Command and Operations School

Investigations & Mishap Reports

US Coast Guard Academy
New London, Connecticut

2001

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COLLISION OF USCGC POLAR SEA AND BARGES IN SEATTLE, WA ON 10 SEPTEMBER 1983

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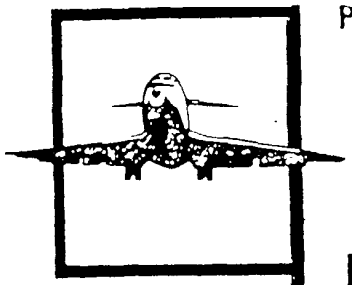

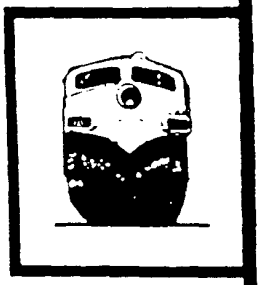

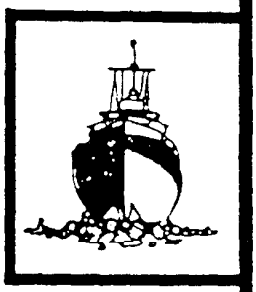

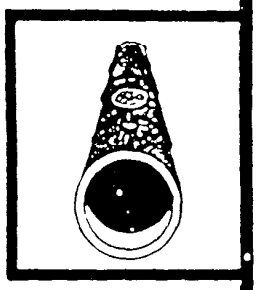

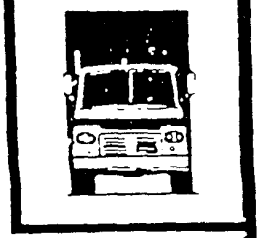

NATIONAL TRANSPORTATION SAFETY BOARD

WASHINGTON, D.C. 20594

MARINE ACCIDENT REPORT

COLLISION OF THE U.S. COAST GUARD
CUTTER POLAR SEA AND BARGES
SEATTLE, WASHINGTON
SEPTEMBER 10, 1983

NTSB/MAR-84/03

UNITED STATES GOVERNMENT

TECHNICAL REPORT DOCUMENTATION PAGE

1. Report No. NTSB/MAR-84/03	2. Government Accession No. PB84-916403	3. Recipient's Catalog No.
4. Title and Subtitle Marine Accident Report—Collision of the U.S. Coast Guard Cutter POLAR SEA and Barges, Seattle, Washington, September 10, 1983		5. Report Date March 20, 1984 6. Performing Organization Code
7. Author(s)		8. Performing Organization Report No.
9. Performing Organization Name and Address National Transportation Safety Board Bureau of Accident Investigation Washington, D.C. 20594		10. Work Unit No. 3886 11. Contract or Grant No. 13. Type of Report and Period Covered Marine Accident Report September 10, 1983
12. Sponsoring Agency Name and Address NATIONAL TRANSPORTATION SAFETY BOARD Washington, D. C. 20594		14. Sponsoring Agency Code
15. Supplementary Notes		

16. Abstract

About 0945 on September 10, 1983, the U.S. Coast Guard Cutter POLAR SEA (WAGB-11) approached its regularly assigned berth at Pier 37, U.S. Coast Guard Base, Seattle, Washington, with two commercial tugs assisting. The POLAR SEA made two attempts to berth and both times was set down against a mooring dolphin at the outer end of the pier. As it backed clear of the berth in the first attempt, the POLAR SEA grazed the outer of two barges moored against the end of the pier. In the second attempt the POLAR SEA struck a passing barge under tow and again struck the outboard barge at the end of the pier, damaging it and the inboard barge, parting the outboard barge's mooring lines and destroying its deck cargo. The POLAR SEA then was maneuvered into Elliott Bay, and a third attempt to berth was successful with the use of a third tug. The damage to the three barges and the deck cargo was estimated at approximately $95,000. There was no damage to the POLAR SEA other than scraped paint.

The National Transportation Safety Board determines that the probable cause of the collision of the POLAR SEA with the tug CLAUDIA FOSS and tow and the MANSON barges was the failure of the conning officer of the POLAR SEA to judge the effects of winds and currents correctly and to position the forward assisting tug properly to berth the ship at Pier 37 in the Port of Seattle, and the backing of the POLAR SEA into the Duwamish East Waterway without adequate warning to passing vessels.

17. Key Words Coast Guard Cutter, icebreaker, collision, assisting tugs, bridge control, docking pilot, VHF radio, barges, dolphin	18. Distribution Statement This document is available to the public through the National Technical Informati Service Springfield, Virginia 22161		
19 Security Classification (of this report) UNCLASSIFIED	20. Security Classification (of this page) UNCLASSIFIED	21. No. of Pages 17	22. Price

NTSB Form 1765.2 (Rev. 9/74)

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NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594

MARINE ACCIDENT REPORT

Adopted: March 20, 1984

COLLISION OF THE U.S. COAST GUARD CUTTER POLAR SEA AND BARGES, SEATTLE, WASHINGTON SEPTEMBER 10, 1983

INTRODUCTION

This accident was investigated by the National Transportation Safety Board in accordance with its Rules of Practice at 49 CFR Part 845. The U.S. Coast Guard, Haida Marine Corp., and Foss Launch & Tug Co. participated as parties to the investigation. Sworn testimony was taken in Seattle, Washington, from September 27 to September 30, 1983. This report is based on the factual information developed by the investigation. The Safety Board has considered all facts pertinent to the Safety Board's statutory responsibility to determine the cause or probable cause of the accident and to make recommendations for the prevention of similar accidents in the future.

The Safety Board's analysis and recommendations have been made independently of any other investigation that may have been conducted by any other agency of the Federal government. To insure public awareness of all Safety Board recommendations and responses, a summary of all recommendations and responses is published in the Federal Register.

SYNOPSIS

About 0945 on September 10, 1983, the U.S. Coast Guard Cutter POLAR SEA (WAGB-11), an icebreaker returning from a shakedown cruise in Puget Sound, Washington, approached its regularly assigned berth at Pier 37, U.S. Coast Guard Base, Seattle, Washington, with two commercial tugs assisting. On the first attempt to berth, the wind and current set the POLAR SEA against a mooring dolphin located at the outer end of the pier and toward two barges moored against the end of the pier. As the vessel was backed clear of the berth, it grazed the outboard barge. On a second attempt to berth, the POLAR SEA again was set down against the dolphin. When it was backed clear, the icebreaker's stern struck a passing barge under tow about 1008. After ahead thrust on the POLAR SEA's propellers, which had been ordered in an attempt to avoid impact with the barge astern, the bow of the POLAR SEA again struck the outboard barge at the end of the pier, damaging it and the inboard barge and parting the outboard barge's mooring lines and destroying its deck cargo. The POLAR SEA then was maneuvered into Elliott Bay, and the service of a third tug were requested. The third attempt to berth was successful with the use of the additional tug. The damage to the three barges and the deck cargo was estimated at approximately $95,000. There was no damage to the POLAR SEA other than scraped paint.

The National Transportation Safety Board determines that the probable cause of the collision of the POLAR SEA with the tug CLAUDIA FOSS and tow and the MANSON barges was the failure of the conning officer of the POLAR SEA to judge the effects of winds and currents correctly and to position the forward assisting tug properly to berth the ship at Pier 37 in the Port of Seattle, and the backing of the POLAR SEA into the Duwamish East Waterway without adequate warning to passing vessels.

INVESTIGATION

The Accident

On September 10, 1983, the U.S. Coast Guard Cutter POLAR SEA, one of the Coast Guard's newest icebreakers, was underway in Elliott Bay in the port of Seattle, Washington. It was returning to the Coast Guard Base at Piers 36 and 37, at the entrance of the Duwamish East Waterway. (See figures 1 and 2.) The POLAR SEA had been on a "shakedown" cruise for five days after a repair period in a local shipyard and had refueled at Manchester, Washington. At about 0930 1/ the POLAR SEA arrived in the area off Duwamish Head, bound for Pier 37 with the commanding officer, who had the conn, directing the movements of the ship. Two commercial tugs, the CREOLE SUE and the BLARNEY, were standing by awaiting the arrival of the POLAR SEA. Both tugs were owned and operated by the Haida Marine Corp. of Seattle. An initial call to request orders was made by the CREOLE SUE to the POLAR SEA on VHF radio, Channel 13. The tug was told to stand by until the icebreaker was further into the harbor, at which time the vessels would shift to a working frequency and the tugs would be given orders.

About 0935, after radio communications had been established on VHF Channel 74, the CREOLE SUE was ordered to make fast to the POLAR SEA's starboard bow with two lines, and the BLARNEY was ordered to stand by at the port quarter. By 0945, the CREOLE SUE had two lines on the starboard bow of the POLAR SEA; one line led through the tug's bull nose 2/ to the fourth chock, about 100 feet aft of the bow; and a slack quarter line led from the tug's aft towing bitts to a chock on the main deck of the POLAR SEA, just aft of the bridge wing. As the POLAR SEA approached Pier 37 on a southeasterly heading, the BLARNEY was ordered to come alongside the port quarter in position to push against the hull. A single headline was passed through the bull nose on the bow of the BLARNEY and through a chock on the port side of the POLAR SEA's main deck, about 40 to 50 feet forward of the stern. The line was made fast.

As the POLAR SEA entered the East Waterway, it was turned to the southeast and then to the east-southeast to make the approach to the pier. When the POLAR SEA began to turn into the berth, the conning officer ordered the tug BLARNEY to push the stern to starboard and the tug CREOLE SUE to pull the bow off the pier. The POLAR SEA's starboard and centerline controllable pitch propellers were used to maneuver the stern to starboard into the wind and current. The port propeller was not available for use. The operator of the BLARNEY stated that the amount of power applied was left to his discretion and that he had used "slow to moderate ahead." He did not receive any orders from the POLAR SEA during the approach to the berth to increase power over what he chose to use. The CREOLE SUE, assisting on the starboard bow, was instructed in the amount of power to apply, and during the initial phase of the maneuver was ordered to "come ahead easy." The tug operator recalled using "ahead easy" to "ahead half" on his engines during this initial phase of the maneuver. As the POLAR SEA started to turn into the berth, it prematurely was set toward a mooring dolphin at the end of the pier and the barges MANSON 48 and MANSON 59, which were moored across the end of Pier 37. (See figure 3). The conning officer elected to abort the berthing attempt and back out for another attempt, and the CREOLE SUE was then ordered "full astern" in an attempt to hold the bow off the mooring dolphin and the barges.

1/ All times are Pacific daylight time based on a 24-hour clock.
2/ A closed fairlead on the bow of the tug.

As the POLAR SEA backed clear of the slip, its port bow brushed the barge MANSON 48, moored outboard of the barge MANSON 59. After the POLAR SEA was clear, a second attempt was made to berth. According to eyewitnesses, the second approach to the pier by the POLAR SEA was essentially the same as the first approach and again the vessel prematurely was set toward the mooring dolphin and the barges. The operator of the tug BLARNEY and the POLAR SEA's executive officer believed that the POLAR SEA went further into the berth before the conning officer decided to back out a second time.

Meanwhile, the tug CLAUDIA FOSS, towing the barge FOSS 253 alongside, was approaching the entrance to the East Waterway from the west. The barge, partially loaded with rail cars, was made up on the starboard side of the tug, bow to stern, so that the tug operator's field of vision was limited on his starboard side by a "blind" sector. The mate of the CLAUDIA FOSS was positioned on the leading (stern) end of the barge to watch to starboard, where the tug operator's view was obstructed. The mate reported via a hand-held portable radio to the tug operator that the POLAR SEA was entering the slip between Piers 36 and 37. The tug operator and the mate were not aware that there had been more than one attempt to berth the POLAR SEA. The tug operator slowed the CLAUDIA FOSS to allow the icebreaker to move clear before the tow entered the waterway. As the tug and tow came around to a southerly heading to enter the waterway, the tug operator was able to see the POLAR SEA. When he saw the POLAR SEA start its approach to the pier, he asked the mate about the clearance astern of the POLAR SEA. Both concluded that there was sufficient room, and the tug and tow proceeded into the waterway. When the tug operator observed the POLAR SEA backing out into the waterway, he immediately placed the CLAUDIA FOSS's engines on full astern and sounded three blasts on the tug's whistle. The operator stated that he had attempted to communicate with the POLAR SEA over VHF radio, channel 13, but had received no response. 3/ The operator testified that he did not hear any whistle signals from the POLAR SEA and that the mate "reported hearing three whistles, but he didn't know where they came from."

As the POLAR SEA backed clear of the slip after the second attempt at berthing, it again was set down against the mooring dolphin and again brushed the MANSON barge as it moved astern. The officer at the engine controls of the POLAR SEA recalled that the pitch setting at the time was "back full." The executive officer testified that three short blasts were sounded on the whistle. The stern lookout had sighted the approaching tug and barge and had reported their presence to the bridge before the POLAR SEA began backing. During the backing, the operator of the tug BLARNEY on the port quarter also informed the POLAR SEA that the tug and barge were entering the waterway. Even though the icebreaker's pitch control levers were placed on "ahead full," or maximum pitch ahead, as the POLAR SEA cleared the slip it was evident to the executive officer that the stern of the POLAR SEA would hit the FOSS barge. The POLAR SEA responded quickly to the engines, and sternway had been reduced when the collision occurred with the FOSS 253 barge at approximately 1008. The POLAR SEA then started to come ahead, and it struck the barge MANSON 48, damaging the barge and destroying its deck cargo, parting its mooring lines, and setting it adrift. The inboard barge MANSON 59 also was damaged. The POLAR SEA again backed full and, when all forward motion was checked, the pitch control levers were placed on zero. The ship then was swung to port until it headed north, at which time it proceeded slowly into Elliott Bay with both tugs still made fast alongside.

3/ A transcript of the recorded VTS transmissions confirmed that the CLAUDIA FOSS called the POLAR SEA on channel 13 at 1004. The POLAR SEA responded within about 30 seconds, but the response apparently was not heard by the CLAUDIA FOSS.

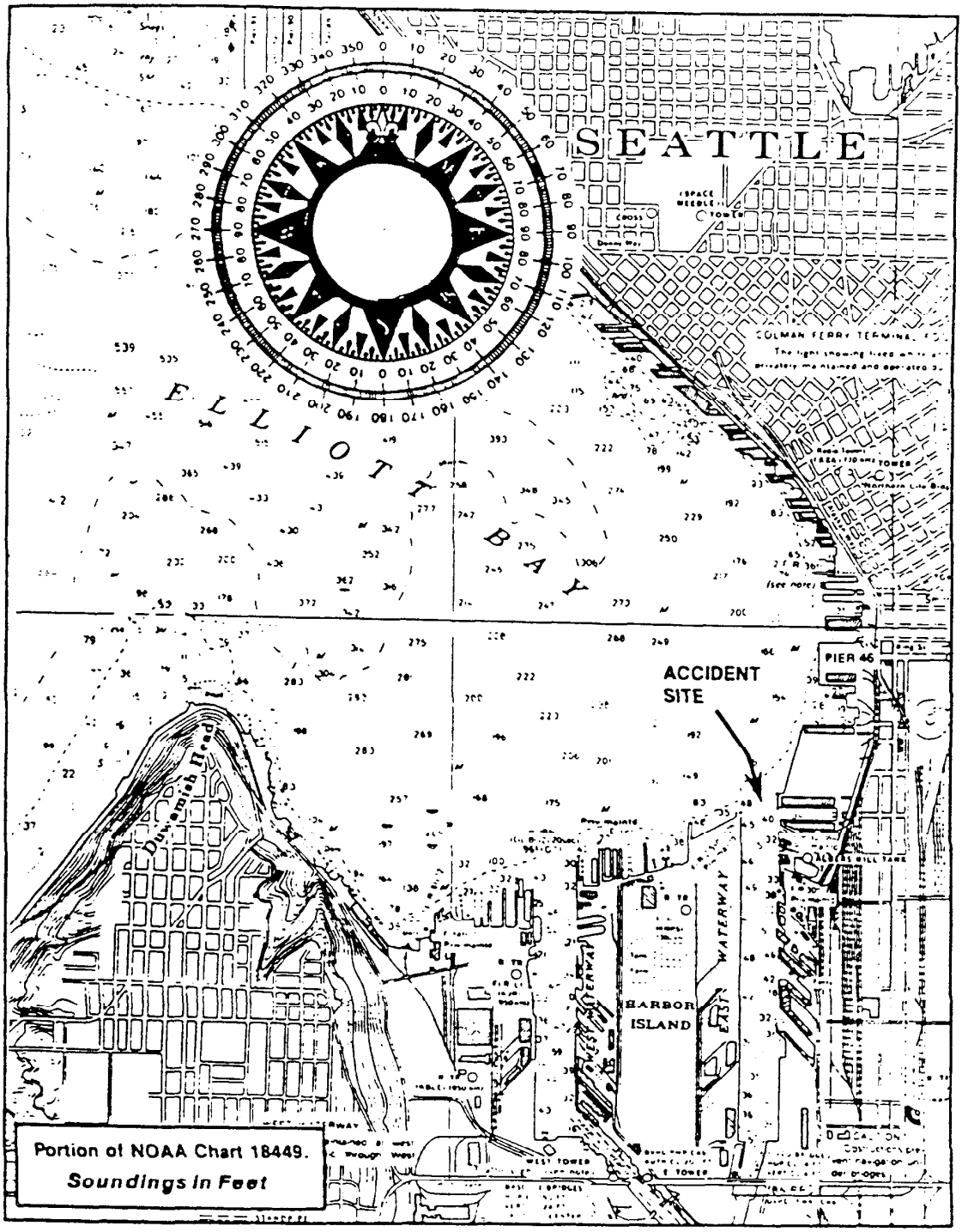

Figure 1.--Elliott Bay, Port of Seattle.

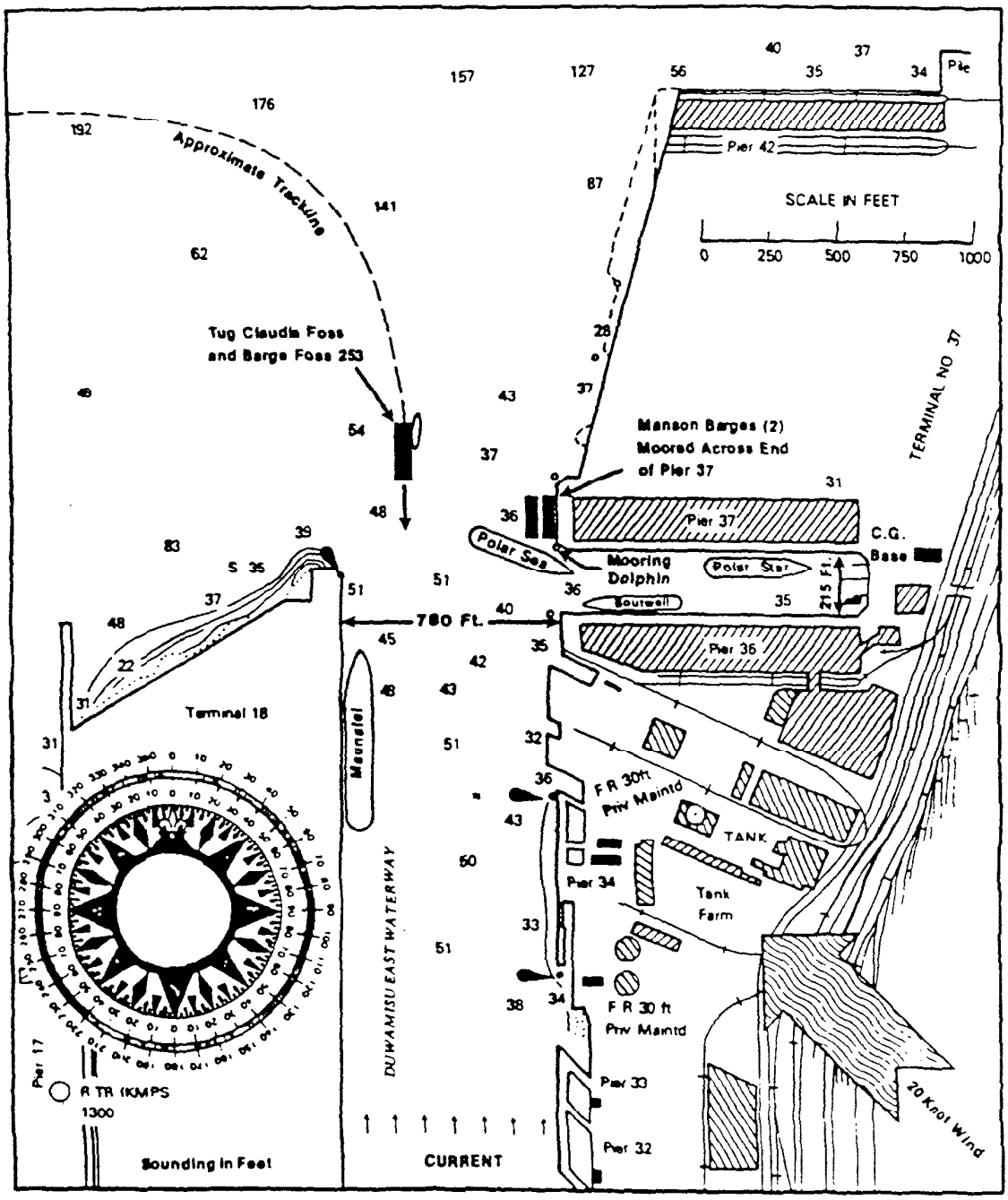

Figure 2.--Accident Site.

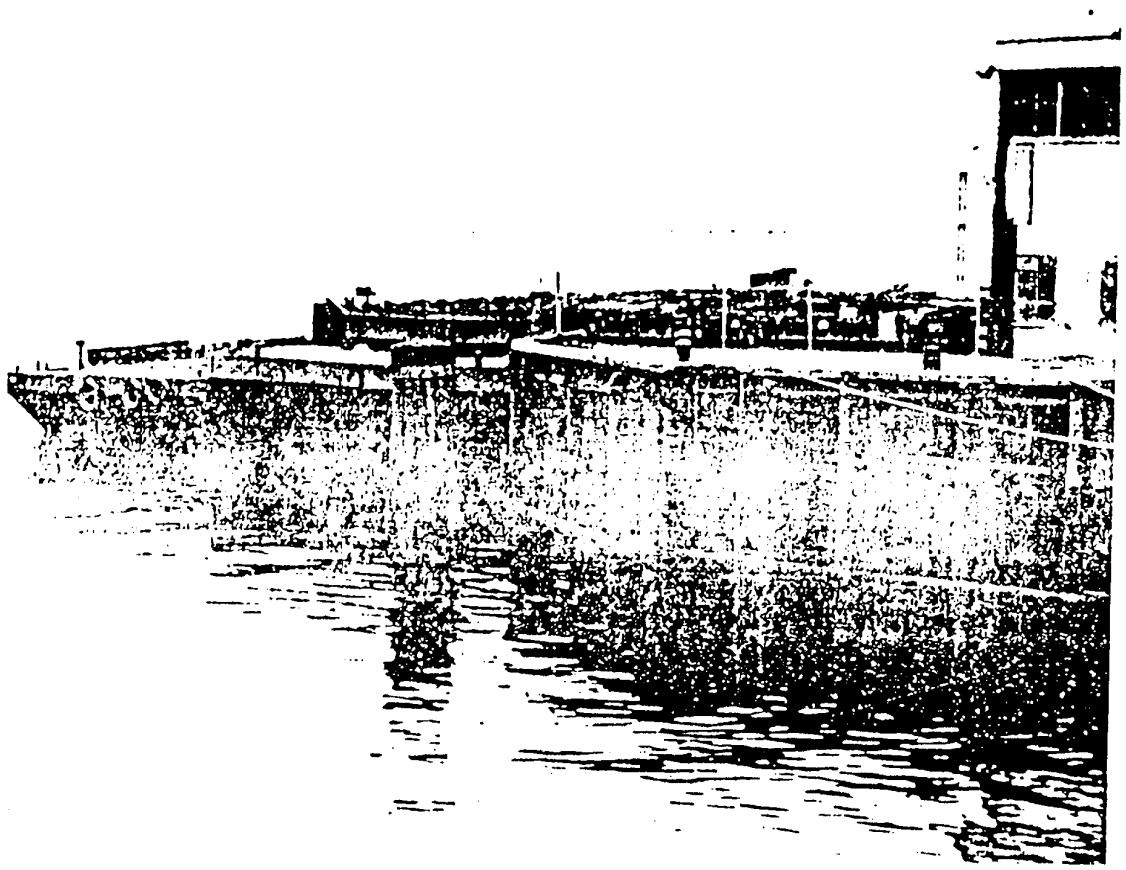

Figure 3.--MANSON barges and mooring dolphin at end of Pier 37.

Meanwhile, the CLAUDIA FOSS had moved astern out of the East Waterway and had maneuvered to allow the POLAR SEA to proceed into Elliott Bay. The POLAR SEA called the Seattle VTC 4/ and reported the barge adrift off Pier 37. The tug WEDELL FOSS, which was standing by at Pier 46, observed the situation and got underway about 1010 to recover the MANSON 48. The WEDELL FOSS took the barge in tow about 1016, returned it to the end of Pier 37, and secured it outboard of the MANSON 59. At 1055, the POLAR SEA called the WEDELL FOSS and requested its assistance in berthing at Pier 37. The WEDELL FOSS responded and was ordered to the starboard bow of the POLAR SEA, forward of the CREOLE SUE. After the tug was made fast, the POLAR SEA was maneuvered into the berth at Pier 37 without incident. The tugs were dismissed by 1124, and the POLAR SEA was secure at the berth at 1128.

Injuries to Persons

Injuries	POLAR SEA	CLAUDIA FOSS AND TOW	MANSON BARGES	Total
Fatal	0	0	0	0
Non-fatal	0	0	0	0
None	137	8	0	145
Total	137	8	0	145

Vessel Damage

There was no damage to the POLAR SEA, other than some scraped paint on the port bow from contact with the mooring dolphin.

Damage to the barge FOSS 253 was estimated to be $19,660.00. The damage consisted of fractured and distorted shell plating at the after end of the barge on the starboard side as well as bent deck plating and internal framing.

Damage to the barges MANSON 48 and MANSON 59 was estimated to be about $75,000.00. The damage to both barges consisted mainly of distorted and fractured shell and deck plating and, on the MANSON 48, damage to the bulwark around the main deck for about 21 feet. Both barges required drydocking to repair the damage below the waterline. The deck cargo on the MANSON 48, consisting of prefabricated concrete panels, was damaged beyond repair.

Crew Information

POLAR SEA.—The crew of the POLAR SEA consisted of 137 officers and enlisted men. The commanding officer held the rank of Captain, USCG. He was commissioned in 1956 after graduating from Officer Candidate School and has served in various billets ashore and afloat. His seagoing experience as a commissioned officer started in 1956 as a deck watch officer. Subsequently he served as executive officer and commanding officer of a number of Coast Guard vessels. He was commanding officer of the USCGC GLACIER (an icebreaker considerably smaller than the POLAR SEA) for over two years before assuming command of the POLAR SEA in July 1982. It is not known how much knowledge and experience the commanding officer of the POLAR SEA had in maneuvering a vessel with tug assistance. On advice of counsel, he declined to give a statement to Safety Board investigators.

4/ Vessel Traffic Center.

POLAR SEA's executive officer held the rank of Commander, USCG. He was commissioned in 1966 after graduation from Officer Candidate School and was immediately assigned as a bridge watch officer on USCGC WESTWIND (an icebreaker somewhat smaller than the GLACIER). He then served in various billets ashore and afloat, including operations officer of the USCGC GLACIER and commanding officer of the USCGC EVERGREEN. Before reporting to the POLAR SEA on August 15, 1983, he had been Commander of the International Ice Patrol.

The officer of the deck at the time of the accident was a Lieutenant, USCG. He was commissioned in 1976 after graduating from Officer Candidate School. He had served on various types of Coast Guard vessels, including the POLAR STAR (sister ship to the POLAR SEA). He had reported aboard the POLAR SEA in July 1983.

CREOLE SUE.--The operator of the tug CREOLE SUE was first employed by the Haida Marine Corp., owner of the CREOLE SUE, in March 1983 as a mate and operator of tugs. He then had about one year's experience on tugboats and, before that, about 17 years as a commercial fisherman. He holds a Coast Guard license as mate of inspected freight and towing vessels, not to exceed 500 gross tons, not to exceed 200 miles offshore, and a seamen's document with an unlimited "able-bodied seaman" endorsement.

BLARNEY.--The operator of the tug BLARNEY had been employed by the Haida Marine Corp. for 3 years. He had operated tugboats in the Seattle area for 8 years, primarily engaged in towing barges. He had about 3 months experience providing tug assistance to ships. He holds a Coast Guard license as master, uninspected motor vessels, not to exceed 1,350 gross tons, not to exceed 200 miles offshore.

