Federal statutory provisions or regulations and requirements thereunder. The Federal Tanker Act and regulations and requirements thereunder cover all phases of tank vessel safety. It follows, therefore, that the states, or subdivisions thereof have no authority to establish any safety requirements applicable to tank vessels on the navigable waters of the United States.

11. Waterfront terminals adjacent to the navigable waters of the United States, through which inflammable or combustible liquids are handled to and from tank vessels, are within the jurisdiction of the respective states, counties, municipalities, or subdivisions thereof. The regulation of the location, design, construction, manning and operation of such terminals is vested in appropriate state authority; except certain limited phases of safety which are under Federal jurisdiction and authority during periods of emergency or wartime. It is under such conditions that existing regulations for the Security of Vessels and Waterfront Facilities came into being as a function of the Federal Government; but, when the need for such regulations has passed, and they become inoperative for any of several reasons, the Federal Government will not exercise jurisdiction over waterfront terminals or conflict with the policy power of the states. At this time it is considered that Subpart 6.12-3 and Part 126 of Title 33 C.F.R. are ample in scope, and that no further Port security regulations are needed. Accordingly, it does not concur with the Board's recommendation.

12. Approaching the subject in the light of normal peacetime operations, it may be observed that there are many diverse interests concerned in the operation of vessels and terminal facilities. The vessels may be operated by owners, charterers, subcharterers, or others in varying legal status. The vessels may be manned or unmanned, and the crews may be the employees of the interests concerned with the vessel, the terminal, or in a status akin to independent contractors, owing no responsibility to either the vessel or the terminal. The same diversities and complexities of interests may prevail with respect to the ownership and operation of the terminal itself.

Commandant

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13. Undoubtedly, combined terminal and vessel operations are the subject of contract covering the responsibility of the various diverse interests involved. Since, (apart from emergency or wartime conditions) no one legal authority has the power to directly regulate the terminal and the vessel as a unit, during normal times a better understanding and closer cooperation between the terminal and the vessel is necessary in the interests of safety. It would appear most desirable, therefore, that all contracts or other arrangements covering a combined operation of terminal and vessels be implemented by a voluntary safety program covering the terminal and vessel within one unified plan. This should be followed up by actual training, stressing the necessity for integrated understanding, cooperation and action by all persons on the job to the common end of over-all safety.

14. Recommendations 2 and 3 of the Board with respect to the proposed amendment of the Tanker Regulations will be referred to the Merchant Marine Council for consideration.

15. Subject to the foregoing remarks, it is recommended that the Findings of Fact, Opinions and Recommendations of the Marine Board of Investigation be approved.

/s/ [REDACTED]
P. A. OVERDEN

FIRST ENDORSEMENT to MVI memorandum of 27 August 1952

M
16 October 1952

From: Chief, Office of Merchant Marine Safety
To: Commandant

Forwarded, recommending approval.

/s/ [REDACTED]
R. A. SMYTH
Acting

APPROVED: 16 OCT 1952

/s/ [REDACTED]
A. C. RICHMOND
Rear Admiral, U.S. Coast Guard
Acting Commandant