CLAUDIA FOSS.--The operator of the tug CLAUDIA FOSS had been employed by Foss Launch & Tug Co. since 1960 as a mate and tugboat operator. He previously had served as both operator and mate aboard tugboats since 1946. He holds a U.S. Coast Guard license as master, uninspected towing vessels, not to exceed 200 gross tons, not to exceed 200 miles offshore; and master of inspected freight and towing vessels, not to exceed 500 gross tons, on lakes, bays, and sounds from Cape Flattery to Hope Island, B.C. He had been operator of the CLAUDIA FOSS for 4 years. The mate of the CLAUDIA FOSS holds a U.S. Coast Guard license as master of inspected freight and towing vessels, not to exceed 1,000 gross tons, not to exceed 200 miles offshore.

Vessel Information

POLAR SEA

Length overall	399 feet
Beam	83.5 feet
Draft	33.5 feet
Displacement, Capacity load	13,190 L. tons
Speed (open water)	17 knots
H.P. (diesel-electric)	18,000
H.P. (gas-turbine)	60,000

The POLAR SEA, built in 1977, is one of two icebreakers of the same design built for the Coast Guard by the Lockheed Shipbuilding and Construction Co., Seattle. It is one of the most powerful non-nuclear icebreakers in the world. It can ram through ice 21 feet thick and move continuously at 3 knots through ice 6 feet thick. The POLAR SEA has three propellers that can be driven by either diesel-electric or gas-turbine power plants.

Each shaft is connected to a 16-foot-diameter, 4-blade controllable pitch propeller that is controlled directly from the navigating bridge. The POLAR SEA and its sistership the POLAR STAR are substantially larger than any other Coast Guard cutters.

The POLAR SEA is not equipped with an automatic course-recording device or means to automatically record engine orders. No record of the headings of the vessel or engine maneuvers was made after the navigation plot was suspended at 0929, when the special sea detail was set. In addition to eliminating the need for manual recording of vessel headings and engine orders, automatic recording devices can provide accurate data to analyze maneuvers and to evaluate the performance of helmsmen and conning officers.

The POLAR SEA had the use of only two of its three propellers. The port shaft was inoperable due to a malfunction in a hydraulic pump servicing the controllable pitch propeller. This condition had existed from the time the vessel had departed the fueling dock at Manchester on September 7. According to testimony from persons on the bridge of the POLAR SEA, this condition caused no difficulty in maneuvering the vessel. The executive officer stated that when he conned the vessel away from the fuel dock using only two shafts, it handled like a twin-screw vessel. He explained, however, that his experience in handling a vessel as large as the POLAR SEA was rather limited.

CREOLE SUE

Length overall	82 feet
Beam	25 feet
Draft	11 feet
H.P.	1,600
Gross tonnage	123

The CREOLE SUE is an uninspected twin-screw direct-drive diesel-powered tug built in 1961 at Pascagoula, Mississippi.

BLARNEY

Length overall	101 feet
Beam	25 feet
Draft	12.5 feet
H.P.	1,500
Gross tonnage	194

The BLARNEY is an uninspected single-screw diesel electric-drive tug built in 1945 at Jacksonville, Florida.

CLAUDIA FOSS

Length overall	80 feet
Beam	25 feet
Draft	8.6 feet
H.P.	1,700
Gross tonnage	97

The CLAUDIA FOSS is an uninspected twin-screw direct-drive diesel tug built in 1968 at Tacoma, Washington.

FOSS - 253

Length overall	288 feet
Beam	50 feet
Draft	16 feet
Gross tonnage	1,914

The barge FOSS 253 was designed to carry railroad cars. It is raked on both ends and has towing skegs at the stern.

WEDELL FOSS

Length overall	100 feet
Beam	36 feet
Draft	16 feet
H.P.	3,000
Gross tonnage	195

The WEDELL FOSS is an uninspected tug built in 1982 at Tacoma, Washington. It was specifically designed for ship assist work and is fitted with a cycloidal propulsion system. Its two cycloidal propelling units can exert thrust in any direction without changing the heading of the tug.

MANSON 48

Length overall	165 feet
Beam	40 feet
Depth	10 feet
Gross tonnage	615

The MANSON 48 is a steel deck barge built in 1953 at Portland, Oregon.

MANSON 59

Length overall	180 feet
Beam	54 feet
Depth	14 feet
Gross tonnage	1,133

The MANSON 59 is a steel deck barge built in 1981 at Freeland, Washington.

Waterway Information

The entrance to Duwamish East Waterway is at the southeastern end of Elliott Bay, which is the outer harbor of the Port of Seattle. The Coast Guard Base is located at Piers 36 and 37 on the east side of the entrance to the East Waterway. The waterway is aligned in a north-south direction and is about 780 feet wide at the north end. The Coast Guard piers flank a 1050-foot-long slip perpendicular to the waterway. The slip is about 215 feet wide. The south face of Pier 37 provides berths for the icebreakers POLAR SEA and POLAR STAR. The POLAR SEA normally occupies the outer or Delta berth. The description of Pier 37, in the U.S. Coast Pilot, Volume 7, includes the following note: "when docking at any of the three Terminal 37 piers during strong N or S winds or during strong ebb tide conditions, the use of a tug and anchor are recommended."

On the morning of September 10, in addition to the moored MANSON barges which extended about 94 feet into the East Waterway from the end of Pier 37, the USCGC POLAR STAR was berthed at the inner berth of Pier 37, the 42-foot-wide USCGC BOUTWELL was in the outer berth of Pier 36 opposite the POLAR SEA's berth, and a large containership with a beam of 95 feet was berthed at Terminal 18 across the East Waterway at Harbor Island somewhat to the south of the approach to Pier 37. The commanding officer of the POLAR SEA did not request that the barges be moved clear of the end of the pier before the icebreaker was berthed.

Meteorological Information

At the time of the accident, the wind was southeasterly at about 20 knots. The sky was overcast with occasional rain showers. The air temperature was 60° F and the barometer was 29.95 inches. The visibility generally was about 3 miles and about 1/2 mile in rain showers. High tide was at 0802, the highest of the two tides on that day. The operators of the tugs BLARNEY and CREOLE SUE stated that the current was "ebbing" (in a northerly direction).

Other Information

Haida Marine Corp. was under contract to provide tug services to assist U.S. Government vessels in berthing in the Port of Seattle. The CREOLE SUE and the BLARNEY were the two Haida Marine Corp. tugs used for ship assistance. Both the POLAR SEA and the POLAR STAR had been assisted previously by Haida Marine Corp. Foss Launch & Tug Co. also had provided tug services previously for the Coast Guard icebreakers. Foss maintained a number of tugboats of various horsepower (up to 4000 H.P.) and provided regular tug services to commercial vessels.

The commanding officer of the POLAR SEA was the conning officer when the accident occurred on September 10th. He positioned the CREOLE SUE and the BLARNEY alongside, and directed their movements throughout the berthing operation. There was no pilot or docking master aboard the POLAR SEA.

ANALYSIS

As the POLAR SEA approached Pier 37 on the morning of September 10, both the wind and the current were adverse. In the opinion of several eyewitnesses on tugboats in the area, including tugboat operators, the POLAR SEA turned into the berth prematurely on its initial approach and did not allow sufficiently for the force of the southeast wind or northerly current that would set it onto the pier. The vessel's log books and records do not provide sufficient data to reconstruct the vessel's track after it entered the East Waterway. The POLAR SEA was not equipped with a course recorder 5/ that would have provided some of this data.

The position at which the CREOLE SUE was made fast on the starboard bow of the POLAR SEA did not provide for its most effective use in holding the icebreaker's bow off the pier. The CREOLE SUE was made fast about 100 feet aft of the bow, in the vicinity of the starboard bridge wing, where it was not as effective as if it had been working closer to the bow of the vessel. When tugboat assistance is used by a larger vessel under power, the primary function of the assisting tugs is to provide a force to change the heading of the vessel at slow speeds, when the vessel's rudder is ineffective. The use of

5/ A device that automatically and continuously records the vessel's gyro-compass heading.

tugboats in this manner reduces the hazard associated with too much way on the vessel when there is limited maneuvering room. The positioning of tugs is an important factor in their ability to perform their expected task. The most efficient locations to apply external forces to turn a vessel are at its bow and stern. However, due to the configuration of vessels' hulls, such as flared bows and overhanging sterns, some compromise is necessary and a less desirable position must be used. A tugboat working close to a vessel's bow requires less power to exert a given turning force than one performing a similar function 1/4 to 1/3 of the vessel's length aft of the bow. The CREOLE SUE could have better assisted a vessel the size and displacement of the POLAR SEA if it had been made fast further forward. Such positioning was feasible in this case.

If the POLAR SEA had been held on its approach heading until the vessel had moved farther south and the bow was closer to the entrance of the slip between Piers 36 and 37, the starboard side of the vessel would have been exposed to adverse wind and current for a shorter period of time when the vessel was turned into the berth. The distance between Piers 36 and 37 was about 215 feet, reduced only by the beam of the USCGC BOUTWELL and its fenders, or by about 50 feet. This was sufficient room for the POLAR SEA to turn parallel to Delta berth while entering the slip.

The MANSON barges, berthed across the end of Pier 37, prevented the use of the mooring dolphin off the corner of the pier in effecting a ready recovery after the first unsuccessful attempt to enter the slip. Had the conning officer on the POLAR SEA been able to land his vessel against the dolphin, he could have pivoted on it and then proceeded into the berth, if the MANSON barges had not been there. The MANSON barges also interfered with the most effective use of the BLARNEY on the port quarter by limiting the tug's maneuvering room in turning the POLAR SEA parallel to the pier. If the interference caused by the barges had not existed, and if the mooring dolphin had been available to pivot the vessel when the forward tug could not hold it against the wind, the first attempt to berth the POLAR SEA might have been successfully salvaged. The Safety Board believes that the conning officer on the POLAR SEA should have anticipated the interference to the effective use of the BLARNEY and the mooring dolphin which was created by the MANSON barges moored at the end of the pier.

The operator of the CLAUDIA FOSS, towing the barge FOSS 253, had waited until he felt that it was safe to proceed into the East Waterway, fully expecting the POLAR SEA to berth successfully. With a southeasterly wind blowing and the tug and barge moving in a southerly direction, they experienced some leeway which dictated that the tug operator not pass close to Harbor Island, especially since the containership with a beam of 95 feet was moored along the west side of the waterway. The Safety Board believes that the operator of the CLAUDIA FOSS exercised suitable discretion before entering the waterway, particularly since he was unaware of the POLAR SEA's earlier difficulty in berthing.

The conning officer of the POLAR SEA sounded three short blasts, as required by Rule 34(a) of COLREGS, 72, when he elected to abort the second berthing attempt and to back into the East Waterway. However, the operator of CLAUDIA FOSS did not hear the whistle signal and was not aware that the POLAR SEA was backing into the East Waterway until he saw the vessel actually making sternway. If the conning officer of the POLAR SEA had transmitted a security call on VHF-FM channel 13 to announce his intentions to abort the second berthing attempt, and if the operator of the CLAUDIA FOSS had heard the call, the operator of the tug could have taken avoiding action sooner and the collision might have been prevented. The VTS tape recording shows that the POLAR SEA responded within about 30 seconds to the call from the CLAUDIA FOSS at 1004; however, the Safety Board cannot determine why the operator of the CLAUDIA FOSS did not hear the POLAR SEA's response.

After the second attempt to berth the POLAR SEA was aborted and it backed out into the East Waterway, the quick response of the conning officer in applying forward pitch minimized the impact with the FOSS 253. However, in the absence of any record of the engine (propeller pitch) maneuvers that the POLAR SEA made, the Safety Board cannot reconstruct the maneuvers of the POLAR SEA that caused the collision with the MANSON 48. The Board believes that even though a ship has bridge control of the engines, some type of recording device should be provided to record the engine maneuvers on sophisticated ships the size of the POLAR SEA, especially in ports and harbors. Recording of engine orders should not be suspended during maneuvering.

Testimony from those witnesses who were on the navigating bridge of the POLAR SEA indicated that the unavailability of the port engine did not adversely affect the maneuverability of the vessel. No special precautions were taken other than being aware that the port propeller was not available and that the vessel would be maneuvered with the starboard and centerline propellers. The Safety Board believes that, with the tugboats it originally had employed, the POLAR SEA could have been maneuvered safely into the berth at Pier 37 without the use of the port propeller.

Because the commanding officer of the POLAR SEA, acting on advice of counsel, declined to answer questions regarding the accident, his prior knowledge of shiphandling using assisting tugs is not known. However, this accident indicates his expertise in this situation probably was limited. The executive officer stated that he had little experience in using assisting tugs in shiphandling. This accident points out that additional training would benefit commanding officers of larger Coast Guard vessels. Although it is recognized that only a few areas of Coast Guard operations require tug assistance, the training of prospective commanding officers to use tugs in handling larger vessels in close quarters would greatly enhance the safe berthing of these vessels. In some areas, the employment of a docking pilot might provide the necessary initial familiarization and knowledge of local conditions. The Safety Board believes that docking pilots should be employed when larger Coast Guard vessels use commercial tugs in berthing, at least until the commanding officers of those vessels gain the necessary skills in using tugs and knowledge of local conditions to berth their vessels safely.

CONCLUSIONS

Findings

1. The conning officer of the POLAR SEA did not anticipate that the presence of the MANSON barges would interfere with the approach to his berth and he did not order them to be moved from the end of Pier 37.

2. The conning officer of the POLAR SEA failed to allow for the effects of the wind and current and turned into the slip to his berth prematurely.

3. The conning officer's placement of the tug CREOLE SUE substantially aft of the starboard bow of the POLAR SEA impaired its ability to provide assistance in successfully berthing the POLAR SEA.

4. The proximity of the MANSON barges to the mooring dolphin prevented its use by the POLAR SEA when berthing and the POLAR SEA's attempts to berth might have been successful if the mooring dolphin had been available for use.

5. The unavailability of the POLAR SEA's port propeller was not a factor in the accident.

6. The proximity of the tug CLAUDIA FOSS and the barge FOSS 253 was not a factor in the unsuccessful attempts to berth the POLAR SEA.

7. Under the circumstances that existed, the operator of the CLAUDIA FOSS was not imprudent in assuming that it was safe to enter the East Waterway.

8. The conning officer failed to broadcast on VHF-FM channel 13 his intent to back into the East Waterway after the first and second attempts to berth the POLAR SEA. The conning officer did sound three short blasts on the whistle, as required by Rule 34(a) of COLREGS, 72, when he elected to abort the second berthing attempt and to back into the East Waterway.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the collision of the POLAR SEA with the tug CLAUDIA FOSS and tow and the MANSON barges was the failure of the conning officer of the POLAR SEA to judge the effects of winds and currents correctly and to position the forward assisting tug properly to berth the ship at Pier 37 in the Port of Seattle, and the backing of the POLAR SEA into the Duwamish East Waterway without adequate warning to passing vessels.

RECOMMENDATIONS

As a result of its findings, the National Transportation Safety Board made the following recommendations:

--to the U.S. Coast Guard:

Install on the USCGC POLAR SEA and other Coast Guard vessels of similar size a means of automatically recording engine orders during maneuvering and a means of automatically recording the vessel's headings. (Class II, Priority Action) (M-84-17)

Require the commanding officers of U.S. Coast Guard vessels using commercial tugs for assistance in berthing to retain the services of a qualified docking pilot until they are knowledgeable of local conditions. (Class II, Priority Action) (M-84-18)

Provide training for commanding officers and prospective commanding officers of larger Coast Guard vessels in the use of tugs. (Class II, Priority Action) (M-84-19)

BY THE NATIONAL TRANSPORTATION SAFETY BOARD

/s/ JIM BURNETT
Chairman

/s/ PATRICIA A. GOLDMAN
Vice Chairman

/s/ G. H. PATRICK BURSLEY
Member

/s/ VERNON L. GROSE
Member

DONALD D. ENGEN, Member, did not participate.

March 20, 1984

GROUNDING OF WHEC

NEAR DUTCH HARBOR, AK

ON 15-16 NOVEMBER 1972

USCG HEADQUARTERS (FLAG PLOT) 16NOV72

CGC WHEC GROUNDING - ALASKA

1. The following is a narrative summary of events surrounding the grounding and serious damage sustained by the high endurance cutter WHEC which occurred in Alaskan waters on 15-16 November 1972.

2. The cutter was on fisheries patrol near Dutch Harbor, Unalaska Island, AK and struck a underwater obsruction at approximately 0820 Washington time Wednesday. The initial report cited flooding of the sonar dome, some damage to the starboard shaft and prop and a small hole in the hull in the engineering spaces near frame 238. After seeking a lee in Kalekta Bay and effecting temporary repairs to the hull, WHEC entered Dutch Harbor and debarked a National Marine Fisheries Agent. She then departed at 2010 est Wednesday evening for her home port. About five hours later, the cutter broadcasted an SOS distress message stating that she was disabled without main propulsion or electrical power, in mountainous seas with flooding occurring in her engine room, some 21 miles south of Akutan Island. Several minutes later the cutter advised that the engine room flooding was out of control with the water level rising over her deck plates.

3. The Pacific AMVER Plot revealed six merchant vessels in positions to respond and several foreign vessels responded to the SOS. The nearest vessel was the Japanese fishing vessel Koyo Maru #3 whose ETA on scene was initially set at 0900 est. The Cutter BALSAM was diverted from a SAR case near Atka Island and had an ETA of 0700 est Friday morning. A Coast Guard C-130 fixed wing aircraft was launched from Kodiak followed shortly thereafter by a second C-130 with air droppable pumps. The C-130 delivered the pumps at 0305 est, but later reported that the pumping capacity was inadequate to stem the flooding which was continuing at a rate of one inch every 15 minutes. WHEC reported that if her present rate and direction of drift continued she would run aground near Sarana Bay on Akutan Island at about 0930 est this morning. The cutter WINONA at Port Angeles, WA was ordered to proceed to the scene when ready for sea. At 0550 est. WHEC reported that her engine room had flooded to her water line and was holding at that level. All other flooding was being contained.

4. The Japanese trawler Koyo Maru #3 arrived on scene at 0830 est and had WHEC safely in tow at 0845 est enroute to a possible anchorage site in Beaver Inlet near Sedanka Island pending the arrival of other Coast Guard facilities.

5. No personnel injuries were sustained during this incident but all of the crew were feeling the effects of fatigue brought about by 25 hours of intensive effort.

6. You will be kept informed of any significant changes or developments in this situation.

Report of Formal Board of Investigation into the circumstances surrounding the grounding of USCGC WHEC at Dutch Harbor, AK on 15 November 1972 and subsequent flooding and loss of power.

Action of Convening Authority

1. Forwarded. While the direct cause of the grounding was high winds as set forth in Opinion 1, the deficiencies noted in Opinion 2 were a contributing factor.

2. Althouqh the hull fracture did not enlarge after the grounding, the working of the hull did enlarge the flooding area of the fracture and caused increased flooding at 1800. It is the Convening Authoritie's opinion that the flooding of the engine room subsequent to that time was increased by malfunction of at least one eductor which pumped water into the engine room as well as reduced available dewatering capacity for an undetermined time.

3. Opinion 14 is concurred in insofar as-it states that failure to slip anchor at an early moment and his failure to remain in sheltered waters for accomplishment of repairs after the grounding were errors in judgement. However, his failure to require adherence to the standards enumerated in Opinion 2 and his failure to return to sheltered water when the flooding increased at 1630 constitute dereliction in performance of his duties as a Commanding Officer charged with the responsibility for the safety of his vessel, which could not be delegated.

4. Opinion 15 that the Ensign's errors were not in violation of the UCMJ are concurred in. His failure to stand an aggressive watch, adequately note items of significance and exercise adequate control over matters within his province are considered to be a failure to perform at a satisfactory level of professional competence. The corrective action recommended by the Board will be taken by this command.

5. Recommendation 1 is not concurred in. A punitive letter reprimand pursuant to Article 15, UCMJ is being awarded to CAPT for dereliction of duty.

6. The recommendation that CAPT be relieved of command is concurred in. His deficiencies as noted by the Board and his attempts to do too much himself reflect adversely upon his fitness for command. Report of Formal Board of Investigation into the circumstances surrounding the grounding of USCGC WHEC at Dutch Harbor, AK on 15 November 1972 and the subsequent flooding and loss of power.

Commander, Fourteenth Coast Guard District is being directed to transfer CAPT to temporary additional duty ashore pending completion of review of this Board by the Commandant.

7. Subject to the foregoing comments, the proceedings, findings of fact, opinions and recommendations of the Board are approved.

8. Distribution of the transcript of testimony and exhibits have been made to all parties. A copy of the report of the Board and of the action have been furnished to CAPT and Commander, Coast Guard District in view of my action as noted in paragraphs 5 and 6 above. Distribution of the report of the Board and my action to the parties is not considered appropriate prior to completion of review by the final reviewing authority.

MARK A. WHALEN

From: Rear Admiral
To: Commander, Pacific Area

Subj: REPORT OF FORMAL BOARD OF INVESTIGATION INTO THE CIRCUMSTANCES SURROUNDING THE GROUNDING OF USCGC WHEC AT DUTCH HARBOR, AK ON 15 NOVEMBER 1972, AND THE SUBSEQUENT FLOODING AND LOSS OF POWER.

Ref: (a) COMPACAREA Appointing Order 5830 dtd 18 NOV 1972

Preliminary Statement

1. The Board first met on board WHEC at Dutch Harbor, AK on 21 November 1972 to view the scene, the photographs taken appear as Exhibits 28 to 57. At this time the vessel actively engaged in repairs and no testimony of witnesses was taken. The Board reopened and continued in the 17th Coast Guard District Office, Juneau, AK on 24 November 1972 for the taking of testimony. The Board next reopened and continued in the Coast Guard District Office, from 11 to 14 December 1972. With the agreement of parties, member Captain, USCG was designated to view the underwater damage to the after dry-docking on 18 December on 1972. His report and photographs appear as Exhibit 122. No comment on this Exhibit was made by any party or counsel.

2. Parties, Counsel, and their attendance were as follows:

a. Recorder and counsel for the Board - CDR, USCG a legal specialist appointed by the Convening Authority. Present at all Board sessions.

b. Parties:

(1) Rear Admiral, USCG, Commander, Coast Guard District. Designated a party by the Convening Authority. Present at all sessions.

Counsel - None.

(2) CAPT, USCG, Chief Operations Division, Coast Guard District. Designated a party by the Convening Authority. Present at sessions at Juneau and absent at Dutch Harbor.

(3) CAPT, USCG, Commanding Officer, WHEC. Designated a party by the Convening Authority. Present at sessions in Dutch Harbor and absent at Juneau.

Counsel - CDR, USCG A legal specialist. Appointed by the Convening Authority on 22 November 1972. Present at sessions in Juneau and absent at Dutch Harbor.

(4) LTJG, USCG Acting Engineering Officer, USCGC WHEC. Designated as a party on 11 December 1972 by the Board. Absent at sessions at Juneau and Dutch Harbor.

(5) ENS, USCG, Officer of the Deck, USCGC WHEC. Designated as a party by the Board on 11 December 1972. Absent at sessions in Juneau and Dutch Harbor.

Counsel - CDR, USCG A legal specialist. Appointed by the Convening Authority on 11 December 1972. Absent at sessions in Juneau and Dutch Harbor.

2. The Parties designated by the convening Authority were notified that they were designated as such and they were notified of the times and places of the meetings of the Board. The operational situation was such that it was impractical for CAPT to attend the session in Dutch Harbor or for CAPT, USCG to attend the sessions in Juneau, their attendance being properly excused within the meaning of Section 0303e(2), Coast Guard Supplement, MCM. CDR, USCG Counsel for CAPT was appointed on short notice and was accorded the right to recall such witnesses as he desired who had previously testified in Juneau. The parties in designated by the Board were given opportunity to review the prior proceedings and were accorded the right to recall any of the earlier witnesses. No party requested the recall of any of the earlier witnesses, except that CDR, USCG conducted an additional examination of CAPT . All parties were accorded their rights to the investigation as set out in Sections 0303, 0304, 0305, Coast Guard Supplement, MCM, and as amplified above. All parties testified and they, as well as Coast Guard witnesses, were cooperative. In particular, witnesses from the 17th District spent many hours preparing descriptive charts and displays which greatly facilitated the investigation.

3. All sessions of the Board were open. Media interest in the incident was high and a request for release of the Board's findings and action of the Convening Authority can be anticipated.

4. The Board, having thoroughly inquired into all the facts and circumstances connected with the incident which occasioned the Board, and having considered the evidence adduced, finds as follows:

SUMMARY CHRONOLOGY

Times are approximate, ship's time (Dutch Harbor)

14 November 1972:

1145 - Anchored Iliuliuk Bay, in 16 fathoms, mud bottom
1900 - Veer to additional 15 fathoms
2300 - Veer to a total of 75 fathoms, winds 25-30 knots, gusts to 35, barometer dropping

15 November 1972:

0030 - Commanding Officer on bridge to check condition.
0200-0230 - Winds increase with gusts in excess of 60 knots, anchor drags, CO called
0317 - Vessel grounds, rupturing hull, damaging starboard propeller, and losing sonar dome. Immediately backs clear and seeks shelter in Kalekta Bay.
0410 - Flooding under control.
0930 - Patching in engineroom completed and reported ready for sea.
1430 - Authority granted by CGD17 to depart for and vessel stands into Akutan Pass.
1630 - Increased flooding noted and controlled by third submersible pump.
1800 - Seas to 30 feet and winds to 70 knots encountered with major increase in flooding in engineroom.
1848 - Water level in engineroom commences to disable machinery.
1855 - Lost main propulsion due to water level. Assistance requested.
1904 - SOS transmitted with KOYO MARU #3 and HARUNA MARU proceeding shortly thereafter. WHEC being set on a lee shore with an ETA of 0330.
2209 - Helicopter launched and proceeded to Akutan Island. Bow thruster lowered. Drift direction controlled by rudder.

16 November 1972:

0045 - Evacuated engineroom with water level at 13 feet.
0200 - Air drop of DC equipment by C-130 aircraft. Only 1 drum of gasoline recovered.
0405 - KOYO MARU #3 close aboard with tow commencing at 0437. WHEC within 3 miles of shore.
1200 - Maximum flooding of engineroom at 15 feet.
1220 - Anchored in Beaver Inlet. Air deliver of equipment and divers commenced. Dewatered and constructed cement patch. BALSAM and CITRUS on scene 17 and 18 November, winds to 60 knots.

19 November 1972:

RICHARD FOSS arrived and towed vessel to Dutch Harbor. Constructed steel cofferdam and installed. Rehabilitation of engineroom.

29 November 1972:

Departed Dutch Harbor under tow of RICHARD FOSS, thence own power.

8 December 1972:

Arrived.

REFERENCED INDIVIDUALS

17TH Coast Guard District

RADM, USCG - A 1941 graduate of the U. S. Coast Guard Academy with an aviation career pattern. Appointed Rear Admiral in 1970 and assigned as Commander, 17th Coast Guard District. Admiral made or was immediately advised and concurred in every significant decision made by the 17th Coast Guard District during this incident.

CAPT, USCG Career commenced in 1941, with 11 years of sea duty, including command of 6 vessels. He has not sailed in Aleutian waters. CAPT was assigned duties as Chief, Operations Division, 17th Coast Guard District, in July 1972, having previously served at headquarters as chief, Military Readiness Division, which included supervision of the pre-commissioning training of WHEC.

CAPT, USCG, Captain spent 10 years sailing in the Merchant Marine, serving as master on 4 ships of the United States Lines. He was commissioned in the Coast Guard in 1951 and has sailed on 3 vessels including duty as Executive Officer on CGC WHEC, but never sailed in Alaskan waters. His shore duty assignments have been in the Merchant Marine Safety field. The WHEC the latest of 378 foot class, completed outfitting in December 1971 and was in full operational status by April 1972. CAPT had earned a reputation as being particularly well-manned, a fact known to both Admiral and CAPT.

Engineering

LTJG, USCG - a 1970 graduate of the Coast Guard Academy had been assigned to the pre-commissioning detail in 1971. He had completed his student engineering training on board CGC CHAUTAUQUA, attended the Navy Damage Control School at Philadelphia, a Pratt-Whitney turbine school graduate and was the Damage Control Assistant. At the time of the casualty, he was Acting Engineer Officer, the regularly assigned Engineer Officer, LCDR, USCG having departed on leave shortly before the November Alaska Patrol. LCDR returned to the ship during rehabilitation efforts in Dutch Harbor.

CWO3, USCG was the main propulsion assistant and was present at all critical damage control evolutions. He has over 17 years of engineering sea duty in a career commending as an enlisted man in the Navy in 1949. He was assigned to the Resident Inspector's Office during the construction of WHEC prior to joining the vessel.

CDR, USCG - Chief, Naval Engineering Branch, Coast Guard District, arrived on the ship at Beaver Inlet on 18 November to assist in the repair efforts and remained on board for the transit to Dutch Harbor. He was accompanied by several senior Electrician Mates.

Deck

LT, USCG - Operations Officer, was on the bridge at the time of grounding and at the time of disablement.

LTJG, USCG - stood the OOD watch from 2000-2400, 14 November, and arrived in CIC shortly before the grounding.

ENS, USCG - a 1972 graduate of the Coast Guard Academy, was Officer of the Deck on the 0000-0400 watch, 15 November, when the vessel dragged anchor. On watch with him were:

RD3, USCG - CIC watch 0000-0200
RD3, USCG - CIC watch 0200-0400
QM3, USCG - Quartermaster of the Watch
BM3, USCG - Boatswain's Mate of the Watch

Three Seaman who rotated so as to fill a bridge messenger watch and an anchor watch. The anchor watch was stood in an enclosed compartment due to inclement weather with observations made every 5 minutes, the report being phoned to the bridge.

BMC, USCG was in charge of the anchor detail when set on 15 November.

FINDING OF FACTS

1. The Alaska Law Enforcement Patrol is the subject of an extensive 17th district Operations Order under which the Coast Guard and the National Marine Fisheries Service conduct co-ordinated and joint patrols in the North Pacific Ocean and Bering Sea to fulfill enforcement obligations dictated by statute and several international treaties regarding the conservation of fishery resources. Surveillance is maintained of foreign fishing fleets and the vessels assigned to the patrol are instructed to additionally transit areas of U. S. fishing activities and call at outlying fishing communities to assure domestic interests that enforcement patrols are being conducted. CGD17 assigns large patrol area to the patrol vessel, relying on the Commanding Officer and embarked NMFS agent to develop the best coverage as the situation dictates.

2. The WHEC, a Coast Guard District Vessel, was assigned by commander Pacific Area to the 17th Coast Guard District for deployment on the Alaska Patrol during October and November 1972. CGD17 exercised operational control during all periods that the vessel was in Alaskan Water. The District exercised administrative control which includes such things as personnel matters, repairs, and routine engineering support.

3. Each year for the past several years an Alaska Patrol Conference has been held and is attended by Commanding Officers and other key ship's officers of vessels which are expected to be utilized during the forthcoming year on the Alaska patrol, key district staff officer and NMFS personnel. At the time of the last conference, (January 1972), the WHEC was not yet in a fully operational status, and a representative was not in attendance.

4. The particular deployment for the WHEC consisted of two separate Alaska Patrols. The first of these commenced 11 October in Kodiak and terminated on 30 October in Juneau. During that period the vessel was generally in the Aleutian chain area, being in Dutch Harbor on 13, 14, 15 and 16 October. The WHEC anchored in Iliuliuk Bay on 15 October at nearly the same location as in November, seeking shelter from the weather. A good lee was found from easterly to southeasterly winds. The winds encountered were up to 45 knots and the vessel rode well to a single anchor. The barometer reached a low point of 28.40 inches (as compared to 28.32 in November) and winds in excess of 100 knots were reported a short distance off shore.

5. The second patrol commenced on 31 October in Juneau and included a stop in Anchorage. The general concept of operation involved keeping the vessel out of sight and anchoring or standing to in the numerous bays in the Aleutian Islands while the helicopter made surveillance flights on 14 November. It was intended to depart at midnight on 14 November and proceed to the Pribilof Islands. The weather commenced to make up and the Commanding Officer determined to remain at anchor throughout the night of 14-15 November, to await more favorable weather.

6. Dutch Harbor is the site of an abandoned World War II, U. S. Naval base, with Iliuliuk Bay lying immediately outside of Dutch Harbor. Both are generally well protected, being surrounded by a combination of high mountains and low-lying land areas. The Coast Pilot describes Iliuliuk Bay as providing good anchorage. Within Dutch Harbor itself there is a reasonably sound commercial fueling dock. It is generally not available for the mooring of Coast Guard vessels due to the number of fishing vessels which refuel there and is considered by the Coast Pilot as exposed to the strong winds which may be encountered in the area. Violent williwaws are experienced during gales, especially from the southwest. The so-called Ballyhoo Dock is owned by the Coast Guard and normally used by Coast Guard vessels which stop at Dutch Harbor on a fairly routine basis. The dock itself is partially ruins and though it appears to offer better protection from high winds than does the fuel dock, its condition is such that it would be imprudent to stay alongside in adverse weather conditions. There are three mooring buoys in Dutch Harbor of unknown vintage. The unpaved air strip used by Reeves Aleutian Airlines also dates from World War II and is only used by Coast Guard C-130 aircraft in emergencies. A few people live in Dutch Harbor to operate the air strip and the fueling dock. The fishing village of Unalaska lies across a narrow channel from Dutch Harbor. There are no facilities in either Dutch Harbor or Unalaska for servicing large vessels such as the WHEC.

7. The WHEC anchored in Iliuliuk Bay at 1145, 14 November, with 45 fathoms of chain to the starboard anchor in 16 fathoms of water, muddy bottom. The wind was light with intermittent snow and rain showers. At 1900 the Commanding Officer ordered an additional 15 fathoms of chain to be veered as a precautionary measure since the barometer was dropping, with the wind increasing shortly thereafter. At approximately 2300 the Commanding Officer ordered an additional 15 fathoms to be veered for a total of 75 fathoms and the main diesel engines placed on five-minute standby. This action was precipitated by the OOD, LTJG, USCG calling the Captain because of increasing winds of 30-40 knots, with gusts to near 50 knots, but the Captain did not observe winds above 35 knots. The Captain personally instructed the Officer of the Deck at 2300 to call him if the conditions changed appreciably and made it clear that he was concerned as to the possibility of the anchor dragging. He did not write night orders since he anticipated being on the bridge several times during the night, which was his usual practice. Shortly after midnight, the Commanding Officer returned to the bridge and reiterated his previous instructions to ENS, USCG who was then Officer of the Deck. The Captain observed that the wind was averaging 20 to 25 knots with gusts to about 35 knots. The Commanding Officer then went to the cabin and fell asleep while fully clothed. He was next called at 0230 on 15 November with the report that the vessel appeared to be dragging anchor.

8. The evidence as to wind velocity is summarized as follows:

14 NOV	KNOTS
1800	6 - Log
2000	27 - Log, 20-25 - OOD
2200	10 - Log
2230-2315	30-40 gusts to 50 - OOD gusts to 35 - OOD
2345	35-40 gusts to 48 - OOD 20-25 - QMOW
2400	26 - Log
0030	20-25 gusts to 35 - CO
0100	26-35 gusts to 40 - OOD
0145	30 gusts to 35 - RD3
0200	24 - Log 35 - BMOW
0215	gusts to 45 - Log, QMOW, OOD
0230	gusts to 60 - Log, QMOW gusts to 70 - CO 65-70 - BMOW

The Board finds that commencing about 2200, the winds increased to an average of about 25-30 knots with frequent gusts to 35, and occasional gust to just under 50. This prevailed until about 0215 when there was a decided and continued increase in winds until gusts of 60 to 70 knots were reached at 0230 and thereafter. Winds were basically from the southeast, but were erratic through an arc of 90 degrees.

9. At the time of anchoring, visual bearings were utilized in addition to radar information. Visibility decreased during the night and reliance shifted to radar ranges for the routine 15 minute position check. The radar targets chosen were at the option of the watchstander. The best radar target was a cliff on Unalaska Island which was generally parallel to the reef the WHEC eventually struck. It gives a good indication of east-west but not the critical north-south movement. LTJG, USCG (2000 to 2400 OOD), and ENS, USCG (000 to 0400 OOD), concentrated on this radar range and it changed little during the night.

10. Replotting was accomplished on Exhibit 79 and establishes that the 1650 bridge fix, was an accurate fix combining both visual and radar information. This 1850 fix, is 100 yards from the initial anchorage bearings indicating that the vessel had moved that distance during the afternoon, probably as a result of bringing the anchor to. The anchor was veered with an additional 60 yards of chain being paid out prior to midnight. All fixes which could be replotted up to and including 0200 were within 135 yards of the 1850 fix. All fathometer readings remained at 16 fathoms.

11. At the relief of the CIC watch, fixes were obtained at 0145, 0148 and 0150. The ranges were not permanently recorded and re-plotting is not possible. The 0145 is 80 yards from a fix taken at the same time by the bridge. There is a distance of 150 yards

between the 0145 and 0140 CIC plots. Neither watchstander considered the plot to show any movement of the vessel. RD3 the relieved watchstander, proceeded to the bridge, took some ranges on the bridge set out of curiosity, and did not find anything out of the ordinary.

12. At 0158, RD3 plotted a fix which showed that the vessel had moved north 200 yards and reported this on the 21 MC squawk box to the bridge. QM3 rechecked his 0200 fix, considered recent reports from the anchor watch advising that the anchor was holding, and told CIC that the bridge did not concur. RD3 thereupon erased his work and was only able to estimate the position of this fix as shown on Exhibits 68 and 79. His log entry of this event, Exhibit 67, was made after the grounding.

13. ENS could not remember if any such report was received from CIC. In any event, his checks of the QMOW radar positions up to 0225 consisted only of checking radar ranges and he did not plot any of the ranges obtained on the chart.

14. The SPS-51A navigational radar on the WHEC has a repeater on the bridge which gives a clearer picture than does the CIC master set, though the two radars were calibrated within their design characteristics to a 30 yard variation. The very large radar antenna is affected by winds over 45 knots. It is slowed going into the wind and speeded up going with the wind, requiring frequent manual adjustment of the drive motor rheostat in an adjacent compartment by the single CIC watchstander. This fully occupied the watchstander after 0200 and little CIC navigational information was developed at the critical times.

15. Throughout the evening, a seaman checked the anchor for dragging every 5 minutes and the BMOW checked every 20 minutes. At no time was there any reported indication that the anchor was dragging. Strain was reported as "hard" or "moderate" dependent on the individual reporting, but there was no variation in their reports. BM3 made a check of the anchor at 0220 because of the increase in the wind velocity, but found no evidence of dragging or an increase in strain.

16. The 0215 bridge radar ranges did not plot. Two of the ranges establish a definite northoward movement, and the disregard of one range ("ruins") would yield a position quite close to the 0225 position. ENS observed the difficulties in plotting and obtained additional radar data, plotting this at 0225. This established that the WHEC had dragged anchor 175 yard north of the 0200 position. At this point, the vessel was one and a half ship's length abeam of shoal water. Upon plotting the 0225 fix, ENS called the Commanding Officer, advising him the anchor was dragging.

17. The Commanding Officer arrived on the bridge at 0230. He immediately recognized that the vessel was in a precarious position and ordered engines on the line and anchor detail set.

He had difficulty obtaining precise navigational data since the wind was slowing or stopping the radar antenna. He stationed himself at the radar scope and assumed conn of the vessel. ENS did undertake to have the anchor detail and the bridge navigational detail set, but directed the messenger to wake the necessary personnel rather than utilizing the PA system. At 0242 the first bell was given and order given to heave around on the anchor, the vessel being maneuvered in an attempt to take the strain off the anchor chain. The forecastle and engineroom were adequately manned to carry out their functions, but there was a lack of personnel both on the bridge and in CIC. RD3 was fully occupied in adjusting the current to the radar antenna drive motor. The Captain observed the radar, gave rudder commands and worked the engine annunciators, the engines remaining on engineroom control. Prior to the grounding, LT, USCG reached the bridge and handled the annunciator. QM3 acted as helmsman, telephone talker to the forecastle, and attempted to maintain the ships log - any one of which would have been a full-time job. This undermanned situation lasted 45 minutes, most personnel arriving after the grounding.

18. BMC, USCG was in charge of the anchor detail, assisted by BM3, USCG on the phones, and several others. The weather conditions were such that both BMC and BM3 had trouble keeping their footing, observing the tend of the chain, and communicating. Chief had opportunity to check the anchor prior to the maneuvering of the vessel and there was no indication that the anchor was dragging. Upon attempting to heave around, the windlass was unable to overcome the strain, and went off the line. By keeping the reset switch depressed and operating at low or high speed as the strain allowed, the anchor chain was brought in over a period of approximately 35 minutes. Maneuvering of the ship had a minimal effect on relieving the strain due to the inability to bring the bow through the wind and to erroneous reports from the foc'sle. Though the wind was on the port bow, reports indicated that the chain was tending to starboard and the ship was maneuvered accordingly. In fact, the chain was leading out to starboard over the anchor housing tripping plate and thence under the stem below the waterline, a fact determined by BMC after a series of erroneous reports by BM3. Since the chain was covered with mud, not all chain markings could be seen. No reports were received on the bridge of the one and two shot markings but only of anchor in sight, the anchor being aweigh without knowledge of either the foc'sle or the bridge. During this critical period, a particularly strong gust in excess of 70 knots hit the vessel on the port beam, driving her dangerously close to the reef.

19. The Commanding Officer commenced backing with a two-thirds bell astern on both shafts as soon as he received the report that the anchor was in sight, there being insufficient sea room to go ahead and bring the bow through the wind. At 0317, the vessel struck the reef, holing herself in the engineroom, and then passed over the reef causing relatively minor scraping damage,

but shearing off the sonar dome and both transducers. The starboard propeller struck bottom, causing the starboard diesel to stall and damaging all four blades. The port engine was increased to back flank, with the starboard engine also being backed full after restarting. WHEC backed free of the reef and into the Dutch Harbor entrance and then shaped course out of the confined waters of Iliuliuk Bay.

20. Flooding was observed in the engineroom, general quarters set, and an effective response initiated. At no time were personnel able to observe the hole, but it was concluded by feel that there were two small cracks of a total dimension of 4 inches by 6 inches at frame 241, starboard, on either side of longitudinal 9. Wedges and rages were placed in the holes by ENG2, USCG and shoring undertaken. These efforts decreased the flooding rate to an estimated 150 gallons per minute, a rate which was not thereafter decreased in spite of additional patching efforts.

21. At 0327 (0527 local Juneau) the WHEC radio watch, as a matter of routine, advised Coast Guard Radio Station Kodiak that she had gone to general quarters and to standby for immediate traffic. WHEC subsequently advised by message 1515572Z that she had struck a reef in Dutch Harbor in hurricane winds, had ruptured shell plating in the engineroom, and had the flooding contained. The WHEC was then seeking shelter in Kalekta Bay, Unalaska Island. In response to a message inquiry from RCC, WHEC advised that no assistance was desired, that the flooding was under control and that there were no personnel casualties. The nearest Coast Guard surface unit was USCGC BALSAM (WLB 62) in Adak, 337 miles from Dutch Harbor. The BALSAM was alerted to the situation but was later directed by RCC Juneau to proceed in response to the N/V EASTPOINT SAR case which involved a freighter with 35 personnel on board grounded at Atka Island, 45 miles to the eastward of Adak.

22. Drydock examination of the rupture of the hull plating in the engineroom revealed that the plating had been dished in with an L shaped rip 12 inches by 11 inches between longitudinals 8 and 9. Because longitudinal #9 had been separated from the plating, it appeared during damage control efforts that there was a fracture outboard of longitudinal #9 from the ingress of water, but such was not the case. The shape and location of the hole was such as to make it extremely difficult to determine its size by feel alone and it was not one particularly suited to patching with wooden wedges. Based on NAVSHIPS Technical Manual, the approximate area of the gash at the particular depth involved (15 feet) and its shape gives a flooding rate of 1,200 gallons per minute which would require somewhat in excess of 6 hours to free flood the engineroom. The vessel's estimated flooding rates were generally twice that of the computed values.

23. After the initial plugging and patching effort, early on 15 November, it was determined that a better patch would be built.

One wedge was removed, but it was found impossible to drive in smaller wedges. A foam rubber mattress was pressed over the general area of the rupture and solid shoring constructed as shown in Exhibit 116. This additional patching did not result in a decrease in the estimated flooding rate of 150 gallons per minute obtained by the initial patch. Vessel personnel determined that there was an insufficient amount of cement on board to construct a concrete patch and there was no underwater welding capability to construct a steel patch. An inspection by shipboard recreational divers was rejected since they were not Navy qualified as required by Commandant's directives. By 0930, the patching had been completed, flooding to a level of 8 to 12 inches in the bilges was being contained by the use of two submersible pumps, and both LTJG and CWO reported that they were prepared to depart for sea insofar as the engineroom patch concerned. The maximum level of flooding in the engineroom was at the 3 to 4 foot level above the base line (Exhibit 118), i.e. below the deck plates, and this had caused no damage to any equipment.

24. Additional shoring was placed in lower sound to prevent progressive flooding from the distorted cover-plates and proved adequate. Later examination revealed that lower sound had flooded to a depth of 3 feet. Careful soundings were taken of all tanks and it was determined that no tank had been ruptured so as to contaminate fuel supplies. The starboard shaft was operated and it was determined that there were no vibrations in the shaft or reduction gear. It was concluded that the shaft could be operated at least at two-thirds speed with no difficulties. Portable pumps and hoses were laid out for dewatering purposes and continuous watches set on the engineroom patch.

25. By message 1755Z, the WHEC advised COMPACAREA and CGD17 that the damage consisted of a 4 inch by 6 inch hole on the starboard side of the engineroom: that the flooding was being controlled by submersible pumps; that shored soft patches were in place; and that the starboard propeller had evidently been damaged. WHEC Requested authority to proceed to Seattle for dry-docking when the weather permitted and requested instructions for the disposition of the embarked H-52 helicopter, the air crew, and the National Marine Fisheries Service agent. The original message as received indicated a date time group of 1855Z and a 4 foot square hole, but this was corrected within a few moments and was not a source of confusion to cognizant personnel. COMPACAREA subsequently directed that CGD17 take the message for action.

26. Shortly thereafter, the WHEC sent a routine weather message and two casualty reports concerning damage to her sonar gear. The positions contained in these reports did not plot in Dutch Harbor. CGD17 contacted the Coast Guard Air Station Kodiak, to obtain their recommendations concerning the disposition of the helicopter embarked on the WHEC. The Air Station strongly recommended against the ferrying of the helicopter from Dutch

Harbor and reiterated this position upon further inquiry. The factors considered were: the lack of range of the H-52 helicopter which would require a C-130 be assigned as escort to carry fuel; the necessity for the C-130 and the helicopter to land at marginal air fields for refueling purposes; icing of the helicopter to be expected at the altitudes at which she would fly; the general hazardous nature of the environment; and the fact that no net gain in operational utilization of the H-52 would be realized by transit from Dutch Harbor vice Seattle/Honolulu.

27. Weather forecasts available from Fleet Weather Central Pearl Harbor and the Anchorage Weather Service to both the WHEC and CGD17, indicated that an intense storm could be expected immediately north of Dutch Harbor, an intense storm could be anticipated directly on the route between Dutch Harbor and Kodiak, or Seattle, and a lesser storm could be anticipated between Dutch Harbor and Adak, all within the next 12 to 24 hour period. Seas were predicted to range in excess of 30 feet.

28. Because of questions concerning the present condition of the WHEC the position of the grounding, and disposition of the embarked helicopter, CAPT initiated a phone patch call to CAPT in mid-morning. CAPT indicated that because of the anticipated weather conditions, it would be desirable for the ship to head due south rather than towards Seattle to reach good weather. CAPT concurred in this analysis of the forecast weather conditions. CAPT advised that he was quite worried about changes in local weather and felt that he should head south when he was sure of his temporary repairs. He stated that it appeared that the starboard shaft would be usable at least at lower speeds, that the temporary soft patch on the four inch by six inch hole was now being made more permanent, and that he would like to leave the helicopter at Dutch Harbor but could carry it even if if it was a rough ride. The alternative of proceeding to Kodiak for further underwater damage survey was discussed and CAPT again indicated that weather conditions made proceeding south the optimum choice and that he was apprehensive about remaining in the Aleutians. This telephone patch conversation did not resolve the situation, but provided an opportunity for a direct report on conditions and discussion of some factors. At no time was the flooding rate discussed, but Captain indicated that the situation was well under control.

29. Shortly thereafter, CGD17 advised by message that they would assume responsibility for engineering repairs to WHEC and requested that WHEC proceed to Honolulu vice Seattle when released by CGD17, offering a buoy tender escort if desired.

30. By message 152230Z, (1230) permission was formally requested to debark the helicopter at Dutch Harbor, the intention to proceed to Honolulu was stated, and it was indicated that an escort was not necessary. The CGD17 SITREP to the Commandant, transmitted before the preceding message, indicated that the WHEC would be proceeding to Honolulu.

31. At 1400 CAPT initiated a phone patch to CAPT and requested verbal authority to debark the helicopter and depart for Honolulu as there was a lull in the weather. Captain explained the difficulties that were involved in ferrying the helicopter from Dutch Harbor to Kodiak and stated that it would be desirable for the WHEC to keep the helicopter on board unless there were overriding considerations. CAPT advised that he didn't feel strongly about the matter and would take the helicopter with him. CAPT further indicated that repairs were proceeding satisfactorily and he would soon be ready to put to sea. The weather was reviewed once again with both parties agreeing that the best weather would lie to the south. CAPT advised that contingent on satisfactory repairs and sufficient fuel the WHEC would be authorized to depart for Honolulu to take advantage of the weather. The authorization was subsequently transmitted by CGD17 message 160159Z, adding that a sea keeping evaluation with the helicopter embarked should be conducted.

32. The WHEC stood into Akutan Pass at 1510 with no difficulties encountered. The winds in the Pass ranged from 15 to 25 knots, a light sea was encountered. The vessel proceeded at standard speed (15 knots) decreasing to two-thirds (8 knots) at 1558 as she reached open water. Speed was reduced one-third ahead at 1812.

33. At 1630 as the WHEC started working in the open seaway an increase in flooding in the engineroom was noted. A third submersible pump was placed in operations and the water level reduced so that it was taken off the line and the flooding once more controlled by two pumps. Little importance was attached to this increased flooding by ship's personnel.

34. As the vessel stood out of Akutan Pass, conditions deteriorated rapidly. The ebb current, running from the Bering Sea to the North Pacific Ocean, and the shallow depths associated with the continental shelf, resulted in a steep sea with a short period. Winds from the southwest increased to 45 to 50 knots with gusts in excess of 60 knots. The ship labored to some extent but did not pound or take green water over the bow, and minor adjustments were made to the course to give the best ride. At 1800 there was a noticeable increase in the flooding of the engineroom and general quarters was set at 1805. The Commanding Officer attempted to come about and return to shelter. When broadside to the sea, a series of heavy waves hit the vessel causing rolls up to 60 degrees. It was Captain's experience that the vessel would roll to an even greater extent with the seas on the quarter when course was set to return to the Aleutians. With the free surface effect due to the flooding and the weight of the helicopter high on the vessel Captain was concerned that WHEC might capsize and so returned to base course. At this time, seas were estimated to be 30 feet in height but it was reported that it was possible to observe that conditions were more moderate 5 to 6 miles ahead and outside the 100-fathom curve. Captain determined that his best course of action would be to reach this relative calm.

35. Progressive flooding occurred in the engineroom in spite of the use of all available pumps. By 1848 engineroom equipment was being lost due to the level of sea water and by 1855 main propulsion had been lost.

36. The total fixed and portable dewatering capability which could possibly be brought to bear in the engineroom was 2,490 gallons per minute, less losses due to discharge hosing runs and as illustrated in Exhibit 117. A dewatering capacity of approximately 1,350 gallons per minute was brought to bear, but serious practical problems were encountered due to a lack of sufficient hosing for the long runs involved and the lack of access space through which to run the hoses out of the engineroom. Cooling water suction for one diesel generator was taken directly from the engineroom adding a 250 gallon per minute dewatering capacity. This technique was also attempted with one 800 gallons per minute main diesel salt water pump, but was unsuccessful probably due to the presence of air in the intake caused by rolling of the vessel. In spite of these efforts, the water level increased slowly but surely and accelerated due to the loss of equipment after 1850. By 0045, 16 November, it was necessary to evacuate the engineroom due to the high water level, (13 feet), and the door to the compressor flat in bulkhead 202 ½ was shored to ensure against rupture and further flooding. By 1153 the water level reached its maximum of 15 feet and was at the ship's draft. Due to the list caused by the strong winds, the port plenum chamber also was flooded to some extent and this caused a 5½ degree port list to develop even when in sheltered waters.

37. At 1848 and at a water level of approximately 4 feet, above the base line (Exhibit 118), a progressive loss of machinery commenced. The water level alone was not the sole factor since the heavy rolling of the ship caused water to slosh around to some extent. The electrical load was shifted to the emergency generator in another compartment and thus electricity was available throughout the incident, but various lighting circuits in the engineroom shorted out and were secured. The water level reached the electrically controlled pneumatic main diesel clutching system and it was concluded that this would soon short out. In fact, there is a positive airlock and the loss of electrical power would not effect operations of the engines. However, the water level was at a point at which it was reaching the hot operating parts of the main diesels and major damage could reasonably be expected from continued operation. The diesels were secured and at 1855 WHEC had lost all main propulsion.

38. Upon losing main propulsion power, the WHEC sent a message to CGD17 requesting assistance and at 1904 transmitted an SOS on 500 KC. Response to the SOS was widespread with 22 vessels establishing contact with WHEC.

39. There were several vessels in a position to render timely aid. UALA, a Russian stern trawler, was the closest vessel

underway, according to some of their reports, but did not proceed. A summary of radio communications with the UALA is as follows:

1950 - UALA answers SOS and gives position 54-16N, 166-36W, some 43 miles from WHEC
2008 - WHEC Requests course and speed. Message received, but no response sent.
2022 - UALA acknowledges WHEC position.
2029 WHEC advises UALA she is closest vessel and request her immediate assistance.
2030 - UALA advises that she is 150 miles from WHEC
2051 - WHEC advises UALA that her position is only 34 miles away and requests assistance.
2058 - UALA advises she is 150 mile distant.
2118 - WHEC asks UALA for confirmation of her position.
2154 - WHEC asks UALA for her intentions.
2202 - WHEC asks UALA if she is coming.
2220 - WHEC advises she will ground at 0330 and asks UALA if she can help.
2234 - WHEC asks UALA if she can assist. UAL advises speed 6 knots and "time of passage 24 o'clock".
2243 - WHEC advises UALA imperative to render assistance and advise as soon as possible.
2252 - UALA advises that she will be in WHEC position at 0700. WHEC asks UALA for confirmation of her position.
2256 - UALA advises her position 54-25N, 166-40W, which was approximately 52 miles from WHEC.

40. Regulation 10, chapter 5, the International Convention for the Safety of Life at Sea, (SOLAS) 1960, reads as follows:

Distress Messages - Obligations and Procedures

(a) The master of a ship at sea, on receiving a signal from any source that a ship or aircraft or survival craft thereof is in distress, is bound to proceed with all speed to the assistance of the persons in distress informing them if possible that he is doing so. If he is unable or, in the special circumstances of the case, considers it unreasonable or unnecessary to proceed to their assistance, he must enter in the logbook the reason for failing to proceed to the assistance of the persons in distress.

(b) The master of a ship in distress, after consultation, so far as may be possible, with the masters of the ships which answer his call for assistance, has the right to requisition such one or more of those ships as he considers best able to

render assistance, and it shall be the duty of the master or masters of the ship or ships requisitioned to comply with the requisition by continuing to proceed with all speed to the assistance of persons in distress.

(c) The master of a ship shall be released from the obligation imposed by paragraph (a) of this Regulation when he learns that one or more ships other than his own have been requisitioned and are complying with the requisition.

(d) The master of a ship shall be released form the obligation imposed by paragraph (a) of this Regulation, and, if his ship has been requisitioned, from the obligation imposed by paragraph (b) of this Regulation, if he is informed by the persons in distress or by the master of another ship which has reached such persons that assistance is no longer necessary.

This Convention entered into force on May 26, 1965 , with the United States ratification being deposited on August 2, 1962. The USSR has ratified the 1960 Convention on safety of Life at Sea; COMDTINST 5902.2D.

41. Article 11 of the International Convention for the Unification of Certain Rules Relating to the Salvage of Vessels at Sea Brussels 1910, 37 State. 1670, reads as follows:

> Assistance to be Rendered. Every master is bound, so far as he can do so without serious danger to his vessel, her crew and passengers, to render assistance to everybody, even though an enemy, found at sea in danger of being lost.

42. The HARUNA MARU, a Japanese trawler, was in the Bering Sea 90 miles from the WHEC and proceeded to assist receiving the SOS at 1933. She was later advised that her presence was not necessary since the KOYO MARU No 3 would be on scene first, but the HARUNA MARU continued on and assured herself by visual observation that the KOYO MARU No. 3 had the WHEC safely in tow, apparently being strongly motivated by the fact that the WHEC had conducted a medevac of an injured crew member during the earlier fisheries patrol in October. The KOYO MARU No. 3 reported that she was proceeding to assist at time 2012 and later gave an ETA of 0330, which was 30 minutes after the WHEC originally anticipated fetching up on the lee shore of Sarana Bay, Akutan Island.

43. The rate of drift of the WHEC was slowed and course altered somewhat by placing the rudder hard over and lowering the bow thruster. Sea drogues were rigged using canvas covers from deck equipment but proved ineffective. It was intended to drop both anchors when the depth of water allowed and to then utilize the

bow thruster. Liferafts were cleared away so as to be available for use.

44. At 2209, 15 November the helicopter was launched and proceeded to the nearest beach on Akutan Island. The launch was made under wind and sea conditions which far exceed the parameters of safe helicopter operations.

45. Upon receipt of the original WHEC distress message, CGD17 directed that a C-130 aircraft be deployed to circle over the vessel and provide a direct communications link. Thereafter the WHEC requested additional gasoline to power her portable pumps indicating that only a 6 hour supply remained on board. Air drops of 55 gallon drums of gasoline were undertaken by a second C-130 but only one of these drums was able to be recovered. The aerial delivery of the gasoline ceased when the KOYO MARU No. 3 arrived on scene.

46. At 0405, 16 November, the KOYO MARU No. 3 arrived and a messenger was passed by the WHEC. This messenger parted but a second messenger was successful and the tow was made up at 0437. By the time she was taken in tow, the WHEC was within 3 miles of a rocky and inhospitable shore. The KOYO MARU No. 3 towed the WHEC without incident to Beaver Inlet, the wind and sea moderating considerably. The maneuvering of the WHEC to set both anchors and to bring her bow to the wind was accomplished by the use of her bow thruster at 1220.

47. The KOYO MARU No. 3 stood by in Beaver Inlet at the request of WHEC until USCGC BALSAM arrived on scene at 2200, 16 November. The weather started to make up and BALSUM moved alongside to assist in holding position. With winds gusting up to 60 knots, BALSAM used up to full power for this purpose, but WHEC did not drag anchor. During this period, rolling of the WHEC damaged BALSAM's bridge wing and boat davit, the latter separating from the 01 deck so as to fracture the plating in the crew's head. This minimal damage is shown in Exhibits 50 to 57.

48. CGD17 contracted for the commercial tug RICHARD FOSS, Foss tug and Barge Company, to tow the WHEC from Beaver Inlet to Dutch Harbor and thence stand-by to tow WHEC to Honolulu , a buoy tender not having sufficient power to safely undertake such a tow. The RICHARD FOSS arrived on 19 November and towed to WHEC to Dutch Harbor. She stood by until 29 November on which date she towed WHEC to sea and departure for Honolulu. Total cost of the services of the RICHARD FOSS is estimated at 60K. Escort to Honolulu was provided by CGC WINONA (WHEC 65), Port Angeles, Washington, which arrived in Dutch Harbor on 23 November. USCGC CITRUS (WLB 300), was on scene from 18 to 20 November. The Coast Guard vessels provided hotel services, men, and supplies to WHEC during the rehabilitation period. The WHEC crew worked to near exhaustion levels in the initial stages of the incident and the vessel was without heat, regular meals or pressure on the domestic water and sanitary system for several day after the

flooding of the engineroom. Nineteen crewmember were subsequently evacuated due to colds and fevers, two of whom required hospitalization.

49. U. S. Navy divers from Naval Station Adak, were on scene on 17 November and fitted an exterior patch to allow dewatering. A diving team from CGC STATEN ISLAND (WAGB 278), Seattle, Washington, was flown to Beaver Inlet and conducted and underwater survey of the damage on 19 November. Another diving team from Harbor Clearance Unit 1, Pearl Harbor, arrived on 18 November and undertook the construction of an external cofferdam. Diving operations were particularly difficult due to the low water temperature which severely limited working time.

50. As requested by CDR Parker, the Naval Engineering Branch, CGD17, undertook the procurement and delivery of supplies to CG Air Station Kodiak, Anchorage, or Cold Bay, air operations being dependent on weather conditions. Air Station Kodiak would then effect delivery to Dutch Harbor, with deliveries to Beaver Inlet being accomplished by helicopter. The flow chart used to control this effort appears as Exhibit 26. Some sources of supplies were as far away as Ohio, and many Coast Guard units acted to expedite procurement and transportation.

51. CG Air Station Kodiak deployed one H-3 helicopter to Dutch Harbor which with the H-52 helicopter from the WHEC had shuttle service capability to Beaver Inlet, Cape Sarichef Loran Station, and Cold Harbor; the latter two airstrips were utilized by C-130 aircraft when there were adverse weather conditions at Dutch Harbor. Flights by C-130s into Dutch Harbor were made by Kodiak based pilots whom, it was felt, were more familiar with conditions. Two C-130s from Air Station Barbers Point augmented the three C-130s at Kodiak during the heavy logistic stages. Some landing and lightning strike damage was incurred by the aircraft.

52. Following arrival in Beaver Inlet, a temporary canvas exterior patch was placed over the rupture and the engineroom was dewater at 2330, 16 November. Though a canvas patch had been attempted while drifting, it was not successful. The tenuousness of a canvas patch was illustrated by the fact that one was partially washed clear in Beaver Inlet when the BALSAM turned over her propeller while moored alongside.

53. After dewatering to the extent possible, an internal concrete patch was built with much of the original wooden patch remaining in place. Approximately 1,00 pounds of quick drying cement was utilized, and a pipe was inserted so as to allow controlled flooding and prevent scouring while the concrete hardened. The pipe was then capped and the vessel towed to Dutch Harbor. Close examination of the vessel's original interior patch revealed that it had not shifted in any respect.

54. At Dutch Harbor, a steel cofferdam was constructed from templates and divers welded it to the hull. This proved a

laborious task requiring 6 days. Of particular note was the accumulation in the cofferdam of hydrogen and oxygen gas created by the welding. As a safety measure, a 2 inch long gap was not welded to avoid the possibility of creating excessive pressure from gas generated in attempting to completely close the cofferdam. Flogging lines were attached and the hull was deemed seaworthy for the voyage to Honolulu on 25 November.

55. While the temporary hull repairs were being accomplished, machine damaged by water was being rehabilitated. Salt was removed by washdowns and flushed with fuel oil or CRC chemical mixture. A baking oven was fabricated for restoration of electrical components, and equipment disassembled and cleaned. Some electric motors were flown to Anchorage for commercial repair. Nine days after efforts had commenced, the engineroom machinery had been rehabilitated with the exception of the main turbines and a few switches.

56. WHEC was towed clear of shore by the RICHARD FOSS on 29 November and made the voyage to Honolulu under her own power. The starboard shaft was secured after several day's use to ensure against any damage from vibrations due to the damage to the propeller blades. WHEC arrived in Honolulu on 8 December and was drydocked on 18 December for permanent repairs and accomplishment of her regularly scheduled overhaul.

57. A recapitulation of damages to the WHEC as a result of the casualty is as follows:

(a) Sonar dome and transducers sheared off as a result of the grounding. The remnants were located at position 53-53-20N, 166-31-24W by diver.

(b) Pit log sword arm bent forward and to port.

(c) Minor flooding in forward magazine above sonar dome cover. No residual damage.

(d) The four starboard propeller blades were curled and otherwise moderately damaged.

(e) Hull puncture at frame 241, starboard, longitudinal number 9.

(f) Hull scrapes, gouges, and slight indentations from frame 150 to frame 244, starboard side, requiring no more than one shell plate renewal.

(g) Flooding of engineroom and adjacent pump room to a level of 15 feet above base line with salt water immersion of all machinery to this level.

58. Repair costs for the hull repairs, sonar replacement, transducer repairs, turbine overhaul, and propeller repairs are

estimated at under 400K. The costliest item is the turbine overhaul which is necessitated by submergence in salt water. All other damage costs are attributable to the initial grounding.

OPINIONS

1. The basic cause of the initial grounding high winds experienced in Iliuliuk Bay on 15 November. The anchor commenced dragging rapidly a few minutes before 0215 when there were frequent gusts to 45 knots. By the time the position was accurately determined at 0225 and the Captain called, the WHEC as in a extremely precarious position. By 0230, WHEC had dragged to the edge of the flat 1-18 fathom anchorage area and did not move significantly thereafter until the anchor was aweigh at approximately 0305. Since it was not recognized that the anchor was aweigh, there was little or no way on and WHEC was driving by the wind into shoal water from which she could not escape unscathed. Captain's decision to attempt to back clear after he realized that the anchor was aweigh was a proper decision. Under the circumstanced, however, the correct course of action would have been to slip anchor at an earlier moment, relying on the weak link at the bitter end of the chain to part.

2. A greater adherence to standard procedures might well have prevented the grounding. Thus:

(a) An anchor buoy had not been streamed. Its presence may well have led the Captain to consider slipping anchor or signalled that the anchor was aweigh.

(b) The anchor chain was not hosed off as it was brought in. The inability to see chain markings because of mud was a material factor in the failure to determine when the anchor was aweigh.

(c) the PA system was not utilized nor the full Bridge and CIC watch set. As a result accurate independent navigational data was not available to the Commanding Officer. An experienced officer was not on the wing of the bridge where he may have quickly determined that the anchor was in fact tending to port. The Commanding Officer was not free from immediate navigational, reporting, and conning duties so as to be free to reflect on alternative courses of action such as slipping anchor.

(d) Anchorage ranges were not established in CIC for the watchstanders and no routine position reports were required. No fix was obtained by CIC during the critical one hour period preceding the grounding and no sufficiently accurate information was at hand to determine if dragging had occurred.

(e) A definitive system of anchor range and bearing checks was not established. This could have been

accomplished by positive markings on the chart to indicate the original position of anchorage with subsequent position checks plotted on an overlay, marking of the shoreline on the radar scope, or establishment of positive visual and radar targets for check purposes. As it was, each watchstander on the bridge and in CIC made his own decision, erased all previous work, and destroyed any opportunity to quickly establish that dragging had occurred. Particularly disturbing was the concentration of two OOD's on a check range to a single radar target which would not reveal movement of the ship to the north and toward the reef.

(f) Poor log keeping and a failure of important events to leave any impression was indicative of generally lax watchstanding by junior officer and petty officer. Experienced officer and petty officers were noticeably more cognizant of significant events.

3. Damage control steps taken after the grounding were proper and to the limit of on-board capabilities. The patch remained tight and the fracture did not enlarge, the increased flooding of the engineroom being due to the working of the hull in a seaway.

4. The conditions under which the authorization for WHEC to depart had been granted by Admiral and Captain were proper and were clearly understood by Captain. As here pertinent, this authorization depended on the adequacy of the patch, a matter solely within the province of the WHEC.

5. The decision to leave sheltered waters was erroneous and the responsibility therefor must rest with Captain. A flooding rate of 150 gallons per minute which required two submersible pumps to control is not indicative of an adequate patch in such a vital space. The correct decision would have been to bring in divers and install a cofferdam patch as was done thereafter. There were many disadvantages to remaining in Dutch Harbor intense storms, lack of full protection from the weather, lack of repair facilities, necessity of mounting and extensive airlift operation, etc. but the fact remains that a poor position was traded for a worse one.

6. The increase in flooding at 1630 which necessitated the use of a third submersible pump coincided with first contact with the open sea and was a clear indication that the patch was inadequate. It was and error not to recognize the significance of this signal and to immediately return to shelter.

7. The major increase in flooding at 1800 was due to the working of the hull in the heavy seas encountered. Captain's decision not to risk capsizing by coming about and to instead seek the relative calm off the continental shelf was a reasonable one under the circumstances.

8. In theory, the flooding at 1800 was capable of being controlled by available equipment. For a considerable period of time, the situation was in a precarious balance but the loss of the fire pumps at 1848 meant the loss of three eductors and the condition deteriorated rapidly thereafter. Though dewatering efforts continued, the engineroom flooded to the 13 foot level in little more time than would be expected under free flooding conditions. This casualty illustrates the extreme vulnerability of the 378' class vessel to a minor hull rupture in the engineroom. If the rupture had been but a few feet away, it would have been inaccessible for patching. Flooding in any other compartment will not seriously cripple the ship. The Board recognized that it is not feasible to effect major changes in this respect and the specific recommendations generated are somewhat minor in nature and will serve only to alleviate damage from relatively minor flooding, but will not protect against disablement in the event of a major rupture. An increased effective dewatering capability in the engineroom may well have averted flooding of the engineroom. It is further the opinion of the Board that working of the hull in a seaway on this class of vessel makes reliance on an interior patch to control flooding unwise.

9. The response by the KOYO MARU No. 3 to the WHEC SOS call was timely, effective, and in the highest traditions of the sea. The tow was accomplished in a very smart and seamanlike manner and her continued presence on the scene at Beaver Inlet while awaiting the arrival of other Coast Guard vessels was a gracious act. Also commendable is the response of the HARUNA MARU to assure that the tow had been successfully undertaken.

10. The conduct of the officer and crew of the WHEC during the damage control and rehabilitation efforts showed a high degree of effort and esprit. The response by all Coast Guard and Navy units involved in both the SAR phase and rehabilitation phase of this incident was outstanding. The repairs to the hull and rejuvenation of the engineroom in Dutch Harbor was a major accomplishment.

11. Adequate information as to weather and local conditions was available to the WHEC. It is concluded that the absence of vessel's representatives from the ALPAT conference and the lack of a detailed individual briefing by CGD17 had no bearing on this casualty. At the same time, ALPAT briefings and conferences are highly desirable if for no other reason than allowing Commanding Officers to trade experiences in these difficult waters.

12. The radar antenna drive mechanism for the S-15A radar on the WHEC is inadequate. The antenna must be capable of rotation in winds in excess of 45 knots without constant adjustment by a technician. No other equipment malfunction requiring correction was noted.

13. The following errors of the personnel indicated contributed to the casualty:

(a) CAPT

(1) Failure to ensure that standard procedures and the highest degree of seamanship was employed and as detailed in opinion 2.

(2) Failure to slip anchor at an early moment and back clear of the danger area.

(3) Failure to remain in sheltered waters for accomplishment of temporary repairs after the initial grounding.

(4) Failure to return to shelter after flooding increased at 1630.

(b) LTJG

(1) Advising Captain that the patch in the engineroom was adequate for an extended open ocean voyage.

(2) Failure to appreciate the significance of the increased flooding at 1630 and properly advise Captain.

(c) ENS

(1) Failure to plot or caused to be plotted the original position of anchorage.

(2) Failure to fix the position of the vessel on the chart by plotting prior to 0225.

(3) Failure to require positive position reports from CIC on a regular basis.

(4) Failure to investigate in detail the information from CIC that led to the 0158 report of anchor dragging.

(5) Failure to call the Commanding Officer when the winds increased at 0215. At this time there were gusts to 45 knots and the dramatic increase was a clear indication of deteriorating weather conditions which necessitated advising the command. The particular wording of the standing orders and verbal orders left by the Captain are of no great moment as he made it perfectly clear that he was concerned about dragging and was to be called sooner rather then later. However calling the Captain some 10 minutes sooner than was done would not materially have altered the situation.

(6) Failure to effectively function as OOD after arrival of the Captain on the bridge. ENS normally

served as OOD during anchor evolutions and should have been familiar with standard procedures.

(d) QM3

(1) Failure to obtain accurate radar ranges at 0215.

(e) RD3

(1) Failure to report to the bridge that he was having difficulties maintaining antenna rotation after 0200 and needed assistance to obtain navigational information.

(f) Anchor Detail

(1) Failure to recognize that the anchor chain was tending to port.

(2) Failure to ensure that all reports to the bridge had the concurrence of the person in charge.

14. As to the Captain, the Board is of the opinion that his errors which contributed to the casualty were ones of judgement and do not amount to a negligent hazarding of a vessel; dereliction in the performance of duty; a failure to obey Coast Guard Regulations nor any other offense under the UCMJ. The Board is of the opinion that the Captain failed to employ the highest standards of navigation and seamanship.

15. As to the ENS, the Board is of the opinion that his errors were not violations of the UCMJ, but rather exhibitions of a lack of professional abilities. The ENS did not stand an aggressive watch, adequately note items of significance, nor exercise adequate control over matters within his province.

16. The errors of the LTJG and the enlisted personnel are errors of judgement and were not violations of the UCMJ.

RECOMMENDATIONS

1. That the Captain be awarded a non-punitive letter of censure pursuant to 14-1-7, Coast Guard Regulations, and 8-D-3, Personnel Manual for the errors in judgement previously described, and that he be relieved of his command.

2. That the Ensign be awarded a non-punitive letter of censure pursuant to 14-1-7, Coast Guard Regulations, and 8-D-3 Personnel Manual, for the errors in judgement previously described and for his lack of professional knowledge and aggressiveness and that his qualification as an Officer of the Deck be revoked.

3. That utmost consideration be given in design criteria for future Coast Guard vessels to require a double hull in a single engineroom space.

4. That the SPS-51A radar antenna drive system on the 378' class be improved to provide reliable automatic rotation in high winds.

5. That a watertight door be installed at Bulkhead 202½ to protect the forward pump room.

6. That the following changes of an engineering/damage control nature be thoroughly reviewed for possible implementation on 378' class vessels:

(a) Add 600 pounds of quick drying cement to damage control allowance lists.

(b) An improved dewatering capability for the engineroom be realized.

7. That an inquiry be directed through appropriate channels to the government of the USSR to establish the position and conduct of the SRTM UALA upon receipt of the WHEC's SOS with a view towards determining whether violation of any international conventions took place.

COLLISION OF WHEC AND S/V IN THE OAKLAND ESTUARY

DEPARTMENT OF TRANSPORTATION

UNITED STATES COAST GUARD

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From: Captain I. B. INVESTIGATOR
To: Commander, Twelfth Coast Guard District (d)

Subj: Collision of CGC H-E-CEEWHEC-) and an unnamed sailing vessel in the Oakland Estuary on 22 February 19

Ref: (a) Coast Guard Claims Manual, COMDTINST M5890.7
(b) CCGD12 OPLAN U-II-A
(c) Coast Guard Supplement to MCM, CG241

PRELIMINARY STATEMENT

1. That at or about 1100 on 22 February 19 the USCGC H-E-C (WHEC-) unmoored and got underway from the Naval Supply Annex, Alameda, CA., and immediately after taking in all lines suffered a casualty to the pitch control system of the starboard engine resulting in a backing situation and a collision with a moored sailing vessel, a dock, and a piling. There were no injuries as a result of this collision and H-E-Cwas able to proceed on its mission. The sailing vessel was damaged to an unknown extent and the dock suffered some dislocation.

2. This investigation was conducted pursuant to enclosure (1) and in accordance with references (a), (b), and (c).

3. During the period 25 February - 4 March 19 ; I conducted an investigation into the circumstances surrounding this subject. Lt.(jg) NEWGUY was designated a party to the investigation and accorded his rights as a party in accordance with reference (c). Enclosure (2). Mr. NEWGUY did not request to witness the investigation or require legal counsel at this time. No other persons were designated parties to this investigation.

4. Standard Form 95 has been supplied to the potential claimants with an explaining letter as recommended in reference (b). No claims have been received to date, however, claims against the Coast Guard may be anticipated.

FINDINGS OF FACT

1. LT(jg) NEWGUY , USCGR was the conning officer at the time of the collision. Enclosure (3).

2. CAPT C. O. was the commanding officer of H-E-Cat the time of the collision and he was present on the bridge during the entire evolution. Enclosure (4).

3. H-E-C unmoored and proceeded seaward using both main diesel engines ahead at 75 rpm and .5 pitch and the bow prop in the direction of 090, ahead position handle 3. Enclosure (4).

5830
18 March 1

Subj: Collision of CGC H-E-C (WHEC-7) and an unnamed sailing vessel in the Oakland Estuary on 22 February 19 .

4. Shortly after taking in all lines the starboard pitch control malfunctioned and started turning with astern pitch of .5. Enclosures (3), (4), and (6).

5. Attempts to correct the direction and speed of the starboard engine included using voice communications with the engine room, utilizing a talker who was not readable due to his heavy Filipino accent. The 21 MC was then used and ultimately the Engineer in the control booth recognized the problem and shifted to engine-room control of the starboard shaft and reversed the pitch of the starboard wheel. Enclosures (7), (10), and (11).

6. H-E-C collided with an unnamed sailing vessel moored in the Oakland Estuary at 1102 on 22 February 19 . Enclosure (5).

7. The starboard pitch control system failed between 1055 and 1105 on 22 February 19 aboard H-E-C Enclosure (6) and (7).

8. LT JONES , the H-E-C navigator and Operations Officer was on the bridge throughout the incident. Enclosure (6).

9. H-E-C was leaving its mooring in pilot house control. Enclosure (6).

10. The pitch control system had responded satisfactorily while underway prior to 1055 on 22 February 19 . Enclosures (3), (5), (6) and (8).

11. LT JONES was first to report the unresponsiveness of the pitch control system. Enclosures (3) and (6).

12. Commands were given to stop the sternward drift of H-E-C Enclosures (3) and (6).

13. SA DECKFORCE was at the bridge Engine Order Telegraph on the morning of 22 February 19 during Special Sea Detail. SA DECKFORCE had no experience at this position. Enclosure (9).

14. The 1 JV circuit was weak and noisy to all stations. 1 JV communications between the bridge and engineering spaces were extremely weak and mixed with background noise. Enclosure (10).

15. The talker from the bridge to the engineroom on the 1 JV circuit speaks in a soft, heavy Filipino accent, and his messages were mostly drowned out by engineroom noise. Enclosure (11). In addition to hearing and understanding the bridge 1 JV talker, continuous repeats were necessary, slowing the communications so as to make it very untimely. Very poor circuit procedure resulted. The only reliable communications established was over the ship's dial phone. Enclosures (11) and (7). The word to de-clutch the starboard shaft never did reach the bridge over the 1 JV.

16. Loss of starboard pitch control has been a recurring problem aboard H-E-C Enclosure (7).

17. Steps were taken to correct the pitch control problem prior to 22 February 19 . Enclosures (7) and (12)

Subj: Collision of CGC H-E-C (WHEC-) and an unnamed sailing vessel in the Oakland Estuary on 22 February 19 .

18. A faulty mode selector switch that was thought to be the cause of the pitch control problem was replaced during the inport immediately prior to the incident. Enclosure (7).

19. Requests from the engineroom over the 1 JV and 21 MC were not responded to. Enclosure (7).

20. The pitch control was finally regained when the starboard shaft was returned to engineroom control. Adding to the communications problem, the 21 MC malfunctioned in the engineroom control bootn during this incident. Enclosures (7) and (13).

21. At the time H-E-C was attempting to get underway, both the port and starboard horsepower meters were improperly installed or partially removed. Enclosure (12). Upon inspection after the incident, 10-15 connections in the engineroom control system were found loose and/or dirty. In addition, the control console wiring does not conform with the applicable class drawing. Enclosure (12).

22. The sailboat that was collided with is an unnamed, unnumbered "Pearson 40'" . The boat suffered damage to the port gunwhale amidship. The port teak caprail was cracked. Enclousre (14).

23. The dock where the Pearson 40' was moored was pushed about 45^{0} from the perpendicular and the piling bent about 40^{0}. Enclosure (14).

24. The S/V General Belgrado, was pinched in its dock slip with an unnamed Ensign 23' S/V owned by Norcal Yachts. The General Belgrado had gel coat scratches. The Ensign 23' had gel coat scratches. Enclosure (14).

25. H-E-C departed the scene after calling ship to shore to LTJG SMITH (a H-E-C officer who was on TAD at the District Engineering office) directing him to contact the owners of the vessels and dock involved.

26. The damaged yachts and dock are the immediate neighbors of the 378 berths. Enclosure (14).

OPINIONS

Based on the facts, it is my opinion:

1. That the incident was completely avoidable and resulted from a combination of several incorrect procedures:

   a. Faulty pitch control system that was not only known to be unreliable but was not correctly wired or "preventive maintenance" serviced prior to getting underway.

Subj: Collision of CGC H-E-C (WHEC-) and an unnamed sailing vessel in the Oakland Estuary on 22 February 19

Opinions (continued)

b. 1 JV not properly manned or functioning satisfactorily prior to unmooring.

c. 21 MC not working properly when getting underway.

d. Having an untrained and inexperienced operator on the Engine Order Telegraph.

2. That the pitch control system should be completely serviced and checked thoroughly against the prints and then tested very completely before using it again to maneuver in confined situations.

3. It is noted that it is the first time H-E-C has gotten underway since October 19 and very possibly it had a high turnover of trained personnel during the inport.

4. I believe the departure of the H-E-C from the scene of an allision of this magnitude is a pretty cavalier action. The least they should have done is put a boat down and proceed directly to the boats and docks for a direct look at the damage and to ascertain that the owners knew they were concerned. I'm not certain that their schedule justifies not doing something to indicate appropriate responsibility.

5. I believe that incidents of this type may happen from time to time, even if all correct procedures are followed. It is the cost of doing business in a busy, rather restricted area and the boats in question have over the years continued to further cramp the end of the dock used by the four (4) 378's homeported there.

RECOMMENDATIONS

It is recommended that:

(1) H-E-C establish a complete checklist procedure to ascertain that all communications circuits are properly manned and working before getting underway.

(2) H-E-C use emergency pitch control for operating in restricted waters until the electrical pitch control system is thoroughly rewired to conform to the drawings and checked for performance.

(3) The Engine Order Telegraph Operator be properly trained to recognize and report pitch control casualties.

(4) The 1 JV circuit be serviced and placed in good operating order and all talkers be properly trained. Remove persons with unacceptable speech problems from communications assignment.

(5) H-E-C be cautioned about leaving the scene of any incident of this type under circumstances other than on a life-saving mission.

of Transportation
United States
Coast Guard

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5890

14 FEB

From: CAPT C. O. , USCG
To: Commander, Twelfth Coast Guard District (d)

Subj: REBUTTAL TO INFORMAL INVESTIGATION INTO COLLISION OF CGC H-E-C (WHEC-) AND A UNNAMED SAILING VESSEL IN THE OAKLAND ESTUARY ON 22 FEBRUARY 19

Ref: (a) CG Supplement to Manual for Courts-Martial

1. The investigation into the engine casualty and subsequent collision of the CGC H-E-C on 22 February 19 was convened by Commander, Twelfth Coast Guard District on 24 February 19 and submitted to the convening authority on 18 March 19 . Even though the investigation directly concerned my command and the tenor of the investigation was critical of several command decisions, I was not named a party to the investigation until 30 June 19 when I first received a copy of the investigation. By this time, the investigation had been completed and sent to the convening authority for review. Had I been given timely opportunity to present rebuttal evidence and question witnesses when events were still fresh in their minds, the findings of fact, opinions and recommendations of the investigating officer may have been different.

2. The investigating officer used LTJG SMITH as an assistant. LTJG SMITH was an officer in the engineering division of CGC H-E-C and his supervisor was LCDR DOE the engineering officer. It appears that the investigating officer took LTJG SMITH's findings of fact and enclosures and then drafted the opinions and recommendations from the information provided by LTJG SMITH. Thus, the fact gathering was conducted by a person with a vested interest in the engineering department, and the resulting findings of fact were absent of any critical inquiry into the causes of the pitch control failure.

3. The findings of fact were inadequate in several significant areas. In the enclosures to my letter and with the assistance of LT ____, an assistant legal officer, other facts have been gathered that must be considered before any opinions and recommendations of the investigating officer are considered. The following information should be considered:

a. As an addition to finding of fact 1, LTJG NEWGUY a reserve officer, was one of the ship's most inexperienced conning officers. When I took command I discovered that the ship handling experience level of my junior officers was negligible and in keeping with Commandant's policy regarding training, I took immediate steps to provide my junior officers with as much practical experience as possible. As CDR X. O. stated (enclosure (1)), a more experienced conning officer may have averted the collision, but as a price to pay for experience, reactions and commands were a little slower due to the experience level of the conning officer. I am not saying that LTJG NEWGUY should in any way be held responsible for the incident, but I am saying that in order to train our junior officers, we must be willing to accept less than excellent reactions to emergencies such as an engine control failures.

b. The investigation is incomplete in its findings of fact 3, 4, and 12 as to what actions were taken on the bridge before the time of collision to counteract the sternway. From the various witnesses and my own personal observations, the following facts should be added to the findings:

(1) On 22 February 19 there was an ebb tide at the time CGC H-E-C was getting underway, with maximum ebb of 4.4 knots at 1010 and slack at 1425.

(2) CGC H-E-C initially moved laterally to starboard about forty (40) feet away from its berth at Delta without difficulty. LTJG NEWGUY brought the pilot house control throttle handles (PHC) to zero pitch to let a fishing vessel pass to starboard (IR enclosure (3) and personal observation).

(3) Intending to move forward and into the middle of the Oakland Estuary Channel, LTJG NEWGUY moved both throttle handles to approximately .5 pitch ahead with the bow thruster at 090° position at one (1) thrust (IR enclosure (3) and personal observation).

(4) While LTJG NEWGUY was taking the above action, LT JONES observed that the starboard shaft's pitch was at .4 pitch astern and did not correspond to the position of the pilot house control handles (IR enclosure (6)).

(5) Based upon his observations, and noticing that the ship was developing sternway, LT JONES reported that the ship had lost pitch control for the starboard shaft (IR enclosure (6)).

(6) LT JONES recalls that the order was given over the 1JV circuit for the engineroom to take control of the engines and that starboard pitch control had been lost. He stated that he wasn't certain whether the engineroom acknowledged (IR enclosure (6).

(7) The ship was moving slowly astern and to port, toward the marina (personal observation).

(8) Upon learning of the loss of pitch control, and noticing the sternway, LTJG NEWGUY stated that he ordered the bow thruster at 045° at position three (3) thrust and then, believing that the ship had lost pitch control on both shafts, ordered right full rudder to try and swing the stern to starboard (IR enclosure (3)).

(9) CAPT C.O. told LTJG NEWGUY to switch to engineroom control, to go all ahead two thirds (2/3) and to shift the rudder to left full (IR enclosure (3) and personal observation).

(10) LTJG NEWGUY recalls that he passed the order to shift to engineroom control over the 1JV and received acknowledgment, that two thirds (2/3) bell was rung up and answered on the engine order telegraph (EOT) and that he ordered the helmsman to shift the rudder (IR enclosure (3)).

(11) Within 2 minutes after the ahead engine commands were ordered, and immediately before the collision, both pitch cards were indicating "ahead" thrust but there still was sternway (IR enclosure (6)).

(12) Before headway developed, CGC H-E-C hit a moored sailboat off the stern and slightly to port (IR enclosure (3)).

c. The action taken by the engineroom is incomplete in its findings of fact 5, 15 and 19. The following facts should be added to the findings:

(1) LCDR DOE was the engineering officer on CGC H-E-C on 22 February 19 , and was in the engine control booth at the time of the incident (IR enclosure (7)).

(2) LCDR DOE stated that the engineroom received word from the bridge that the bridge had lost starboard pitch control, but received no command to take action (IR enclosure (7)).

33 4

(3) LCDR DOE made requests to take engineroom control of the engines and to declutch the starboard shaft over the 1JV and 21MC, but received no response to his request (IR enclosure (7)).

(4) About one minute after the first report of losing pitch control, the engineroom received commands to take engineroom control over the dial x (ship's telephone system) (enclosure (2)).

(5) After receiving the command to take engineroom control, an attempt was made to regain pitch control in the emergency mode. This method was abandoned because it was too slow. (IR enclosure (7)).

(6) Upon shifting the pitch control back to normal, both the starboard and port pitch responded properly (IR enclosure (7)).

(7) In the opinion of the engineering officer, LCDR DOE, the source of the temporary pitch failure was in the engineroom console, and that the collision may not have been prevented even if the order to take engineroom control had been received initially, rather than after a minute delay caused by communication failures (enclosure (2)).

d. Essential facts surrounding the communication breakdown on the 1JV circuit are missing from findings of fact 5, 14, and 15. These missing facts will minimize the critical opinions and recommendations in the investigative report. The following facts should be added to the findings:

(1) The bridge 1JV sound-powered phone circuit was manned by SKC SALTY on the date of the incident (enclosure (3)).

(2) Chief SALTY had been assigned as bridge 1JV talker since reporting aboard in August 19 and had served on that special sea detail post on at least eighteen (18) ship evolutions since reporting aboard (personal observation).

(3) Chief SALTY stated that on the day of the incident he got a phone check with everyone on the 1JV circuit and the phone system was working properly (enclosure (3)).

(4) Prior to and on 22 February, LCDR DOE had complained about SKC SALTY on the 1JV circuit to the executive officer, CDR X. O. . CDR X. O. had previously discussed the problem with Captain C. O. and a decision was made to allow Chief SALTY to remain at that billet based upon the reasoning that he needed only further experience; that he was conscientious and knew the proper terminology; and that the command didn't believe the ennunciation problem was serious enough to warrant pulling a chief from a position that normally goes to his billet and giving him a job with less responsibility (enclosure (1)).

e. The finding of fact 13 requires more elaboration. SA DECKFORCE was standing the engineroom telegraph billet on the bridge for special sea detail on 22 February 19 for the first time. He was the last-minute replacement for a seaman who had been removed from the ship TAD to Support Center Alameda after having a positive urinalysis test result. Prior to getting underway, SA DECKFORCE was instructed as to his duties by ENS J. DOE (enclosure (4)). CDR X. O. was aware of the situation but did not consider the lack of experience critical at that position because the job was not too difficult to perform properly (enclosure (1)). I concur with that opinion. When a ship goes through inport periods lasting from October through February, some people must be assigned to positions in which they lack experience. One of the roles of LT JONES as operations officer is to oversee the performance of the bridge personnel during special sea detail, and in doing his job he was able to detect that SA DECKFORCE had failed to alert the conning officer as to the reverse pitch. Under normal circumstances, each bridge watchstander runs through certain training and qualifications, but as I stated before, real experience for all hands is sometimes a luxury that an operational command is not afforded.

f. Findings of fact 11 and 13 do not reflect the fact that on the engineroom console there is a pitch loss alarm indicator. As designed, a light should alert the engineroom that there is a loss of pitch without the need for bridge personnel to detect a discrepancy. This light had been disconnected on the control panel and according to my engineering department, it was supposed to be disconnected because it caused an inordinate amount of electrical shorts in the control panel. Had there been an operable pitch loss alarm indicator, the engineroom personnel could have quickly detected pitch loss and taken appropriate steps to remedy the situation, possibly averting the collision. I believe that the absence of this design feature is a critical factor in considering the circumstances that led to this collision.

g. Finding of fact 25 needs to be elaborated to include the reasons for the decision to depart after the collision. I was primarily concerned about the mechanical failure on the ship, since we were underway in a relatively narrow channel where another pitch control failure could be more serious than the one we had just experienced. I directed CDR X. O. , my executive officer to look after the damage cause by CGC H-E-C. In making the decision to send LTJG SMITH to the scene and continue on with the ship's mission, the following factors were considered:

(1) The intial damage report did not appear to be too serious. (Note: District legal has informed me that the damage claim from the owner of the sailboat was for $835.00.)

(2) LTJG SMITH, a ship's officer from the engineering department, had been left ashore at the District Office in Alameda.

(3) LTJG SMITH could quickly go to the scene of the incident, appraise the damage and assure the civilians on the pier that they will be reimbursed by the Coast Guard for the damage to their property.

(4) A phone patch to LTJG SMITH from CDR X. O. was arranged within minutes of the incident, and LTJG SMITH was directed to go to the scene of the accident.

(5) After talking with LTJG SMITH, CDR X. O. believed that LTJG SMITH understood that he was to go to the scene immediately. (Note: The phone patch was made at approximately 1110, but LTJG SMITH did not arrive at the scene until the afternoon of 22 February 19 because he stopped at the District Legal Office prior to departure for advice on how to do an investigation.)

(6) A message to District was sent from CGC H-E-C explaining the incident, in order to fully appraise the district of what happened.

(8) My explanation as to why the ship departed the scene, rather than lower a small boat was that the damage did not seem too serious and that LTJG SMITH would arrive promptly. On scene, LTJG SMITH would be under no time restraints, enabling him to do a complete investigation. To lower a small boat would require CGC H-E-C to remain in the estuary rather than move to more open water while it checked out its electrical systems. By having LTJG SMITH go to the scene, CGC H-E-C could continue on its mission and a command representative would still be able to meet with the public.

4. Several opinions and recommendations of the investigating officer are not supported by findings of fact and should be disapproved.

a. Opinion 1, that the incident was completely avoidable:

(1) The cause of the loss of pitch control was, in the opinion of the engineering officer, located in the engineroom console. LCDR DOE states that CGC H-E-C has been experiencing pitch loss problems over the past two years and that there was an ongoing trouble-shooting program to find the problem. To say that "preventive maintenance" would have prevented the incident is naive when speaking of such a complicated electrical system.

(2) The 1JV was manned by a chief petty officer with prior experience and the circuit was tested prior to getting underway.

(3) There is no confirmation that the 21MC was not working properly prior to getting underway. The 2IMC is regularly used prior to getting underway in the process of checking out emergency bells, etc., with engineroom personnel.

(4) To state that the incident could have been avoided with an experienced operator on the engine order telegraph ignores the problems of personnel turnover and the necessity to use inexperienced people who have received limited prior to training.

(5) The opinion of the engineering officer that the communications delay possibly did not aggravate the incident must be considered.

b. Opinion 2 that there should be a complete check of the pitch control system ignores the facts that the system was an ongoing problem of the engineers (see my remarks on Opinion 1). LCDR DOE stated that prior to getting underway on 22 February 19 , the pitch control was extensively exercised without failure (IR enclosure (7)).

c. Opinion 4 is an opinion that I find personally offensive. The investigating officer made no attempt to investigate facts surrounding the decision to continue the mission by talking to either myself or CDR X. O. . The opinion suggests one alternative and at the time, I thought the alternative to use LTJG SMITH was preferable. The message sent to District was also not made a part of the investigation and now cannot be located due to the passage of time.

d. Opinion 5 is true, that incidents of this type may happen. The distance to the marina from our stern is approximately 150 feet, which is very little room to maneuver.

e. Recommendation 1 is and has always been done prior to getting underway (enclosure (6)). The investigating officer never looked at our pre-sail checklist and unfortunately the ones from 22 February 19 are no longer retained. However, I have enclosed an example (enclosure (5)).

f. Recommendation 2 is recommending that we do not use any of the electronic aids provided on a modern ship for fear they may fail. While CGC [redacted] has experienced problems with the pitch control, for the most part it operates in the regular mode. The conning officer should be able to rely on the fact that the system was checked out and reported to be operable.

g. I have already made comments pertaining to recommendations 3, 4, and 5 and will not repeat them. I have enclosed a qualification sheet which has been in use for some time prior to the incident. (enclosure (7)). This sheet must be completed by every underway lookout/helm/messenger. (enclosure (7)).

5. I feel that this investigation was poorly conducted and left many areas unanswered. The incident itself was not of any serious magnitude and mechanical failures occasionally occur. I believe that this investigation, because of its poor gathering of facts, was unfairly critical of CGC H-E-C and the way that my command is prepared in the areas of readiness and training. I hope that my input has clarified some areas in which the investigation was critical.

Encl: (1) Statement of
(2) Statement of
(3) Statement by
(4) Statement by
(5) Pre-sail Checklist (example)
(6) Statement by QMC
(7) Qualification Sheet for lookout/helm/messenger

IR-10-83
5830
25 June 19

From: Commander, Twelfth Coast Guard District
To: COMMANDANT (G-LGL)

Subj: COLLISION OF CGC H-E-C (WHEC-) AND AN UNNAMED SAILING VESSEL IN THE OAKLAND ESTUARY ON 22 FEBRUARY 19

ACTION OF CONVENING AND FINAL REVIEWING AUTHORITY

1. Captain C. O. was not originally designated a party as he should have been. Because of that failure when the Report of Investigation was received in the District, Captain C. O. was accorded the rights of a party (see Enclosure (5)). He was given a copy of the Report of Investigation and provided an opportunity to submit a rebuttal and to submit any additional evidence. In addition, Captain C. O. eventually requested and was provided legal counsel. Captain C. O. s rebuttal (enclosure (2)) was submitted and considered. Despite the inital failure to designate Captain C. O. as a party, he has subsequently been accorded all the rights of a party and has not been prejudiced. He has had full and complete opportunity to respond to the entire Report of Investigation.

2. The investigation has been delayed considerably. Indeed the action is dated almost 16 months after the incident. The delay was due primarily to the failure to designate Captain C. O. as a party. A large portion of the delay was a result of allowing Captain C. O. to review the Report and to respond. By letter dated 28 June 19 , Captain C. O. was accorded the rights of a party. However, no response was received from him until February 19 .

3. Captain C. O. in enclosure (2) indicated that on 22 February 19 , there was an ebb tide at the time CGC H-E-C got underway with maximum ebb of 4.4 knots at 1010 and slack at 1425. Correctly, the state of the current at 1100 22 February 19 was 1.3 knots with a maximum ebb of 1.3 knots 300°T at 1010 and slack water (minimum before flood) at 1415. (See Enclosure (4)).

4. In reviewing the original investigation and the commanding officer's statement, it appears the accident was caused by the following related sequence of events:

a. An unrepaired and unreliable pilothouse pitch control system. This was known to ship's personnel from previous incidents including dockside testing on 22 February 19 (Encl 7).

b. Poor 1 JV communications which included line interference and talker pronunciation difficulties.

c. Failure of the 21 MC at a critical time.

d. The use of an unqualified engine order telegraph watchstander with an unreliable pitch control indicating system.

e. Lack of timely recognition by the conning officer that the vessel had gained sternway.

DIVISION

70

IR# 20455

f. Close proximity of moored vessels astern of H-E-C which negated belated attempts to arrest sternway and prevent the minor collision.

5. The facts as developed show no wrongdoing on the part the conning officer, LTJG . NEWGUY. I therefore absolve him of any responsibility for the collison.

6. Opinion 2 is a recommendation, not an opinion. As such, it appears that the recommended action has been subsequently taken.

7. Opinion 3 is not supported by any fact.

8. Opinion 4 is a bit harsh. However, I fully concur that the vessel's action immediately following the collision was not commendable. As far as can be determined, the only immediate actions taken by the vessel were a visual damage survey and a phone patch to LTJG . SMITH. The District Office received officia notification by message several hours later. Needless to say the sight of the H-E-C steaming away coupled by the inability of staff personnel to answer irate citizens' queries due to lack of knowledge did not bring credit upon the service.

9. Having already suffered a pitch control casualty and collided with a sailboat, it would have been more prudent for H-E-C to return to the dock to again test the pitch control system before transiting a narrow, restricted channel and to ascertain the extent of damage(s) at the marina.

10. It appears recommendations 1 through 4 have been acted upon. The continued exemplary operational performance of this unit indicates that any glitches, mechanical or personnel, that may have developed during the extended inport period prior to the collision have been ironed out.

11. A damage claim was filed against the U. S. Coast Guard by Mr. & Mrs. , the owners of a 40 foot Pearson sailboat which sustained damage from its collision with the H-E-C. Their claim for the amount of $460.85 has been adjudicated as reasonable and full payment has been approved and made.

12. The investigating officer failed to determine the role and responsibility of the officer of the deck, LTJG OOD . With the passage of time, it is doubtful if any further information can be now gained.

13. Subject to the foregoing comments, the proceedings, findings of fact, opinions and recommendations of the investigating officer are approved.

U.S. Department of Transportation
United States Coast Guard

Commander
United States Coast Guard
Atlantic Area

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5830
MAY 1 2000

INVESTIGATION INTO THE FACTS SURROUNDING THE CGC [redacted] GROUNDING IN KEY WEST HARBOR ON 14 MARCH 2000

ACTION OF THE CONVENING & FINAL REVIEWING AUTHORITY

On 14 March 2000, USCGC [redacted] entered the port of Key West, Florida to transfer a crewmember ashore to attend to a family emergency. The Commanding Officer decided that a navigation brief for this evolution was not necessary because of several recent transits in the port and the familiarity he and the Executive Officer had with the port. A partial entering port checklist was completed, but the bridge wing gyrocompass repeaters were apparently not compared to either the steering compass or the master gyrocompass. The navigation detail was set at 0830 when the vessel was approximately two miles south of the sea buoy. A deck watch officer who had not yet qualified as an underway OOD was assigned to conn the vessel during the transit, under the coaching supervision of a more experience officer.

The transit into port was completed without incident. After lowering the cutter small boat to transfer the crewmember to Group Key West, the Commanding Officer directed the conning officer to move the cutter to the west of the shipping channel to loiter until the small boat returned. The area selected for loitering was in the vicinity of several designated anchorages, and held sufficient maneuvering room for the cutter to safely loiter. Two known hazards to navigation exist in this area, a mooring buoy and a wreck marked by a green lighted buoy, WR5. The Commanding Officer directed the conning officer to keep the ship between the last channel buoy (buoy 13) and buoy WR5.

The cutter departed the channel and proceeded at various courses and speeds, but generally in a westward direction and ahead on both shafts. As it did so, it was set to the southwest by a combination of the wind and ebb current. At about 0926, the ship's position was plotted approximately 280 yards north of the charted position of the mooring buoy. At about 0929, the ship's position was plotted approximately 190 yards northeast of the charted position of buoy WR5. As the ship approached close to buoy WR5, the conning officer decided to use a twist to port to clear the buoy to the south and then come about on an easterly heading toward the shipping channel. When the ship was within approximately 20 yards of buoy WR5, the Commanding Officer directed the conning officer to come ahead on both engines, rather than using the twisting maneuver, and clear the buoy. At about 0934, as the conning officer changed the port engine from an astern to an ahead bell, the port propeller struck the obstruction marked by buoy WR5. The impact bent the tips of the blades of the port propeller, and caused the port engine to drop off line. At this point the Commanding Officer assumed the conn and maneuvered the ship away from buoy WR5 and shortly thereafter anchored the ship to conduct a thorough check of the ship for damage. After a vibration as discovered in the port shaft, the Commanding Officer decided to moor at Group Key West for further investigation using divers. This investigation confirmed damage to all blades of the port propeller. This damage was eventually repaired at an estimated cost of $57,900.00.

5830
MAY 2000

INVESTIGATION INTO THE FACTS SURROUNDING THE CGC [redacted]
GROUNDING IN KEY WEST HARBOR ON 14 MARCH 2000

The findings of fact, opinions, and recommendations contained in the report of investigation dated 12 April 2000 are approved subject to the following comments:

Finding of Fact 3 correctly states the final plan for the 14 March evolution. However, the final plan evolved from an earlier plan which was modified during the inbound transit due to the on scene weather which required [redacted] to go further into the harbor before launching the small boat. Neither the initial or final plans were passed to key personnel via a navigation brief or acceptable substitute. In fact, the ship's Executive Officer, a bridge safety observer, never knew the exact loiter - area.

Findings of Fact 7 and 8 describe the [redacted] entering port checklist and the completion of an abbreviated checklist on the morning of 14 March. There is ample evidence that some portions of the checklist were completed. The ship's navigator reviewed the checklist at around 0845 and discussed a missing item concerning harbor pilot communications with ENS [redacted], the break-in OOD. However, due to the post-grounding discovery of large errors in both bearing taker gyro repeaters (finding 30), a key step from the checklist was omitted or noted as satisfactory without actual verification. The person who completed the checklist item concerning gyro repeater error remains unidentified. The actual checklist completed on 14 March was not retained.

Finding of Fact 49 is inaccurate to the extent that it fails to distinguish between the published chart and the additional notations made by unit personnel to mark shoal water based upon the ship's navigational draft. Chart 11447, as published, clearly marks the wreck [redacted] struck with a symbol that means "dangerous wreck, depth unknown." However, the navigator did not highlight this wreck as shoal water by outlining the symbol in blue ink. This appears to be an oversight since one other identically charted wreck on the same conning chart is outlined in blue ink to highlight its designation as shoal water.

Opinions 6 through 8 discuss causal factors in the incident and Opinion 11 states that the actions of [redacted] crew were not grossly negligent in preparing for and executing this evolution. While perhaps not rising to the level of gross negligence, there was a disturbing lack of professionalism displayed. The Commanding Officer's decision to forgo the required navigation briefing prior to entering port created a chain of events that ended when [redacted] ran aground on a clearly charted hazard marked by an on-station wreck buoy, with abundant safe water available to maneuver. The visibility was good, there was ample room to maneuver safely, and no compelling operational reason existed to risk a close aboard approach to the wreck or to skip the required navigation brief. Key personnel did not know precisely where the ship was supposed to loiter, there was extremely limited recognition or discussion of the hazard marked by buoy WR5, and both bearing taker gyro repeaters contained significant, unknown, error. While [redacted] gave wide berth to the mooring buoy, and despite the presence of the Commanding Officer, Executive Officer, Officer of the Deck, and two officers responsible for conning the ship, no action was taken to steer clear of buoy WR5 until it was close aboard on the port side. This was more than a lack of situational awareness as to the existence and position of the wreck and to that extent I disagree with Opinion 7. During the

nearly eight minute period after passing the mooring buoy and being set toward buoy WR5, the bridge team displayed a lack of prudent seamanship that placed [redacted] in extremis, albeit unintentionally. It appears that the failure to follow prescribed procedures for this evolution led to cutting corners and relaxed vigilance and turned what could have been a series of minor mistakes into a significant loss.

A copy of this report will be provided to Commander, Seventh Coast Guard District for possible action on recommendations 2 and 3. The Atlantic Area staff, cutter forces section, will work with COMDT (G-OCU) to more fully evaluate the fleet-wide effectiveness of implementing recommendations 4-7 and necessity of changing the applicable doctrines and directives.

This is a final action within the meaning of paragraph 1-J-2.c of the Administrative Investigations Manual.

J. E. SHKOR

Copy: COMDT (G-OCU), LANTAREA (Ao), D7 (o), CAPT Rice, PCO School

U.S. Department of Transportation
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5830
12 April 2000

From: Captain [redacted], USCG
To: Commander, Atlantic Area

Subj: INVESTIGATION OF CGC [redacted] ALLISION WITH BUOY WR5, SOUTHEAST OF KEY WEST, FL ON 14 MAR 2000

Ref: (a) COMLANTAREA ltr 5830 of 15 MAR 2000
(b) CG Administrative Investigations Manual, COMDTINST M5830.1

Preliminary Statement

1. As directed by reference (a) and in accordance with Chapter 4 of reference (b), a one-officer informal investigation was convened in Key West, FL on 16 March 2000 to identify and examine all relevant information surrounding subject allision.

2. All witnesses were available and submitted statements. A commercial diver was contracted and a survey was conducted of buoy WR5, its chain, and the obstruction it marks. The results of this survey are included in this report. ANT Key West inspected the buoy and provided its report along with positioning records on this aid dating back to 1998. An estimate of damage to CGC [redacted] was provided by MLCLANT (vr).

3. The officers and crew of CGC [redacted] were cooperative, professional, and hospitable, contributing greatly to the collection of facts and timely completion of this investigation.

4. The submission date of this report is later than the date required by reference (a) due to additional time necessary to gather and review documents, as well as review by LANTAREA (al). LANTAREA (aof) was kept informed of the reasons for and agreed to the extension.

5. Summary of Incident: CGC [redacted] was loitering in the area of Key West harbor referred to as the cruise ship anchorage located west of Fort Taylor in order to complete a personnel transfer ashore via small boat. While awaiting the return of the small boat, CGC [redacted] maneuvered to stem an ebbing current with both engines on line. When the cutter drifted towards a point just west of Buoy WR5, the conning officer attempted to clear the buoy by applying a twisting maneuver to port. The Commanding Officer directed the conn to come ahead and clear the buoy. At the point the conn came ahead, the cutter's port propeller made contact with the wreck marked by WR5 and this contact stalled the port engine. The Commanding Officer immediately assumed the conn and maneuvered to a safe

anchorage. Subsequent examination revealed the port propeller blades were damaged (dog eared).

5830
12 April 2000

Subj: INVESTIGATION OF CGC [redacted] ALLISION WITH BUOY WR5, SOUTHEAST OF KEY WEST, FL ON 14 MAR 2000

Findings of Fact

1. On 14 March 2000, CGC [redacted] was on a Law Enforcement patrol under the OPCON of CCGD7 and TACON of Group Key West (Enclosures 1,6).

2. CGC [redacted] entered Key West Harbor on the morning of 14 March for the purpose of transferring a member of the crew to shore (CG Group Key West) via smallboat and to pick up parts (Enclosures 1, 2).

3. The plan for the evolution that morning was to enter the harbor via the Main Ship Channel, Cut "A" Range and Cut "B" Range (see NOAA Chart 11447; Enclosure 8). The small boat would be lowered while on the Cut "B" (Tank Island) Range and CGC [redacted] would then loiter in the vicinity of the anchorage area directly west of Cut "B" Range buoy G13 (Enclosures 1, 2, 3, 8).

4. The Navigation Detail was set at 0830R seaward of the Key West Sea Buoy in accordance with the CO's Standing Orders (Enclosures 1, 2, 6, 9).

5. At 0837R, ENS [redacted] relieved as the Conning Officer for the entrance into port under the instruction of LTJG [redacted] who was the Conning Officer Safety Observer (coach) (Enclosures 1, 2, 3, 4, 5, 6).

6. QMC [redacted] was the assigned Officer of the Deck (Enclosure 37).

7. Prior to entering port on 14 March, an abbreviated Entering Port Checklist was completed. It was abbreviated in that it negated portions that applied to going to a pier which wasn't planned (Enclosure 3).

8. The Entering Port Checklist used by CGC [redacted] required determination and posting of gyro, steering and navigational repeater errors be posted at the repeater, at navplot and entered into the log (Enclosure 38).

9. A navigation brief, or an abbreviated brief as allowed by COMDTINST 3530.2 (for vessels that make frequent transits in a particular area), was not conducted prior to entering port (Enclosures 1, 2).

10. A navigation brief is required by the CO's Standing Orders prior to entering port (Enclosure 9).

Subj: INVESTIGATION OF CGC [redacted] ALLISION WITH BUOY WR5, SOUTHEAST OF KEY WEST, FL ON 14 MAR 2000

11. The Commanding Officer, Executive Officer, and Operations Officer were present on the bridge for the northbound transit of the Main Ship Channel, Cut "A" Range and Cut "B" Range (Enclosure 1, 2, 3).

12. The Special Sea Detail (modified) and Anchor Detail was set at 0840R prior to entering the Key West Main Ship Channel as prescribed by the CO's Standing Orders (Enclosures 2, 6, 9).

13. At 0900R on 14 March, there was an approximate ebb of 1.2 kts in a direction of 195°T (Enclosures 10, 11).

14. The ebb current, using the Key West reference station, was calculated using the CAP'N Electronic Charting software and posted on the bridge prior to entering port on 14 March (Enclosures 3, 10).

15. At 0900R on 14 March, True Wind was from 050°T at 25 kts (Enclosure 6).

16. Last recorded gyro error was on 12 March 2000 and found to be 1°W by azimuth. No gyro error was logged for March 13 or 14 (Enclosure 6).

17. No gyro error was obtained by terrestrial range while entering port (Enclosure 31).

18. At 0845R, CGC [redacted] proceeded past the Key West Sea Buoy inbound (Enclosure 36).

19. At 0911R, the starboard small boat [redacted] was lowered south of Bouy 13 (Enclosure 6).

20. At 0913R, [redacted] was away (Enclosure 6).

21. At 0921R, CGC [redacted] turned west leaving the Cut "B" (Tank Island) Range channel after passing buoy 13 (Enclosures 1, 3, 6, 8).

22. The Commanding Officer noted and drew the Safety Observer's and Conning Officer's attention to the ebbing current after leaving the channel (Enclosures 1, 2, 4).

23. LTJG [redacted], the conning officer safety observer, acknowledged recognition that the ship was being set by the ebb when reminded by the CO (Enclosure 2).

24. The ship's navigator was not aware of the navigation team's inability to obtain a fix (except for minute 26) from the time the ship departed the channel until the allision (Enclosure 3, 6, 8, 19, 31, 32).

Subj: INVESTIGATION OF CGC [redacted] ALLISION WITH BUOY WR5, SOUTHEAST OF KEY WEST, FL ON 14 MAR 2000

25. The Commanding Officer directed the Safety Observer and Conning Officer to position the ship to the north of the mooring buoy located in position 24° 32.58N, 081° 49.28W (approximately 490 yards east of buoy WR5) to await the boat's return (Enclosures 3, 4).

26. The Operations Officer, upon receiving permission to do so, departed the bridge at 0921R to gather grading sheets for a drill that was planned for the outbound transit after retrieving the small boat, and returned to the bridge at 0933R just prior to [redacted] striking the wreck (Enclosures 3, 6, 8).

27. The navigation plot was unable to obtain a visual fix from the point CGC [redacted] departed Cut "B" Range channel until after the allision with the exception of the fix plotted at 0926R (Enclosures 8, 19, 31, 32).

28. The Navigation Team consisted of ENS [redacted], assigned as plot evaluator, and PO [redacted], assigned as bearing recorder and plotter, along with a navigation radar operator and two bearing takers (Enclosures 6, 19, 20, 21, 31).

29. The Navigation Team was using visual bearings, radar ranges and DGPS positions for determining ship's position during the transit on 14 March (Enclosures 19, 20 21, 31, 32).

30. Error on the bearing taker's repeater was found to be 7° on the port and 4° on the starboard determined after CGC [redacted] anchored following the allision (Enclosure 31).

31. The Navigation Team plot evaluator was using DGPS derived positions to report ship's position and navigation information to the Conning Officer (Enclosures 9, 31).

32. The Navigation Team plot evaluator was reporting nearest shoal water and next aid to navigation in accordance with the CO's Standing Orders. Danger bearings and ranges were not plotted on the chart, and set and drift were not being reported as required by the Standing Orders (Enclosure 31).

33. CGC [redacted] was being set, at 0933R, to the southwest towards WR5 (Enclosures 1, 2, 4).

34. Ship's heading prior to the twist maneuver (at approximately 0933R) was north to northwest. The heading was difficult to determine because it was not being recorded in the ship's log, rather "MVCS" was entered (Enclosures 33, 35).

35. Prior to the twist maneuver, ship's ordered speed was handle position 2 on both engines turning for approximately 3 knots (Enclosures 4, 5).

Subj: INVESTIGATION OF CGC [redacted] ALLISION WITH BUOY WR5, SOUTHEAST OF KEY WEST, FL ON 14 MAR 2000

36. As CGC [redacted] was set down on WR5, the Conning Officer commenced a twisting maneuver at approximately 0933R to port using 3 feet of pitch back on the port shaft and two feet of pitch ahead on the starboard shaft with left full rudder (Enclosures 1, 2, 4, 5).

37. Shortly after the Conning Officer initiated the twist maneuver, the Commanding Officer instructed the Conning Officer and Safety Observer to use all ahead with two feet of pitch in order to regain momentum and counteract the set and drift (Enclosures 1, 3, 4, 5).

38. At 0934R, CGC [redacted] started to shudder briefly as it passed WR5 buoy down its port quarter (Enclosures 1, 2, 3, 6).

39. The shuddering occurred immediately following the change to the handle positions as instructed by the Commanding Officer (Enclosures 1, 3, 4, 5).

40. Concurrent with the shuddering of the ship, #2 Main Diesel Engine dropped off the line (Enclosures 1, 2, 4, 7).

41. When the shuddering occurred, WR5 was observed to be approximately 13 to 20 yards from the port quarter of CGC [redacted] at a relative bearing of 250° (Enclosures 1, 2, 4).

42. The Commanding Officer assumed the conn immediately upon experiencing the shuddering of the ship and loss of #2 MDE (Enclosures 1, 3).

43. The depth indicated on the fathometer at the time of apparent allision was 18 feet. No other navigation information was recorded (Enclosures 2, 3, 6, 19).

44. Navigation draft for CGC [redacted] is 18 feet (Enclosure 9).

45. The [redacted]s propeller blade tips extend approximately 12 feet 6 inches below the waterline (Enclosure 35).

46. The last NOS Survey for the vicinity of WR5 was 1963-65 (Enclosure 8).

47. Following the allision, CGC [redacted] continued to the south, then east, anchoring in position 24° 32.48N, 081° 49.29W (Enclosures 1, 6).

48. After anchoring, CGC [redacted] was able to restart #2 MDE without difficulty (Enclosure 1).

49. Buoy WR5 marks a charted wreck of unknown depth that, as charted, lies under and westward of the charted position of the buoy, and was not outlined as a shoal as was other shoal areas (Enclosures 8, 18).

Subj: INVESTIGATION OF CGC [redacted] ALLISION WITH BUOY WR5, SOUTHEAST OF KEY WEST, FL ON 14 MAR 2000

50. The wreck marked by buoy WR5 is located in anchorage F-1 of Key West Harbor (Enclosure 8).

51. Buoy WR5, and the wreck it marks, is in a large area that is otherwise free of navigational hazards and safely navigable by a 210 foor WMEC (IO observation of chart at enclosure 8).

52. Buoy WR5 is a green, lighted buoy (Enclosures 8, 23, 27).

53. There is no reference to WR5 or the wreck it marks in the Coast Pilot (IO review of this reference).

54. The wreck marked by WR5 is a sunken barge of approximate length of 100 ft. which extends due north from the position of WR5 (Enclosures 12, 27).

55. The barge's attitude on the harbor bottom is angled, lying on its side with the uppermost edge approximately 11 feet from the surface (Enclosures 12, 26, 28, 29).

56. Depth of water adjacent to the obstruction marked by WR5 is 27 feet (Enclosures 8, 12).

57. Local knowledge from an independent source was that the minimum depth of water over the wreck marked by WR5 was 17 feet (Enclosure 13).

58. Four impact sites of recent origin were located on the barge side approximately 75 feet from buoy WR5 and at a depth of approximately 11 feet (Enclosures 12, 14, 26, 28, 29, 30).

59. The color of the barge was black and was heavily caked in marine growth (Enclosures 26, 34).

60. Total damage to CGC [redacted] The port propeller blade edges were curled and marred by black paint (Enclosures 14, 15).

61. Estimated total damage and repair cost is $57,900.00 (Enclosure 16).

62. No damage was observed of the WR5 buoy body or chain (Enclosures 14, 17, 28).

63. WR5's actual position on 17 MAR as recorded by ANT Key West was 24° 32' 34.023"N, 081° 49' 32.835"W (Enclosure 17).

64. Buoy WR5's assigned position (LLNR 15155) is 24° 32' 34.632"N, 081° 49' 32.932"W (Enclosure 17).

65. Buoy WR5's actual position on 17 MAR was 46 yards to the south of its assigned position (Enclosure 17).

Subj: INVESTIGATION OF CGC [redacted] ALLISION WITH BUOY WR5, SOUTHEAST OF KEY WEST, FL ON 14 MAR 2000

66. Buoy WR5's charted position (Chart 11447) is 24° 32' 30.38"N, 081° 49' 33.00"W (Enclosure 8).

67. Buoy WR5's assigned position is 167° T at 11 yards from charted position (Enclosures 8, 17, 24).

68. Buoy WR5's actual position as measured on 17 March 2000 was 174° T at 33 yards from charted position (Enclosures 8, 17, 24).

69. Accuracy Classification (AC) for positioning of this type aid is Class B (considered acceptable within 50 yards of assigned position) (Enclosures 17, 25).

70. WR5's actual position was verified using Differential GPS (Enclosure 17).

5830
12 April 2000

Subj: INVESTIGATION OF CGC [redacted] ALLISION WITH BUOY WR5, SOUTHEAST OF KEY WEST, FL ON 14 MAR 2000

Opinions

1. That the incident which occurred on 14 March 2000 involving the CGC [redacted] was a grounding vice allision in that, at 0934R, its port propeller made contact with the submerged wreck (barge) marked by buoy WR5 (Findings 38, 41, 43, 45, 49, 54, 58, 59, 60, 62).

2. That ship's speed over ground just prior to the twisting maneuver was approximately 3 knots (Findings 13, 15, 35, 36).

3. That the twist maneuver initiated by the conning officer at 0933R stalled the ship's speed to less than 3 knots allowing for ebb and wind effects to overcome forward momentum and cause CGC [redacted] to drift south to southwest (Findings 13, 15, 33, 34, 36, 37).

4. That the grounding of the propeller caused the #2 MDE to stall (Findings 38, 40, 48).

5. That buoy WR5 was on station (Findings 63, 64, 65, 66, 68, 69).

6. That the primary cause of the accident was loss of situational awareness in that CGC [redacted] was maneuvering in the vicinity of a buoy marking a wreck of unknown depth and failed to remain well clear. With a set to the south-southwest, the buoy marking the wreck will most likely be effected by the ebb in that it will be further south of the position it marks. It is prudent not to maneuver in the vicinity of a buoy marking an obstruction, but when necessary, to do so on the down sea/down wind side. The Commanding Officer recognized the danger but did not react early enough to avoid the hazard (Findings 33, 35, 36, 37, 38, 39, 41, 49, 51, 54, 55).

7. That a contributing factor was the lack of information that impacted situational awareness. Cues were being taken from the visual position of the buoy and actions were focused on avoiding it, not the wreck beneath. It is apparent that the wreck was not highlighted as a specific hazard to avoid. This is related to fundamental problems with the navigation team's performance where critical information was not available to the conning officer. Some discrepancies such as repeater error not observed, gyro error not determined for that day, and information not being posted and logged as required, hindered the capability of the team and the quality of the information the team produced. Also, one individual, the navigation team plotter/bearing recorder was performing two tasks. The navigation plotter should not be encumbered with other responsibilities. More definite information with respect to vessel's position and proximity to the wreck might have resulted in earlier response to avoid the hazard (Finding 16, 17, 22, 23, 27, 30, 32, 49).

Subj: INVESTIGATION OF CGC [redacted] ALLISION WITH BUOY WR5, SOUTHEAST OF KEY WEST, FL ON 14 MAR 2000

8. That an additional contributing factor was the lack of a navigation brief among all involved personnel. Although members of the crew including the CO were familiar with Key West Harbor, they were not as familiar with that area of the anchorage. Regardless, the CG Navigation Standards and CO's Standing Orders allow only for an abbreviated brief, not a dispense of the brief altogether. Additionally, not all participants had an opportunity to review the plan and ask questions. The opportunity to examine the situation including current conditions, charts, and intentions is important even when the crew is familiar with the port. It also provides an excellent opportunity for experienced and knowledgeable officers to impart insight and share past experiences with less experienced crew members (Findings 3, 9, 10, 22, 25, 26).

9. That the decision to assign a relatively new junior officer as Conning Officer for this evolution, and assign a seasoned junior officer as Safety Observer was appropriate given the complexity of the evolution, ample supervision, area of operation, and conditions for opportunity to train (Finding 3, 5, 11).

10. That the specific nature of the wreck marked by WR5 is poorly represented. The anchorage, F-1, is heavily used for commercial traffic including cruise ships, as evidenced by the proximity of a mooring buoy adjacent to it and a deep water channel to the northwest of its location. As a minimum, the depth of the wreck should be made clear to all mariners and the chart should indicate a north- south vice east-west orientation (Findings 25, 49, 50, 53, 54, 55).

11. That there was no gross negligence in the performance of the crew of CGC [redacted] Many of the personnel were junior and relatively inexperienced. Most noteably the Conning Officer, Safety Observer and Navigation plot evaluator were all in training situations with proper oversight (Finding 5, 11, 25, 37).

5830
12 April 2000

Subj: INVESTIGATION OF CGC [redacted] ALLISION WITH BUOY WR5, SOUTHEAST OF KEY WEST, FL ON 14 MAR 2000

Recommendations

1. That no disciplinary action be taken in this matter (Opinion 11).

2. That a Notice to Mariners be issued to specify the true depth and nature of the obstruction marked by WR5 due to its proximity to cruise ship and location in a designated anchorage (Opinion 10).

3. That due to the depth of the wreck and proximity to commercial traffic including cruise ships, consideration be made to removal of the obstruction or adjustment of the marking system as covered by Chapter 6 of the Aids to Navigation Manual, COMDTINST M16500.7 (Opinion 10).

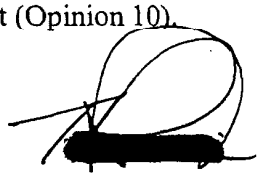
4. That navigation briefs be conducted in accordance with the CG Navigation Standards and that Standing Orders define specifically when, and under what circumstances, abbreviated briefs may be conducted (Opinion 8).

5. That the responsibilities of bearing recorder and plotter as members of the Navigation Team should be assigned to separate individuals (Opinion 7).

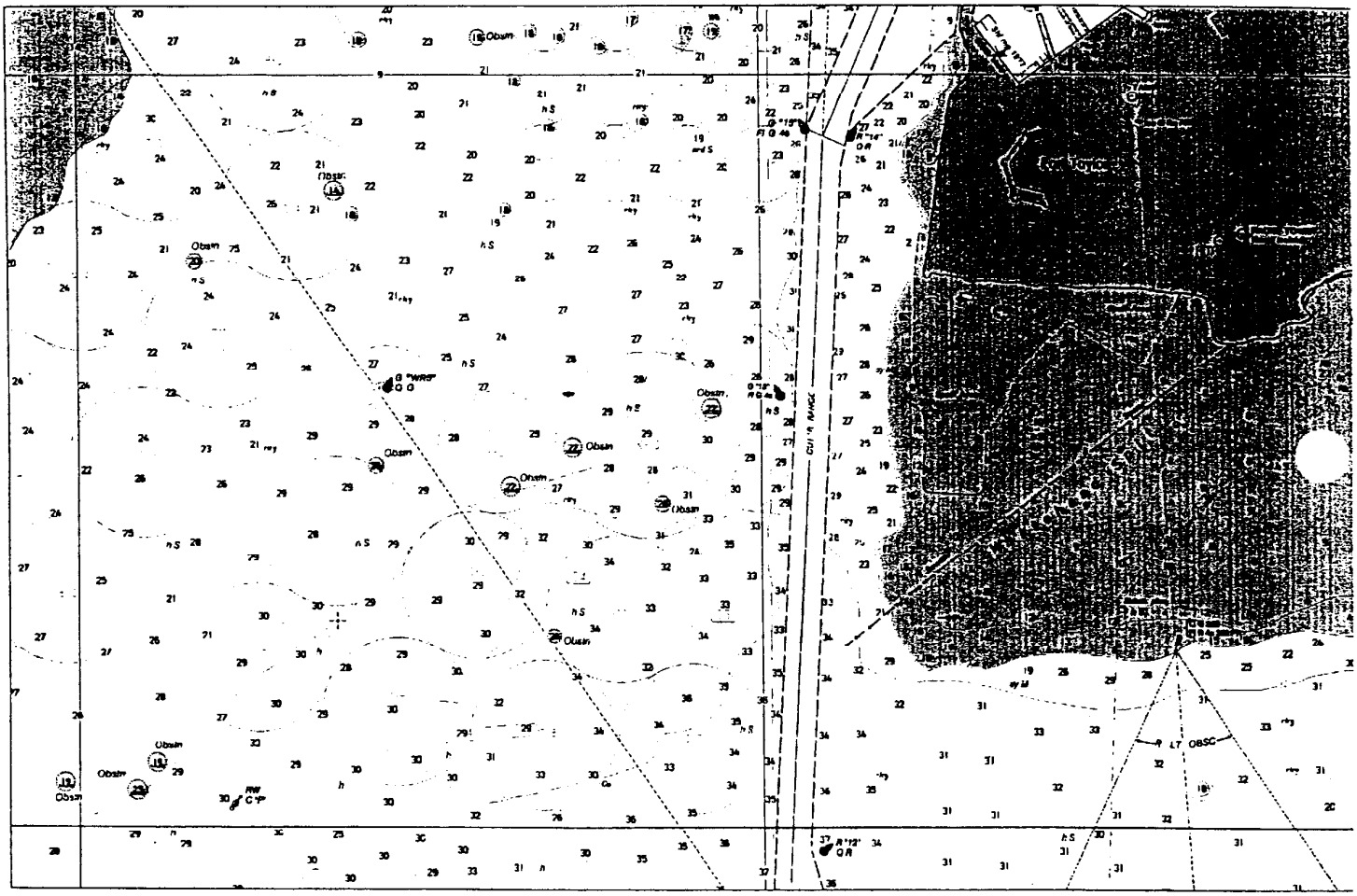
6. That consideration be made to a new requirement under the Navigation Standard for cutters to log, in addition to gyro error, repeater error for any repeaters used for navigation on the bridge in the ship's log (Opinion 7).

7. That a requirement be established for Electronic Charting software in use on cutters today to include the ability to automatically record position, heading, and radionavigation source (GPS, DGPS, LORAN) into a file.

8. That a copy of this investigation be forwarded to Commander, Seventh CG District (oan) and Commander, Group Key West (Opinion 10).



Enclosure: (1) Statement of CDR [redacted] Commanding Officer
(2) Statement of LCDR [redacted] Executive Officer
(3) Statement of LT [redacted] Operations Officer
(4) Statement of LTJG [redacted] Conning Officer Coach
(5) Statement of ENS [redacted] Conning Officer
(6) USCGC [redacted] Ship's Log of 14 March 2000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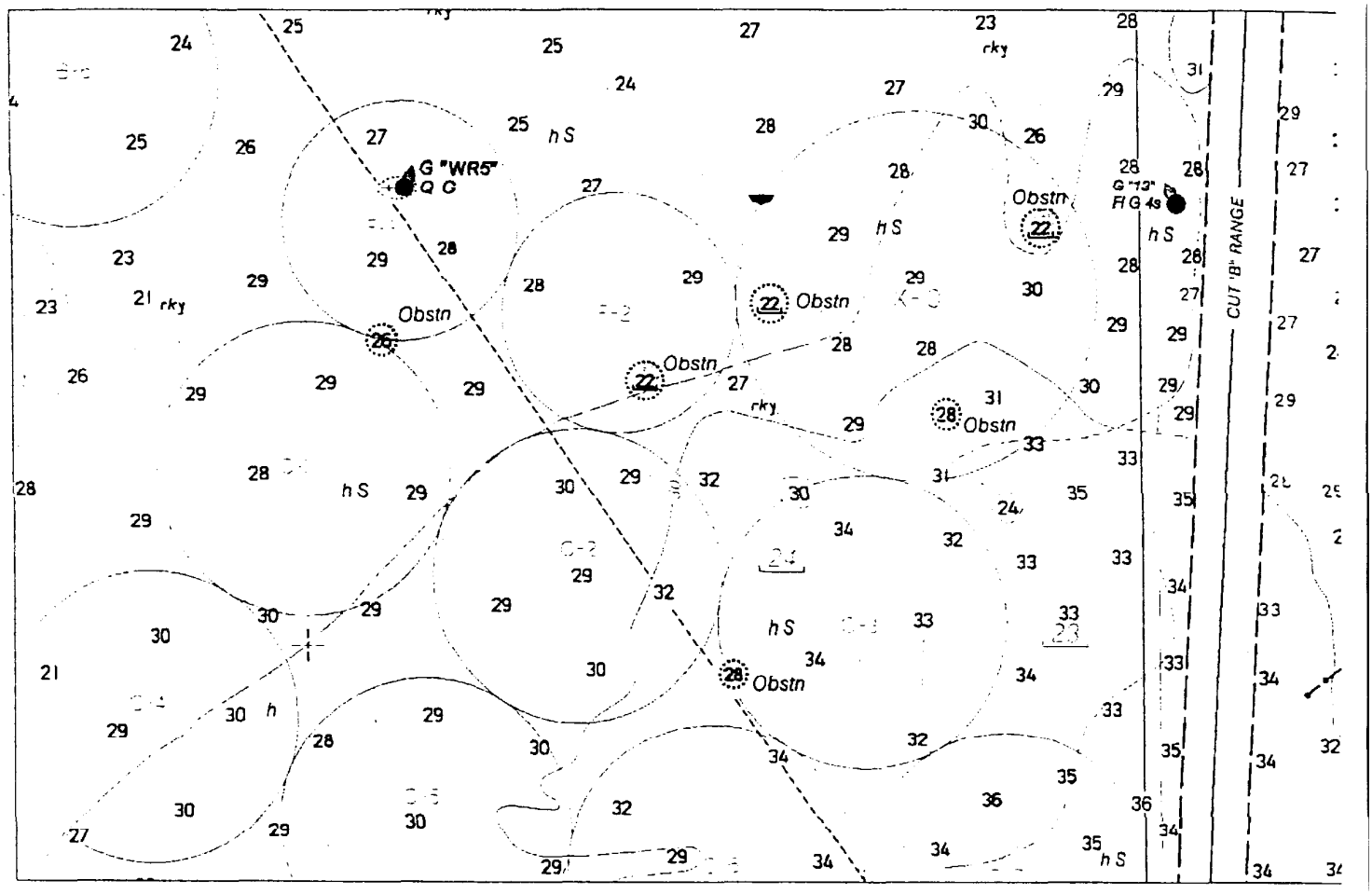
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GROUNDING OF WMEC

IN BOSTON HARBOR

ON 15APR96

5800
MAY 1996

INVESTIGATION INTO THE GROUNDING OF USCGC WMEC
AT BOSTON, MA IN APRIL 1996

FINAL ACTION OF THE CONVENING AUTHORITY

On a morning in April 1996, USCGC WMEC got underway from the World Trade Center Pier (Commonwealth Pier 5) in Boston, MA to resume its patrol following a two day port call. Shortly after the ship got underway and still in the vicinity of the pier, the commanding officer assumed the CONN. While maneuvering the ship in a northwesterly direction looking for a location from which to turn the ship and back into the channel, the vessel grounded on rocks near Commonwealth Pier 2. An underwater inspection of the vessel revealed cosmetic damage to the port fin stabilizer. I convened a one officer informal investigation to inquire into the circumstances surrounding the grounding. An investigation report was submitted by CAPT I. B. Investigator in April 1996.

The Investigating Officer determined that the proximate cause of the grounding was the failure to safely maneuver the cutter away from the piers. Excessive speed was a contributing factor in the grounding. The investigation found that mechanical or other equipment malfunctions, weather and tides, and navigation procedures and training did not contribute to the grounding. There was no damage to the piers or other vessels in the vicinity.

The navigation brief was conducted on the bridge only 30 minutes before scheduled departure. While all appropriate personnel appear to have been in attendance, I am concerned about its location and timing. The bridge of a 270 WMEC is an awkward place in which to brief a large audience, particularly when charts are required; thus, the briefing may have lost some of its effectiveness. Its timing left little opportunity for personnel to identify and correct any potential errors or omissions in the departure plan. In addition, it may even have created a sense of urgency, discouraging questions or an examination of "what if's." Navigation briefs inform key personnel of the ship's intended movement and seek feedback regarding their observations or concerns. They also ensure the navigation team as a whole is cognizant of the Conning Officer's and CO's maneuvering intentions in restricted waters. Because Special Sea Detail was set immediately afterwards, the opportunity to discuss maneuvering sequences and options was severely limited.

Opinion 1 indicates that the grounding occurred at 1018. However, there is a discrepancy between the bridge logs and the engineer's machinery log (enclosure 21), which indicates that a "loud, nonmetallic noise on port side" was heard at 1017. I do not consider it significant for the purposes of this investigation.

I do not concur with Opinion 4. Proper navigation procedures were used, but the ship was not navigated properly. Team Coordination Training teaches that a knowledgeable, experienced safety observer can assist the bridge team in trapping errors and breaking error chains which, if not detected and acted upon, can have calamitous results. In this case, there was confusion in the mind of the Conning Officer as to which role the CO and XO were to play in the evolution. The Conning Officer believed the XO would coach; however, once on the bridge the XO indicated the CO would coach and then moved to the starboard side to keep an eye on buoy 13 and any vessel traffic in the main channel. As a result, WMEC did not have a safety observer on the engaged side as the ship got underway.

The Commanding Officer displayed poor operational judgement at several junctures in this case. First and foremost, he did not ensure the bridge team understood the unmooring plan. The Conning Officer, the coach, and the safety observer are not the only ones who must understand the plan for getting underway. The deck officer, bearing takers, phone talkers, and lookouts can assist the Conn in determining the ship's position relative to hazards in the area if they know and understand the intended maneuvering sequence. In this case, a phone talker on the fantail could have advised the bridge of the relative bearing and range to buoy 13, freeing the XO to serve as coach and the CO to act as safety observer.

Secondly, the Commanding Officer did not like the Conning Officer's back up plan, voiced his concerns about it, yet did not insist on developing an alternative prior to taking in all lines. Consequently, there was no common understanding about the alternative course of action. Subsequently, when the ship did not spring off the pier far enough to take buoy 13 to port, the CO's orders to the conning officer made the conning officer uncomfortable and directly led to the CO relieving her.

I agree with the investigating officer's determination of the proximate cause of the grounding. Tentative ship handling initially, characterized by poor use of engines and rudders while undocking, and the subsequent use of excessive speed

while maneuvering along the pier faces were contributing causes.

77

Findings of Fact

1. USCGC WMEC departed her homeport of Portsmouth, VA in April, 1996 to conduct a Northwest Atlantic fisheries patrol in the First Coast Guard District. CGC WMEC spent the next weekend on a directed port call in Boston, MA in commemoration of the 100th Anniversary of the Boston Marathon. CGC WMEC moored port side to the outboard face of Commonwealth Pier 5.

2. CGC WMEC had successfully completed Refresher Training in September, 1995, and Limited Team Training in February, 1996.

3. In the morning, CGC WMEC remained moored port side to the out board face of Pier 5 with USS ASHLAND (LSD48) moored starboard side to the southeast side of the pier. USS BRISCOE (DD 977), was moored to the northwest side of Pier 5 during the weekend, and had departed. The stern of USS ASHLAND protruded channel-ward of the end of the pier by about 20 feet.

4. USS ASHLAND (LSD 48) is 609 feet in length with a beam of 84 feet, a draft of approximately 20.5 feet, and displacement of 15,726 tons.

5. Commonwealth Pier 5, also known as the World Trade Center Pier, is of open pile, concrete deck construction and is 400 yards in length. The outer face (width of pier), along which WMEC was moored, is 130 yards in length. The heading of the outer face is 299 degrees true/119 degrees true. Depths' alongside range from 35-40 feet. To the south, Pier 6 lies parallel to Pier 5, 100 yards distant. The charted position of Boston Inner Harbor Lighted Buoy 13 (LLNR 10925) is 310 yards from the northeast corner of Pier 5 and 195 yards channel-ward of a line connecting the faces of Piers 5 and 6.

6. At the time USCGC WMEC got underway on 15 April, the sky was clear and sunny, the wind was from the northwest at 10-15 knots (slightly on dock), and the temperature was approximately 43 degrees (F).

7. High tide had occurred at the Boston, MA reference station at 0953, at a height of 10.5 ft above Mean Low Water (MLW). Low tide was predicted to occur at 1604 at -0.4 ft. The approximate height of tide at 1018 was 9.8 ft above MLW. Slack water, before an ebb, had occurred at 0933 at the South Boston Pier 4 reference station. Maximum ebb was predicted to occur at 1452 at a velocity of 0.45 Kts. At 1018 the velocity of the ebb current was 06 Kts in the general direction of the outbound channel (118 deg T).

8. Drafts were recorded as 13'2" WMEC and 13'9" aft in the

ship's log, and as 13'2" WMEC and 14'3" aft in the Engineer's rough log.

9. All main propulsion, electrical generating and ship control equipment with associated systems, were fully operational in the morning. The equipment remained operational throughout the underway period that day. An outstanding CASREP on the No. 2 main diesel engine speed pitch control had been restored, with the exception of the speed pitch alarm indicator.

10. All electronic equipment was fully operational with the exception of the AS-3018/WSC-1 (WMEC rotatable communications antenna), the VHF-FM RDF, and the HF direction finder. Of three installed electronic depth sounding equipments aboard, the AN/SQN-18 (Ross depth sounder) and AN/DSN-450 (Doppler speed log), both located on the bridge, were operational. The AN/UQN-1 (deep water depth sounder), located in radio central, was operational but not energized.

11. Preparations for getting underway at 1000 proceeded without incident with the Deck, Engineering, and Electronic Departments' checklists completed.

12. At 0825 gyro error was determined to be zero degrees, by triangulation, for both the MK27 and MK29 gyros.

13. At 0925, quarters for muster was held aboard CGC WMEC. All hands were present or accounted for.

14. Upon conclusion of quarters, a 10-15 minute navigational brief was held on the bridge. The brief was attended by the CO, XO, underway OOD, conning officer, First Lieutenant, all assigned deck watch officers, and navigation detail personnel.

15. The navigation brief was given by the Assistant Navigator, and covered the track lines to be followed departing Boston Harbor, including courses and distances, tides and currents to be encountered, weather forecasts, assignment of ship control personnel to duties, and traffic expected to be encountered.

16. At 0941, the Special Sea Detail was set aboard CGC WMEC.

17. Watch, Quarter and Station bill assignments underway evolution for ship control personnel detailed the unit's operations officer as the conning officer, LTJG as the Officer of the Deck, and ENS as the navigation plot evaluator.

18. The Conning Officer reported aboard USCGC WMEC in June, 1994, was qualified as an underway Officer of the Deck in March, 1995 and is assigned as the WMEC's Navigation and Operations Officer.

19. The Officer of the Deck reported aboard WMEC in June, 1994 and was qualified as an underway Officer of the Deck in February, 1995.

20. The four Quartermasters assigned to USCGC WMEC, and to duties on the bridge that morning are all qualified as underway Quartermasters of the Watch.

21. The cutter's helmsman was qualified for the helm duty assignment.

22. On two occasions that morning the conning officer and OOD discussed the plan for getting the cutter underway. Their plan was to spring the ship WMEC, utilizing line 2, moving the stern away from the pier and towards the charted position of LB 13. Upon completion of the spring, the cutter would be backed to the channel, leaving LB 13 on the port side of the backing cutter. Once in the channel, the cutter would be twisted to the outbound heading. As an alternative plan, they discussed leaving LB 13 to starboard as they backed into the channel, noting the minimum water depth inside LB 13 was 20 feet.

23. Upon completion of the navigation brief the Conning Officer discussed the underway plan with the Commanding Officer and the Executive Officer. All agreed on the primary plan of springing the stern out and backing to the channel, leaving LB 13 on the port side of the backing cutter.

24. During this discussion among the CO, XO, and Conning Officer, the CO indicated his discomfort with the alternative plan of leaving LB 13 to starboard, citing his concern with the 20 foot sounding inside the buoy.

25. The XO recognized the CO's discomfort with taking LB 13 to starboard as the cutter backed toward the channel, but believed this remained a viable option given the 20 foot sounding, and the state of tide, which was near high.

26. Discussion among the CO, XO, and Conning Officer also covered the springing maneuver, including the position of the spring line, the hard (concrete) deck of the pier, susceptibility of the pier's safety rail to damage, the position of USS ASHLAND's stern (which protruded approximately 20 feet. beyond Pier 5 toward the channel, and was 20-30 feet astern of CGC WMEC), and that CGC WMEC was buffered from the pier by a camel. It was decided that the current position of the spring line, line 2, could not be improved.

27. With the underway checklist complete, and after observing the position of LB 13 from the starboard bridge wing the CO, conning officer and OOD moved to the port bridge wing to commence the spring using left rudder and the port engine ahead, handle

position (HP) 1/2 (about 0.6 Kts). The XO remained on the starboard bridge wing to watch LB 13 and for vessel traffic.

28. The stern of CGC WMEC was moved away from the pier by springing on line 2. The OOD estimates that the maximum angle of spring obtained with the pier face was between 10 and 15 degrees. During interviews with the investigating officer on board the cutter the CO estimated that the maximum angle obtained was 30 or more degrees, while the XO estimates the maximum angle was 25-30 degrees.

29. The angle between the face of Commonwealth Pier 5 and the charted position of LB 13 is 31 degrees.

30. After springing the stern away from the pier, the conning officer ordered all engines back, HP 2 (about 3.6 Kts). The CO negated this command, noting that Line 1 had not been taken in. The line was taken aboard at 1012. The cutter was then backed with both engines at HP 2 and the rudder amidship.

31. The backing bell was increased to HP 3 on both engines as the vessel opened the face of the pier. CGC WMEC continued to move astern to a position between LB 13 and USS ASHLAND, with bow angled towards USS ASHLAND, approximately 40-60 feet channel-ward of a line connecting Piers 5 and 6.

32. The CO, believing he would not be able to leave LB 13 to port and unable to see it from the port bridge wing, directed the conning officer to stop backing and to maneuver the ship ahead. The conning officer brought both engines to the stop (HP 0) position. The CO directed her to go ahead and both engines were ordered ahead at HP 2. Right rudder was applied to bring the cutter parallel to the pier faces.

33. The OOD and the conning officer told the CO that they did not feel comfortable going ahead at this point due to the close proximity of USS ASHLAND and Pier 5 and recommended to him that they continue backing toward LB 13 as there was sufficient water depth to take the buoy on either side. The OOD then repeated the recommendation to the CO.

34. The XO, upon seeing the astern movement of the vessel diminish, proceeded to the port bridge wing and voiced his concern with the situation.

35. As the ship's head continued to swing to starboard and the cutter paralleled the face of Pier 5, the conning officer told the CO that she was uncomfortable with the ship's position. At 1015, the CO relieved the conning officer.

36. After taking the Conn, the CO maneuvered the ship toward the Northwest, parallel to the shoreline, approximately 20-60 feet

seaward of the pier faces, with both engines ahead at HP 3, or 4 (5.5 - 6.9 Kts).

37. The CO's intent was to find a location, between piers, to swing his bow shoreward (stern channel-ward) and then to back into the channel. Unable to turn into the slip on the northwest side of Pier 5 (previously occupied by USS BRISCOE (DD 977)), and advised by the assistant navigator of insufficient water depths and the existence of 2 wreck buoys, WR1 and WR3 (LLNR 10965 and LLNR 10~70) in the next berth to the Northwest, he continued to conn the cutter along the face of Pier 4, toward Pier 2. His intent at this moment was to proceed beyond Pier 2 before turning the cutter left and backing to the channel.

38. During this period, while the cutter proceeded parallel to the pier faces from the vicinity of Pier 5 northwest to Pier 2 (approximately 640 yards) the CO made no significant attempt to conn the cutter to the right (channel-ward), since he was concerned that doing so would move the stern into the piers, damaging screws or rudder.

39. Pier 2 is a concrete block pier with associated concrete block seawall which curves from a northwesterly heading to a southwesterly heading into Fort Point Channel. The concrete block seawall is severely deteriorated for approximately 100 yards in the vicinity of the 12 foot sounding shown on NOAA Chart 13272, Boston Inner Harbor. At this point, concrete blocks and large rock (rip rap) spill down into the water, channel-ward of the charted seawall.

40. At approximately 1017, while passing Pier 2, observing the deteriorated condition of the seawall, and having been advised by the assistant navigator of hazards in the vicinity of Pier 2, the CO ordered left 5 degrees rudder, then left 10 degrees rudder in order to move the stern away from the hazards.

41. At 1018 a loud scraping sound was heard on the port side, aft of frames 60-90. Moments prior to this time the assistant navigator, standing on the port bridge wing, observed rocks under the water below the bridge wing and observed that the scraping sounds occurred as WMEC passed over the position of the rocks he had observed.

42. At 1018, QM3 in charge of the navigation plot, recorded the ship's position as 42-21.3N, 071-02.7W which was displayed on WMEC's Differential Global Positioning System (DGPS) receiver, located above the chart table.

43. At 1017 the CO ordered the port engine stopped. (Investigating Officer's Note: The port engine was brought to HP 0. At this position on a WMEC 270 controllable pitch propeller system, the engine continues to run, and the shaft and propeller

continue to turn. The propeller is at a zero degree pitch angle).

44. Immediately after the scraping sound was heard, investigators were dispatched to look for damage.

45. At 1025 the fin stabilization system was secured.

46. With the application of left rudder, and with the port engine at HP0 and starboard ahead at HP3, the cutter's stern moved to starboard. The CO then used various degrees of right rudder and various backing bells (HP's 3-5) to back clear of Pier 2 and into the channel.

47. At 1029 the navigation team fixed the position of the cutter as 42-21.3N, 071-02.0W.

48. The cutter proceeded outbound in the channel until 1032, at which time the ship was twisted in the channel, reversing the heading, and the cutter proceeded to Coast Guard Support Center Boston to conduct a visual inspection of the hull. On the second approach to CG Support Center Pier 3 the cutter was moored without incident.

49. A complete hull inspection of CGC WMEC was conducted, and recorded on tape by Coastal Diving Company of Newport, RI. The inspection revealed cosmetic damage to the port fin stabilizer, consisting of abrasions along the leading and outboard edges. These abrasions consisted of areas where the paint had been. scraped to bare metal, and the metal scratched.

50. An operational check of the CGC WMEC fin stabilization system was conducted by the Naval Engineering Support Unit, Boston. The system required minor adjustment, but was found to operate normally.

Opinions

1. That at 1018, 15 April, 1996, USCGC WMEC's port stabilizing fin grounded on rip rap on or near the 12 foot sounding portrayed on NOAA Chart 13272 - Boston Inner Harbor, near position 42-21.3N, 071-02.7W (Investigating Officer's note: the stated latitude and longitude is in a position approximately 20 yards inshore of the 12 foot sounding and is the position displayed on CGC WMEC's DGPS receiver, at 1018. DGPS is accurate to less than 10 meters and substantially exceeds the accuracy of the paper chart. Thus, I believe the DGPS position correlates well with written statements regarding the position of the grounding). Findings (39), (40), (41), (42) and (51).

2. That damage sustained to CGC WMEC as a result of the grounding was minimal. Findings (49) and (50).

3. Failure or improper operation of main propulsion, electrical generating, electronic, or ship control equipment was not a contributing factor in the grounding. Findings (9), (10) and (11).

4. The grounding was not a result of improper navigation or navigational procedures, nor lack of sufficient numbers of properly trained and qualified personnel. Findings (11), (12), (14), (15), (17), (18), (19), (20) and (21).

5. Neither severe weather nor excessive tidal conditions existed at the time of the grounding. Findings (6) and (7).

6. A reasonable plan for unmooring the cutter, which considered wind, tide, current, hazards and position of the cutter on the pier, was discussed and understood by all primary ship control personnel (CO, XO, Conning Officer, OOD). Findings (22), (23) and (26).

7. An alternative, or fallback plan for getting the cutter underway was not mutually understood by these ship control personnel. Findings (24), (25), (32), (33), (34) and (35).

8. The primary plan was not well executed. Some of the angle obtained with the sprinqing maneuver, as well as any momentum attained, was lost when the backing bell was removed to take in line one. The ship was backed conservatively from the dock with minimal use of rudder. There is no indication that either engines or rudder were used to attain a superior angle with respect to LB 13 through twisting, or any other maneuver. Findings (28), (29), (30), (31) and (32).

9. The CO used poor judgment when, seeing he would be unable to

take LB 13 to port, directed the ship to come ahead while in close proximity to the pier and USS ASHLAND. Further, by doing so, he discarded a reasonable course of action, which was to take LB 13 to starboard while backing the cutter. Given the state of tide (+9.8 ft), the cutter could have safely transited over or past the 20 foot MLW sounding, since the cutter drew only 14 feet. Findings (32), (33), (34) and (35).

10. The CO exhibited poor judgment by operating the ship with both engines ahead at HP3 or HP4 (5.5 - 6.9 Kts) while in close proximity to the piers. Further, this high speed reduced his time to consider alternate courses of action. The high speed contributed to the grounding incident. Finding (36).

11. There is no indication that the CO considered any other alternatives while conning the cutter toward Pier 2, such as moving the cutter channel-ward in increments through a twisting action, or through decisive combinations of rudder and engines, dredging, anchoring, mooring, slowing, or any other ship handling technique. Had the maneuver used after the grounding to back the ship clear and into the channel been used immediately after unmooring, or prior to arriving in the shallow water in the vicinity of Pier 2, the incident may have been averted. The failure to maneuver the cutter away from the piers, and the shallow and fouled areawhich lay ahead of the cutter, was the proximate cause of the grounding. Findings (37), (38), (40) and (46).

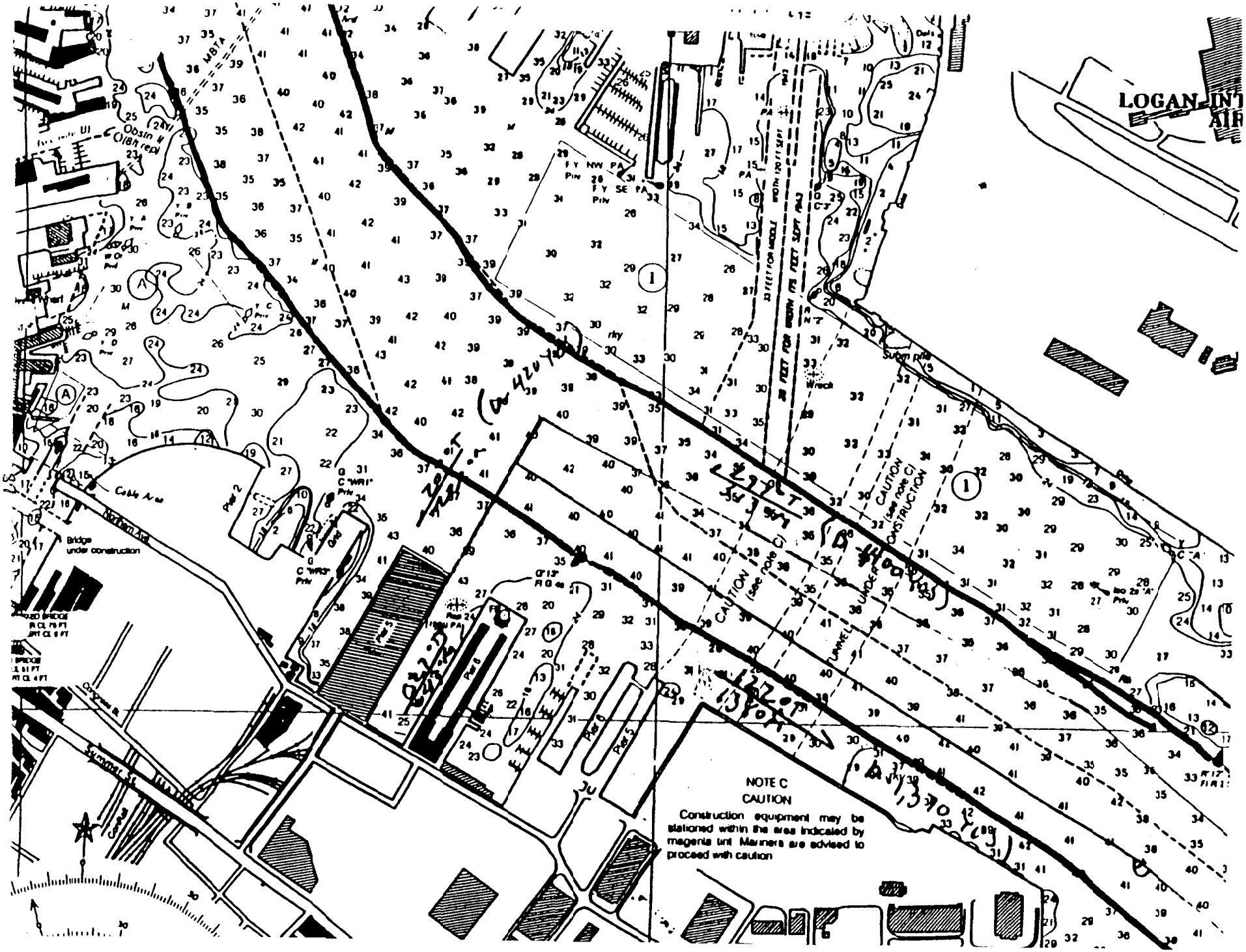
RECOMMENDATIONS

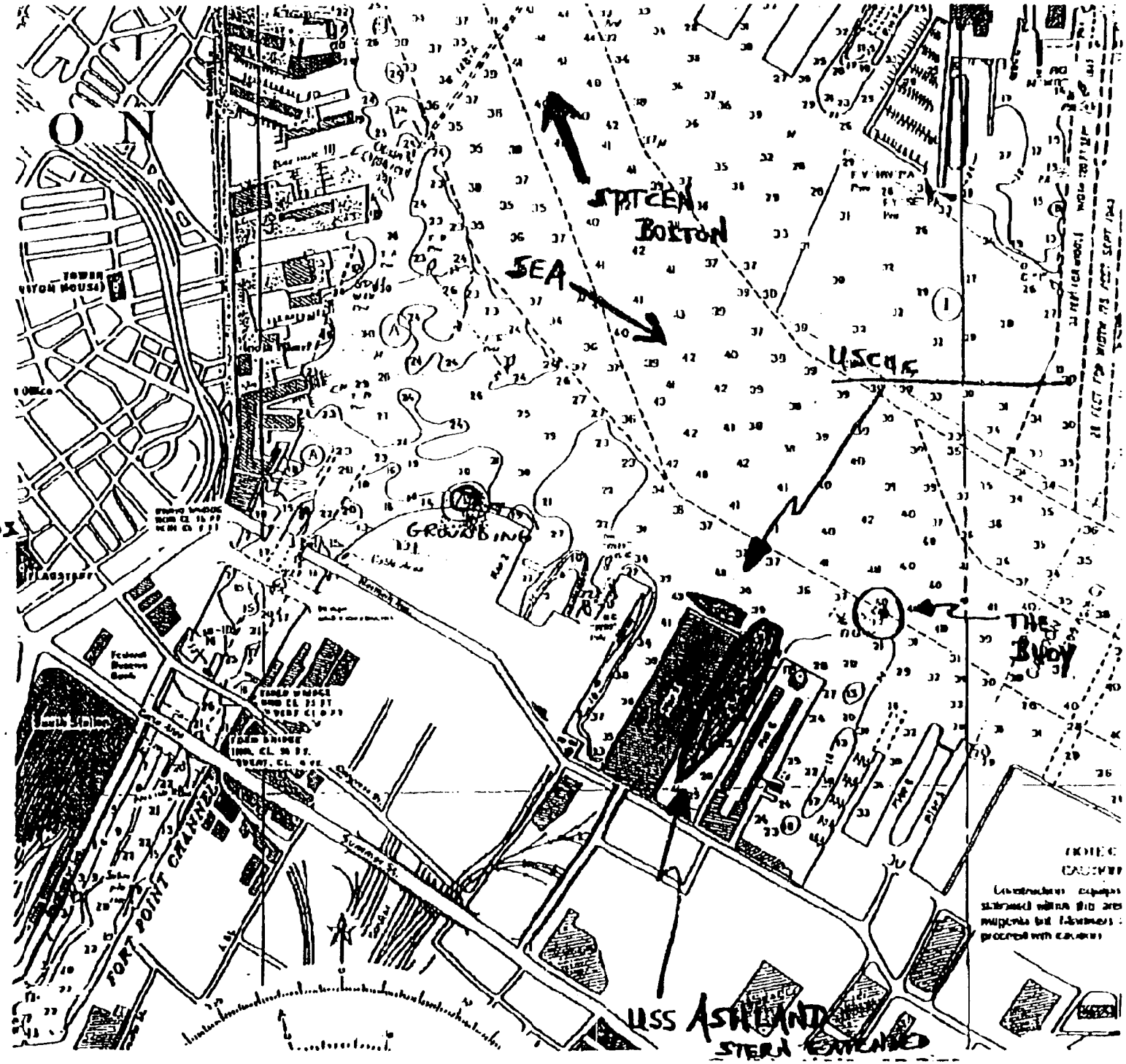
1. That the Commanding Officer be issued a non-punitive letter of censure addressing his need to effectively plan for operational evolutions and to communicate that plan to all ship control personnel involved. Opinion (7).

2. That Commanding Officer's Officer Evaluation Report reflect the substandard performance shown in this incident, in the dimensions of "Being Prepared", "Operational Specialty" (Ship handling), and "Judgment". Opinions (7), (8), (9), (10) and (11).

3. That the fitness of the Commanding Officer for continued command be reviewed in light of this incident, as well as his overall performance while in command. Opinions (9), (10) and (11).

4. That the possibility of providing recurring Team Coordination Training to the bridge Ship Control Teams of our larger, more complex cutters (WHEC/WMEC) be investigated. Introductory team coordination training is provided to individuals attending the PCO/PXO course. Other personnel may have attended courses such as the Vessel Resource Management Course offered by the Management Team Research Center in Toledo, OH. However, I am not aware of a Coast Guard program (such as the annual Phase III Helo certification program) which focuses on the entire cutter ship control team. The principles of this training include mission analysis, team communication, etc., which are critical to the safe operations of our major resources. Opinion (7).


LOGAN INT
AIR
MBTA
Bridge under construction
Pier 2
Pier 6
Pier 5
CAUTION (See note C) CONSTRUCTION
TUNNEL UNDER
Wreck
NOTE C
CAUTION
Construction equipment may be stationed within the area indicated by magenta tint Mariners are advised to proceed with caution



W/W 1000

SLIGHT EBB (MAX EBB AT 1300)

WIND 100/7

DEPARTING FOR PATROL

USS ASHLAND STERN EXTENDS BEYOND HEAD OF PIER 5

88

727-4415

O

ALLISION OF WMEC WITH PIER AT KEY WEST

U.S. Department
of Transportation

**United States
Coast Guard**

Commander
United States Coast Guard
Atlantic Area

431 Crawford Street
Portsmouth, Va. 23704-5004
Staff Symbol. (Aofc)
Phone (757)123-4567

5830
FEB 02

INVESTIGATION INTO THE ALLISION OF USCGC BADMOOR (WMEC 270) WITH PIER D-2 SOUTH AT GROUP KEY WEST ON 18 NOV

FINAL ACTION OF THE CONVENING AUTHORITY

1. Subject to my comments below, the findings of fact contained in the letter incident report from Commander I. R. Looking dated 12 December are approved.

a. Finding paragraph 5 h. The narrative does not address the conflicting statements pertaining to the ordered engine speeds immediately prior to the allision. Doubt exists whether a twisting combination of port ahead "3" and starboard back"6" had been executed by the lee helmsman operating the pilothouse control throttles immediately prior to the sternway surge.

(1) The commanding officer in his capacity as coach stated that he told the conn to increase power ahead on the port shaft followed by an increase in power astern on the starboard shaft. The executive officer in his capacity as safety supervisor did not recall the speed settings other than the command of handle position "5" being excessive. The conning officer stated that he used a twisting combination of port shaft ahead and starboard shaft back, with a maximum split of port ahead "2" and starboard back "6". The quarter master of the watch observing the lee helmsman stated that the conn ordered backing speeds of port back "6" and starboard back "2" immediately prior to impact. The main control throttleman observed both engine throttles in an astern "8" setting immediately prior to impact.

(2) The rapid succession of engine commands and lack of a designated helm safety observer increased the probability of an improperly executed engine command. These conflicting statements between ordered and executed engine speeds underscore the need for a designated helm safety observer while conning in close quarters. The executive officer was serving as overall safety observer (after the commanding officer assumed the role of coach), but was admittedly preoccupied in overseeing deck preparations. Similarly, the deck officer was stationed on the unengaged side. The quarter master of the watch was responsible for log keeping and safety observer on the unengaged side. In effect, there was no one designated whose sole function was to trap error chains between the conning officer, helmsman and lee helmsman.

2. The following comments address several opinions of the investigating officer.

a. Opinion paragraph 7 d. I concur that too much power was applied while maneuvering in close quarters. Moreover, there is evidence of improper line management. Line., was made up with a short, athwartships lead and ordered to be heard while the conning officer attempted twist the bow to starboard. No command was given to check or slack line 3 despite the significant power being applied to both shafts. In effect, line 3 served to neutralize the twisting combination and held the starboard quarter close to Pier D-2 South while preventing the bow from closing the distance to the pier face. Although the holding of line 3 prevented the screws from coming into contact with the mooring dolphins immediately astern, the application of additional power causing this sternway was attributed to the failure to recognize the snubbing effect of line 3 on the starboard quarter. Although it is apparent that an aggressive shiphandling training program is in effect aboard BADMOOR and risk factors are properly assessed, this incident reflects that further emphasis needs to be placed on line handling evolutions. The initiative demonstrated by the fantail supervisor in keeping line 4 clear of the screws and attempting to position fenders with no direction from the bridge is noteworthy.

b. Opinion paragraph 8. Concur. The intervention and judgment of the commanding officer in assuming the conn immediately following impact was appropriate and reflects sound execution of the duties of a commanding officer.

3. The following comments apply to the recommendations of the investigating officer.

a. Recommendation paragraph 9. Concur. No disciplinary or administrative action is contemplated as a result of this incident.

b. Recommendation paragraph 9b. Concur. The Major Cutter Forces branch shall disseminate policy.

c. Recommendation paragraph 9c. Do not concur. It is common practice for cutters to rig a fore and aft messenger line during alongside evolutions including fueling at sea, towing and mooring. This prudent standard of preparation and seamanship does not require further evaluation.

d. Recommendation paragraph 9d. Concur. A sanitized copy shall be forwarded.

4. Action.

a. In addition to the above recommendations, the Major Cutter Forces branch shall disseminate policy for Atlantic Area major cutter to designate a helm safety observer during mooring evolution USCGC BADMOOR shall hold training for all deck watch officer, bridge, forecastle and fantail 1 JV phone talkers, and deck line handlers to address proper line handling procedures, communications and the hazard of synthetic line snap-back

b. This investigation is closed. This is a final action within the meaning and authority of Section 1-K- 1 .d of the Coast Guard Administrative Investigations Manual (COMDTINST *M5330.1)*.

Chief of Staff

Copy: CGC BADMOOR (WMEC 270)

U.S. Department
of Transportation

**United States
Coast Guard**

Coast Guard Liaison Officer
Afloat Training Group Atlantic

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Norfolk~ VA 23511—3799
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5830
12 December

From: CDR I. R. Looking 010 01 0101, USCG
To: Commander, Coast Guard Atlantic Area

Subj: LETTER INCIDENT REPORT; INVESTIGATION INTO THE ALLISION OF USCGC BADMOOR (WMEC 270) WITH PIER D-2 SOUTH AT GROUP KEY WEST ON 18 NOV

Ref: (a) COMLANTAREA ltr 5830 dtd 25 November
(b) Administrative Investigations Man., COMDTINST M5830.1

1. As directed by reference (a), I conducted an informal investigation to determine the cause of the allision of USCGC BADMOOR with pier D-2 South at Group Key West on 18 November. This report is submitted in the Letter Incident Report format prescribed in enclosure (6) to reference (b).

2. The Commanding Officer, CDR Oh No, the wardroom and crew of BADMOOR were highly cooperative, forthright, and helpful during my visit aboard the cutter in Key West, 1-4 December. I was given use of the Engineer Officer's stateroom to conduct interviews and provided with access to the ship's CGSWII. The cutter provided all documentation that I requested. All interview subjects were made available as requested. I also received documentation, assistance cooperation and valuable insight and advice from MLCLANT (yr. vs), NESU Miami, Group Key West, USCGC MEC, Afloat Training Group Mayport, and Coast Guard Atlantic Area (Aof, Aofc, Al) staff personnel.

3. The exact engine orders given, that led to the impact with the pier, cannot be firmly determined. There is no requirement to maintain an engineroom bell log when a cutter is in pilot house control, and BADMOOR's Bell Log for 18 November contains no useful information. The Navigation Data Sheet (CG-4380C) only indicates, "MVCS (Maneuvering Various Courses & Speeds) Mooring", from 0727 until moored at 0744. There are no Nay Data entries after 0744 although the impact occurred at 0759 and mooring was not complete until 0824. Recollections of the critical engine orders given during the moment before the cutter impacted with the pier differ among those present. However, based on physical evidence and statements of the personnel involved, I believe the following narrative adequately describes the incident. All times noted in this report are local, Eastern Standard Time.

4. In order to facilitate crane access for removal/replacement of the MK75 gun mount, MLCLant (vr) had requested BADMOOR to moor with the bow at the seaward or west end of pier D-2 when the cutter returned to Key West following a seven-week patrol. On 17 November, the last evening of the patrol, the cutter held a navigation briefing to discuss the inbound transit and mooring plans. CO, XO, OPS, BMC, EO and personnel with bridge navigation detail assignments were present for the NAVBrief. During the brief, the decision was made to drop the port anchor, with one shot of chain on deck, in position approximately two shiplengths west of the pier. The plan called for

using the anchor in a reverse dredge, in this case, pulling the anchor along the bottom as the cutter backed into the berth. This maneuver, which is also called a kedge or "poor man's tug", is commonly used by 270' WMECs when winds exceed 15 knots but is normally done moving forward through the water, dragging the anchor beneath the ship with the scope of chain equal to less than 1½ times the water depth. Plans called for arrival during slack tide. Weather was forecasted to be clear with winds 16 to 20 knots from 060 degrees. A risk analysis was conducted during the NavBrief, using a GAR assessment (Green, Amber, Red). The event was scored as an 18, in the green range, with the strength of the off-dock wind the most significant concern, followed by the complexity of the approach.

5. Entering port, arrival in the vicinity of the pier, anchoring, pivoting and backing towards the berth went substantially as planned and briefed. The 0600 weather matched the forecast: visibility 10 miles, scattered clouds, wind from 070T at 17 knots. The OPS Officer (LT I'm Sorry) had the Conn; the Engineer Officer (LT Clean Bilges) had the deck; the Executive Officer (LCDR Bad Guy) was assigned to coach and train the Conning Officer and OOD; the CO was overall safety observer. Key personnel were rested and qualified for their Special Sea Detail assignments. The crew was adequately trained from REFTRA in June, and maintaining proficiency using on board training teams. The anchor was dropped at 0734. BADMOOR pivoted on the anchor and backed towards her berth, into the wind, at a 20 to 30 degree angle with the pier face.

a. BADMOOR initially backed at about three knots using handle positions 3 astern on both shafts. Backing speed was slowed to all back 1½ as the cutter got fully inside the slip between pier D-2 and D-1. The Conning Officer observed that the rudder had very little effect, due to backing at a slow speed. The ship tended to back into the wind, which took BADMOOR in the intended direction. At 0744, line four was put over and secured from the stern to pier D-2 South. The ship's log indicates moored at that time.

b. As line four was passed to the pier, linehandlers on the forecastle made several attempts to pass heaving lines for lines one and two. They were unsuccessful because the distance was greater than the length of the heaving lines. The Conning Officer directed the forecastle to use M-16 rifle, rigged as a line throwing gun, to pass the messenger for line one. The shot line parted where it was tied to the rubber projectile and the line throwing gun attempt failed. The projectile fell harmlessly on the pier. The Conning Officer directed the forecastle to prepare another projectile for the line throwing gun.

c. Also at about the same time, the fantail used a different line throwing gun to successfully put over line three from the starboard quarter to the pier.

d. With lines three and four under tension on the pier and a strong wind off the starboard quarter, BADMOOR's heading fell off to approximately 250T to 235T or, between 30 and 40 degrees off the pier. The Conning Officer attempted to twist the ship's bow to the right, into the wind, by backing the starboard shaft, handle position 2, while going ahead on the port shaft, handle position 2. Suspecting that the tension on the port anchor chain was preventing the bow from moving to the right, the Conning Officer ordered the forecastle to veer 50 feet of chain at 0752. Power was increased to handle position 3 ahead on port, handle position 3 astern on starboard.

e. During this time, the CO expressed concern that BADMOOR was moving closer to the small boat mooring dolphins aft of the port quarter. He pointed out the danger to the XO and advised him to use the Group Key West engineering building as an easy reference, keeping the front of the building astern of the ship's navigation bridge. The Boatswain Mate in charge of the fantail was also concerned with the mooring dolphins. He directed the fender detail to place the portable fender over the port quarter to guard against contact with the dolphins.

f. When the first 50 additional feet of chain did not enable him to twist the bow to the right, the Conning Officer called for another 50 feet of anchor chain. However, the XO, advised the Conning Officer that another 50 feet would be too much chain. They compromised with 20 feet and at 0756, 20 additional feet of chain was veered. BADMOOR had paid out a total of 170 feet (on deck), into 31 feet of water.

g. Still attempting to twist the bow into the pier, the Conning Officer used increasing amounts of power to stop the ship's alternating ahead and astern motion. As BADMOOR developed headway, backing power was increased on the starboard shaft. Each time the ship showed sternway, additional power ahead on the port shaft was ordered to keep the ship clear of the mooring dolphins. Due to tension on lines 3 and 4, the wind off the quarter and the holding power of the anchor/chain, little progress was made bringing the bow closer to the pier.

h. When the CO observed that BADMOOR's stern was again too close (within 10 feet and closing) to the mooring dolphins, and the bridge had gone past the face of the Group engineering building, he directed the Conning Officer to increase ahead power on the port shaft [my best estimate is that port ahead 5; starboard back 2 was the engine order command]. As sternway stopped, the CO directed the Conning Officer to slow the port shaft and back the starboard shaft hard port ahead 3; starboard back 6 to prevent forward momentum. The ship surged astern and quickly picked up speed. In quick succession, the Conning Officer ordered, all stop, all ahead 3, all ahead 4, and all ahead 7. As the ship gained sternway, line 3 remained taut and slack developed in line 4. The Boatswain Mate in charge of the fantail ordered linehandlers to take in slack in line 4 and ordered the portable fender shifted from the port quarter to the starboard quarter. The fender was too late. The last command to the fantail regarding line 3 had been, "hold line 3". Line 3 caused the starboard quarter to spring into the pier as BADMOOR backed. The starboard made contact with pier D-2 at 0759. Stern wash, pushing the ship ahead was not evident until after the impact.

i. The CO took the Conn immediately after the allision. He reversed engines to counteract the ahead momentum that had begun to carry the ship forward again. Lines 3 and 4 were brought aboard and the ship's motion was brought to a stop. The line throwing gun was used successfully to put over lines 1 and 2. The ship used line 2 to spring in the bow as the forecastle and fantail warping winches, on lines 1 and 4, brought BADMOOR to the pier without further incident. The CO relinquished the deck and the conn at 0824.

6. The force of the impact caused damage to the pier and BADMOOR's starboard quarter. The corner of the hull was deflected inboard approximately 8 to 10 inches at the point of impact, approximately 5 feet above the water line, on the seam where the starboard side connects with the transom. There were no personnel injuries sustained. All operating machinery has been satisfactorily test run and there is no indication of damage to the underwater hull.

a. A one inch crack was detected along the weld at the point of impact. Ship's personnel repaired the crack with three welding passes. Inside after steering space, three longitudinal support beams, from frame 252 aft, and four 3/8" plate frames are deformed and require replacement. Approximately 60 square feet of hull plating will need replacement. The government estimate for emergency repairs to BADMOOR is $43,845. However, current plans are to defer repairs to BADMOOR's hull until the next scheduled dockside availability in December 1998. As part of a competitive bid package, repairs to BADMOOR are estimated to cost $30,798.

b. BADMOOR will carry a scar on her starboard quarter for a year, but the structural properties of the hull are substantially unchanged. The hull CASREP will remain open until repairs have been completed. In the mean time, NESU Miami will monitor the damage and check to see if any new stresses appear after each patrol.

c. Pier damage consists of a 3' x 3' chunk of concrete chipped away, exposing the rebar; a cracked eye bolt, used to support the fendering system; and a crack in one fender on the pier at the point of impact. Repairs to the pier are estimated to cost $3,500.

7. A series of events led to and caused BADMOOR to allide with Pier D-2 South. If any one of the following actions had been different, I believe the allision with the pier would have been unlikely.

a. In anticipation of an unusual mooring procedure and a difficult wind, BADMOOR should have had a backup method to pass messengers for mooring lines. It is prudent to expect a shoulder line throwing gun's failure rate is high enough to warrant having a second projectile ready to use on the forecastle and fantail. A bob is not recommended for the 270'WMEC because of the small deck area both forward and aft. Another possibility would have been to rig a messenger line from the forecastle to the fantail along the side to be moored to the pier. This is often done in preparation for towing. It would allow the cutter to pass heaving lines from the end of the ship closest to the pier.

b. The Conning Officer should not have ordered additional chain veered. Knight's Modern Seamanship, Crenshaw's Naval Shiphandling and MacElinevy's Shiphandling for the Mariner, all advocate using a short scope of chain whenever using the anchor as a shiphandling tool. The accepted rule of thumb for deciding how much anchor chain to use when it is desired that the anchor hold, is five to seven times the water's depth. BADMOOR veered chain to five and one half times the water depth minimal for anchoring but too much for dredging. The extra chain could have either piled up on itself or allowed the anchor to dig into the soft mud. Either the dug in anchor pulled free under power and skipped along the bottom or piled up chain paid out under power. The results would be the same. Like a load suspended by a poorly tied knot, when the chain broke free, BADMOOR surged astern under considerable backing power.

c. BADMOOR should have held position with zero pitch (all stop) on both shafts and waited for the Gunner's Mate to prepare another line throwing gun projectile. When the forward line throwing gun failed, lines 3 and 4 were secured to the pier, the port anchor was down and there was an off dock wind trying to push the cutter towards deep water. It would have been relatively easy to hold position. Holding position would have also given

the bridge team an opportunity to reconsider their attempt to twist the bow to the right with the stern held to the pier.

d. Too much power was applied while inside the confined space between piers D-2 and D-1. With lines 3 and 4 holding the stern, the bow simply was not going to twist into the wind. Increasing the power did nothing to change that. When pulling on the anchor caused it to break out, all that power was suddenly directed at pushing the ship astern, without resistance.

e. When line 3 was held, the stern of BADMOOR had no place to go but into the pier. However, adding slack to line 3 with the same circumstances, probably would have resulted in the port quarter coming in contact with one of the mooring dolphins, possibly risking damage to the underwater body, rudders and CPP.

8. It is my opinion that the sequence of actions taken by the Commanding Officer was proper and showed appropriate judgement and command discretion. When he first felt compelled to give guidance on shiphandling, he addressed his comments to the XO, who was coaching the evolution. He gave clear guidance on using the engineering building as a reference and his concern that the mooring dolphins presented the greatest threat was logical. As the situation deteriorated, he took over the coaching role when he spoke directly to the Conning Officer. Shortly before the allision, he had begun specifically directing each command that the Conning Officer gave. Finally, he took the Conn when the OPS Officer's actions had become ineffective.

a. I believe the CO took a justifiable risk in allowing his Operations Officer some latitude to try to work the ship into a more favorable position. The Commanding Officer would have been justified to relieve the Conning Officer earlier than he did. The Operations Officer had not had many opportunities to conn the ship in his five months aboard. Until a few seconds before the allision, it appeared that the Conning Officer would still be able to moor the ship and the CO felt it was important to show confidence in his Operations Officer. Likewise, the Operations Officer's desire to demonstrate confidence and competence kept him from asking to be relieved when he felt he was losing control of the situation.

b. There does not appear to have been misconduct on the part of any personnel involved in this incident.

c. There does not appear to have been negligence on the part of any personnel involved in this incident.

d. There was ample advance planning, briefing and risk analysis before the mooring was attempted. The maneuver of using the anchor as a tool to aid in pivoting the ship and controlling speed of advance towards the pier is indicative that good seamanship and smart shiphandling are normal practices aboard CGC
BADMOOR.

e. All personnel involved with ship control aboard BADMOOR have discussed, analyzed and taken lessons from every detail of this incident, privately and collectively. The CO held a training session with the wardroom the next day to discuss the evolution.

9. Based on my investigation, I recommend no disciplinary or adverse administrative action should be taken as a result of this incident. I believe

that the guidance in Commandant's Instruction 1520.22B, Expanded Junior Officer Shiphandling Opportunities, applies to this situation. It states:

> "An expanded shiphandling training program necessarily entails a greater risk of damage to vessels and other facilities. The Commandant has determined that the potential benefits from such a program outweigh these risks... Accordingly, responsible reviewing senior officers must not penalize commanding officers for every scrape and dent sustained during such a training program where the damages are the direct results of a training situation under prudent conditions.

a. I recommend the establishment of a requirement that a minimum of two projectiles and two shotline spools will be on station when a shoulder line throwing gun is ready for use.

b. The practice of rigging a messenger from forecastle to fantail on the engaged side, should be tested and evaluated by BADMOOR and at least two other LANTAREA cutters.

b. I recommend a copy of this Letter Incident Report be forwarded to the Coast Guard PCO/PXO school for use as a case study in seamanship and shiphandling.

End:
(1) COMLANTAREA ltr 5830 dtd 25 November
(2) Chronological Time Line
(3) Drawing Ship's position at 0744R
(4) Drawing Ship's position at 0758R
(5) Drawing Ship's position at 0759R
(6) Drawing Ship's position at 0824R
(7) Statement of CDR Ooh No, 3 December
(8) Statement of LCDR Bad Guy, 3 December
(9) Statement of LT I'm Sorry, 3 December
(10) Statement of LT Clean Bilges, 3 December
(11) Statement of QMC Trackline, QMOW, 2 December
(12) Statement of BM2 Chipper, 3 December
(13) Summary of Interview with BMC Scrapper
(14) Summary of Interview with EMC Breaker
(15) Summary of Interview with MK1 Wrench
(16) Summary of Interview SA Commandsir
(17) Jane's Fighting ships 270 WMEC description
(18) CGC BADMOOR Damage Assessment dtd 19 November
(19) Government Estimate for Emergency Repairs to BADMOOR
(20) Government Estimate for Repairs, Competitive Bid
(21) BADMOOR msg 201501Z NOV, Mishap Report
(22) BADMOOR msg 241845Z NOV, Initial CASREP
(23) BADMOOR msg 261624Z NOV Casualty Update
(24) Statement of LTJG New Guy, 4 December
(25) Naval shiphandling (fourth edition), R.S. Crenshaw
(26) Shiphandling for the Mariner (third edition), Daniel H. MacElrevy
(27) Knight's Modern Seamanship (seventeenth edition), John V. Noel, Jr., CAPT. USN (ret.)
(28) USCGC BADMOOR Speed/Pitch/Handle Position tables
(29) COMDTINST 1520.22B, Expanded Junior Officer Shiphandling Opportunities
(30) Detail view of NOAA Chart 11447, Key West Harbor
(31) Tides - Key West November 18,
(32) Currents - Key West Ship Channel November 18
(33) COMAFLOATRAGRU Mayport msg 231715Z JUN - End of Training

Report for USCGC BADMOOR

(34) Mooring Alongside a Pier Gradesheet dtd 5 November
(35) 5W350-A1-MMO-010, Line Throwing Gun Manual
(36) CGC BADMOOR Assignment of personnel - 18 November
(37) CGC BADMOOR Ship's log, 18 November
(38) CGC BADMOOR Engineer's Bell Book dated 11-18-
(39) CGC BADMOOR starboard side 19 November
(40) CGC BADMOOR transom/starboard chine 19 November
(41) CGC BADMOOR starboard quarter 19 November
(42) CGC BADMOOR starboard quarter 2 December (w/ yardstick)
(43) CGC BADMOOR starboard chine 2 December (w/ yardstick)
(44) Key West Pier D-2 South 19 November
(45) Key West Pier D-2 South views(3), 2 December
(46) CGC BADMOOR after steering space interior 12/2/
(47) Station Key West mooring dolphins 12/9/

U.S. Department,
of Transporation

**United States
Coast Guard**

Commander
United States Coast Guard
Atlantic Area

431 Crawford Street
Portsmouth. Va 23704-5004
Staff Symbol Aofc
Phone (757)123-4567

5830
25 November

From: Commander Atlantic Area
To: CDR I. R. Looking, USCG

Subj: INVESTIGATION INTO THE COLLISION OF USCGC BADMOOR (WMEC 270) WITH PIER D2 SOUTH AT GROUP KEY WEST ON 18 NOV

Ref: (a) Administrative Investigations Manual, COMDTJNST M5830. 1

1. You are directed to conduct an informal investigation under Chapter 4 of reference (a) into the circumstances surrounding the collision of USCGC BADMOOR (WMEC 270) with Pier D2 South at Group Key West on 18 November . You are not required to conduct a hearing.

2. You shall investigate the cause of the collision and any damage to the ship and pier as a result. See chapter 6 and enclosures (11) and (17) of reference (a) concerning the specific facts that must be considered during this investigation. You shall make findings concerning any fault or responsibility for the collision and you may recommend appropriate administrative or disciplinary action.

3. The investigation shall be initiated on 01 December or as soon thereafter as practicable onboard USCGC BADMOOR. The investigation should be completed and your report submitted not later than 15 December . If you are unable to complete this investigation by that date, you shall advise me of the reasons for the delay and include an explanation of the delay in the preliminary statement.

4. The final report shall be submitted in either the format contained in enclosure (5) or (6) of reference (a), as you deem appropriate based upon your findings of fact. You shall be guided by the provisions in chapter 1 section 1 of reference (a) in preparing and submitting your report.

Chief of Staff

Copy: COMDT (G-OCU)
MLCLANT (I)
CGC BADMOOR (WMEC 270)

End ~)

CHRONOLOGICAL TIME LINE OF EVENTS - 18 NOV

USCGC BADMOOR (WMEC 270)

The following times and events were extracted from the Bridge Log, Nay Data Sheets and Machinery Logs. All times are local, Eastern Standard Time.

0607R Engine Tests in preparation for entering port

0610R Set the Special Sea Detail

0639R Inbound Key West Harbor on Trackline 1, Course 357T, Speed 13 knots

0734R Dropped Port anchor, one shot on deck, with 18 feet of water under the keel and a muddy bottom.

0744R Moored - Line 4 on pier D-2 South, Group Key West.

0752R Veered 50 feet of chain on the port anchor.

0756R Veered 20 feet of chain on the port anchor.

0759R BADMOOR's starboard quarter impacted with pier D-2. CO took the Conn

Lines 3 and 4 brought aboard.

0824R LT Jackson Relieved the Deck and the Conn.

0829R ENS Guiterez relieved the Deck.

0835 - 0856R Heave around on the port anchor.

0857R TCC Ballard assumed the inport OOD.

0900R Liberty granted.

End ~)

GROUNDING OF WMEC

NEAR MIRA POR VOS PASSAGE

ON 4 SEPTEMBER 1993

WMEC GROUNDING

Pre Mishap: The Cutter returned to home port in the first week of August after completing a highly successful refresher training. Due to operational needs, the inport period was cut short two weeks and the Cutter sailed on 2 September 1993.

The Optical Sight was not operational and the Cutter navigated in Mode 3 (without COMDAC, manual plot). COMDAC, however, was otherwise fully operational. After clearing the channel, the Cutter conducted General Quarters, Man Overboard and Abandon Ship training evolutions. A relatively quiet transit towards the operation area followed.

The ship control team on the bridge for special events underway is the CO, XO, OPS, OOD, QM1, and QMOW. The CC and XO are involved with ship functions. One is directly involved in directing the movements of the vessel with the OOD and the other is a detached safety observer. OPS is involved working the case (LE or SAR). The OOD is responsible for conning the vessel (or if a conning officer is present, coaching as needed), getting boats in the water and in general, controlling the evolution. The QM1's primary focus is the navigation picture with assistance from the QMOW who also takes care of the ship's log.

On the morning of the mishap, the bridge watch section included the OOD; a break-in conning officer; a QM2 as break-in QMOW; and the QM1 as QMOW. Approximately one hour prior to the mishap, the CO went to the bridge. He was followed by OPS.

OPS referred to the DMA Catalog which identified Chart 28557 to be the best chart for the local area. On Chart 28557 the Slow Boat passage was outlined in purple with a note to refer to Chart 27936. "27936" was crossed out indicating that it was discontinued. Although discontinued, the OPS felt that it offered the best scale navigation picture of the Big Island area. Chart 27936 was also not corrected as it is not on the Cutter's required-to-be-corrected list. Two copies of this chart were used, one for the bridge and one for CIC. Post mishap research by OPS revealed that the DMA Catalog incorrectly identified Chart 28557 as most suitable for the area. Chart 27943 would have been the best choice for the Big Island area.

Just minutes before the mishap the XO was called to the bridge. Notes to wake up the CO and XO were not in the wake up log, but were written on a chart. The time for the wake up calls was when the watch relief was in process and just prior to the point where the charts were shifted. Also, the CO had arrived on the bridge without the section having to give him a wake up call. The off going and oncoming sections both perceived that the other had called the XO.

The permanently assigned QM2 and a key member of the navigation team, did not sail with the Cutter due to a previously scheduled training requirement. He was well known for his vocal and aggressive stance in maintaining the navigation picture, and his assertivness in making this information known to the CO, OOD and Conning Officer. Team expectations were that this team member would keep the remainder of the team well informed if difficulties in navigation arose. This was a critical absence as the opposite response was received from the TAD QM2. The normal response was not present, but was not readily identified as being absent. These issues were not recognized by the command group.

Mishap: At 0036R 04 September 1993, the Cutter was diverted to assist a 50 meter freighter, off Big Island, southwest of Little Island. Information available to the Cutter indicated a need for urgency. The vessel was in serious condition, reported to be out of fuel, dragging anchor towards shoal water with crew in life jackets. the Cutter proceeded towards disabled vessel's position at 17.5 knots with an estimated time of arrival at 0500R.

The initial position of the D/V was southeast of Big Island in good water. The course line established along the transit and from 0400R would have placed the Cutter southeast of this initial position. At 0140R a revised position was passed. At 0217R, a third position was received from rescue aircraft on scene that placed the vessel on land east of South Bluff on Little Island. At 0300R, a fourth position was obtained, this one from the D/V. This fourth position placed the D/V in shoal water between Little Island and Big Island.

Arriving on the bridge around 0400, the CO became involved with managing the operation that would soon take place. The 0400-0800 watch had just relieved prior to the top of the hour with two break-in watchstanders (Conning Officer and QMOW) as members of the watch team. The CO conversed with the OOD about ship specific operations, navigation, distressed vessel location and personnel. He conversed with OPS about the SAR problem, the Cutter approach and intentions, navigation, and distressed vessel location. The CO decided not to set the navigation detail because of his intentions to remain sufficiently offshore and send a boat and boarding team to the vessel in distress, and partially because sevicewide exams were scheduled for the next morning and he did not wish to awaken anyone unnecessarily. As the ship proceeded, his focus became largely on determining the position of the vessel in distress. Although he intermittently reviewed the chart, it was primarily for purposes of ascertaining the position of the vessel in distress. He reviewed the nav plot and charted track and felt comfortable with proceeding as planned. He was unaware that the plotter, the TAD QM2, was not complying with existing requirements to use standard navigation procedures, including: plotting, and labelling symbology; not

using all available means to ascertain position; not taking and recording soundings with each fix; and, that he was not computin. set and drift information.

During the entire approach (0400 till grounding), bridge personnel involved in directing the ship movements were the CO, OOD, Conning Officer (break-in), QMOW and break-in QMOW. A position report was heard over radio at 0420R that plotted in th same position as the 0300R position, however, further transmissions by the Master of the D/V indicated his GPS was not working and that he was located south of Big Island (same location as the 0119R fix). At 0425R a meeting was held at the chart table which included the CO, OPS and the OOD. The locatio of the D/V was discussed, and the meeting temporarily broke up reconvening at 0434R. At this time the CO established PT "M", a point at which he wanted to commence operations to assist the vessel, and drew a line on the chart that designated a danger range to Big Island. As the CO, OPS, and OOD clustered around the chart table, the conning officer moved to the front of the bridge. He participated in neither of the meetings and was not aware of the navigation picture, the plan or the significance of point 'M'. Based on past expectations, there was also a presumption that the OOD was monitoring the actions of the Conning Officer. There is some indication that the plan was not fully known to all team members. OPS and the OOD were aware of PT 'M', but the QM1 and QM2 did not fully appreciate its significance.

The CO's belief that the XO had been called and was on the bridge; the assignment of team members to key billets (radar) was being accomplished; and ship navigation (i. e. danger range, fix accuracy) was providing the necessary input allowed him to concentrate on the mission. The key assumption was that the XO was present to act as the safety observer and team monitor.

Throughout this period the QM2 break-in watchstander was unable to get to the chart table to plot the 0430R fix. Following the meeting OPS laid out a danger bearing to Big Island Light and the danger range. The danger range was drawn on the chart at 3000+ yards but erroneously labeled 1500 yards by the QM1 who had been present only for the latter part of the meeting. The CO moved off with the OOD and directed that the radar be continuously manned to monitor the closest point of approach to land, correlate radar and GPS fix information, and notify him if the Cutter came inside the danger range. Neither he nor the OOD specifically identified or directed anyone to man the radar. From the meeting until just after the turn onto the D/V the CO became heavily involved in locating the D/V and doesn't recall noticing that the radar was not being manned continuously, but expected that it was. The QM1 should have been manning the radar but was instead moving in and out of the bridge using the night goggles and the SRD-22 RDF in an attempt to locate the D/V. OPS was in CSC talking with the D/V; the OOD was coordinating small boat operations, getting radios, calling personnel, and trying to

locate the D/V. The Conning Officer stood in front of the console and was generally detached from the operation. He later stated that he was uncomfortable with the situation but was hesitant to speak up. The QM2 (on board for only two days and not familiar with the general functioning of the bridge team) was the only person involved in navigating the Cutter. The D/V was identified and located visually (not geographically) at approximately 0447R after it flashed its lights upon request of the Cutter. Throughout this segment of the evolution the Cutter's position was not fixed and the danger range and bearing were not observed. With the exception of the conning officer, the bridge team was fixated on locating the D/V. With the CO, OPS, and OOD on the bridge, the break in conning officer became assumed the role of middle man simply parroting commands to the helmsman. The QM2 was playing catch up on his fixes and, although a competent QM, he was not in his comfort zone and failed to speak up and advise any other bridge team members that he was behind.

Following identification of the D/V, the CO directed the Conning Officer to turn towards the vessel. The Cutter slowed to 13.5 knots to launch the rigid hull inflatable with a boarding team. In the few minutes following the turn, the Commanding Officer recognized the Cutter standing into danger and took action to bring the Cutter back into safe waters. During the latter part of these actions, with a 3 foot swell in approximately 17 feet of water, the Cutter's propellers and rudders touched bottom twice before moving out of danger. Approximate time of grounding was 0458R. There were no personnel injuries involved with this mishap.

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2. DAMAGE TO UNIT. All eight blades (four each propeller) were damaged and were replaced in drydock between 21-26 April 1993. Repair costs exceeded $200,000.

3. CAUSAL FACTORS.

a. The breakdown in team coordination on the bridge was the major causal factor of this mishap. Setting of the Navigation Bill or R&A Bill would have assisted in preventing this breakdown with assignment of personnel to billets, but also in taking the burden off the watch section (notably the OOD) to identify and wake personnel and individually follow up on the manning status. This factor needs corrective action, and should be reviewed on a Coast Guard wide scale. In summary, these were:

(1) Not having all available information to make a decision.

(2) Lack of assertiveness by individual members in asking for assistance and in passing vital information.

(3) Team awareness of plans was insufficient to allow individual team member analysis.

(4) Team assignments were made that took several members outside their normal roles. Other team members made team assignments without knowledge of impact on other duties already assigned.

(5) Poor communications between team members.

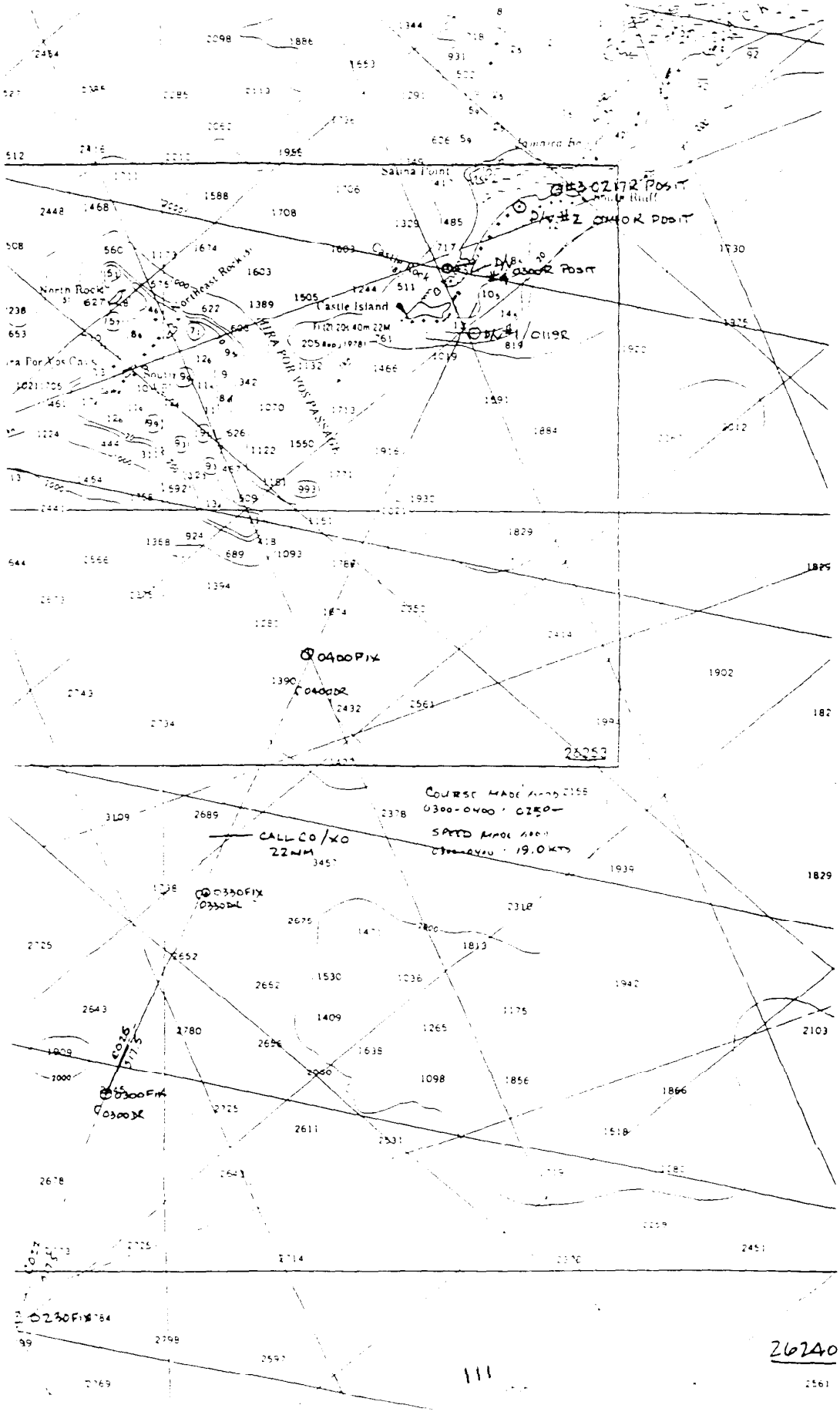
(6) Team was not situationally aware of the impact certain members had on team, and did not alter behavior to account for the absence of these team members.

b. This is not a causal factor, but it bears comment regarding the constant need to identify the impacts on team performance when key personnel are not present. This factor is the continued loss of personnel due to incomplete pipeline training on arrival at the unit, thereby requiring the unit to obtain the training and lose key personnel to this effort while underway. Each sailing requires a concerted effort to recognize the loss of these members, and the impact each loss has on the effectiveness of the team. This factor requires corrective action.

c. Lack of COMDAC related digitized charts was not a direct causal factor in this mishap, but its availability and resultant use could have helped prevent the mishap. The 270 MEC is equipped with an excellent command and control system. To make it fully effective for its intended purpose, digitized charts must be made available that cover the 270 MEC operational area. This is an information tool that can provide integrated data to the team to allow them to make a more informed decision. The level of this action is beyond the ability of the 270 fleet and COMDAC Support Facility. This factor requires corrective action

d. The roll and heave of the Cutter in the seaway increased the draft of the vessel. Even though the Cutter may have been in 18 feet of water (navigational draft), the increase in draft was sufficient enough to cause grounding.

4. CONTRIBUTING FACTORS. In this particular mishap key personnel in the ship control and navigation team were not present, two members of the regular R&A detail were not present, and the MPA and the CSC officer were not aboard. Fifteen (15) personnel not sailing were augmented by four (4) TAD personnel for a total of 92 on the sailing list. 270 WMEC allowance is 100. This is a fleet wide problem. This situation ensures that on each sailing, the various teams (ship control, navigation, weapons, law enforcement, boat operations, damage control, routine watches) must reform and learn each other's abilities. Training and acclimatizing are key issues in the early days of patrol. Depending on the number of personnel changes this can take up to 3-5 days before the ship is fully functional after sailing from a 30 day inport.


Salina Point
North Rock
Castle Island
Northeast Rock
Castle Rock
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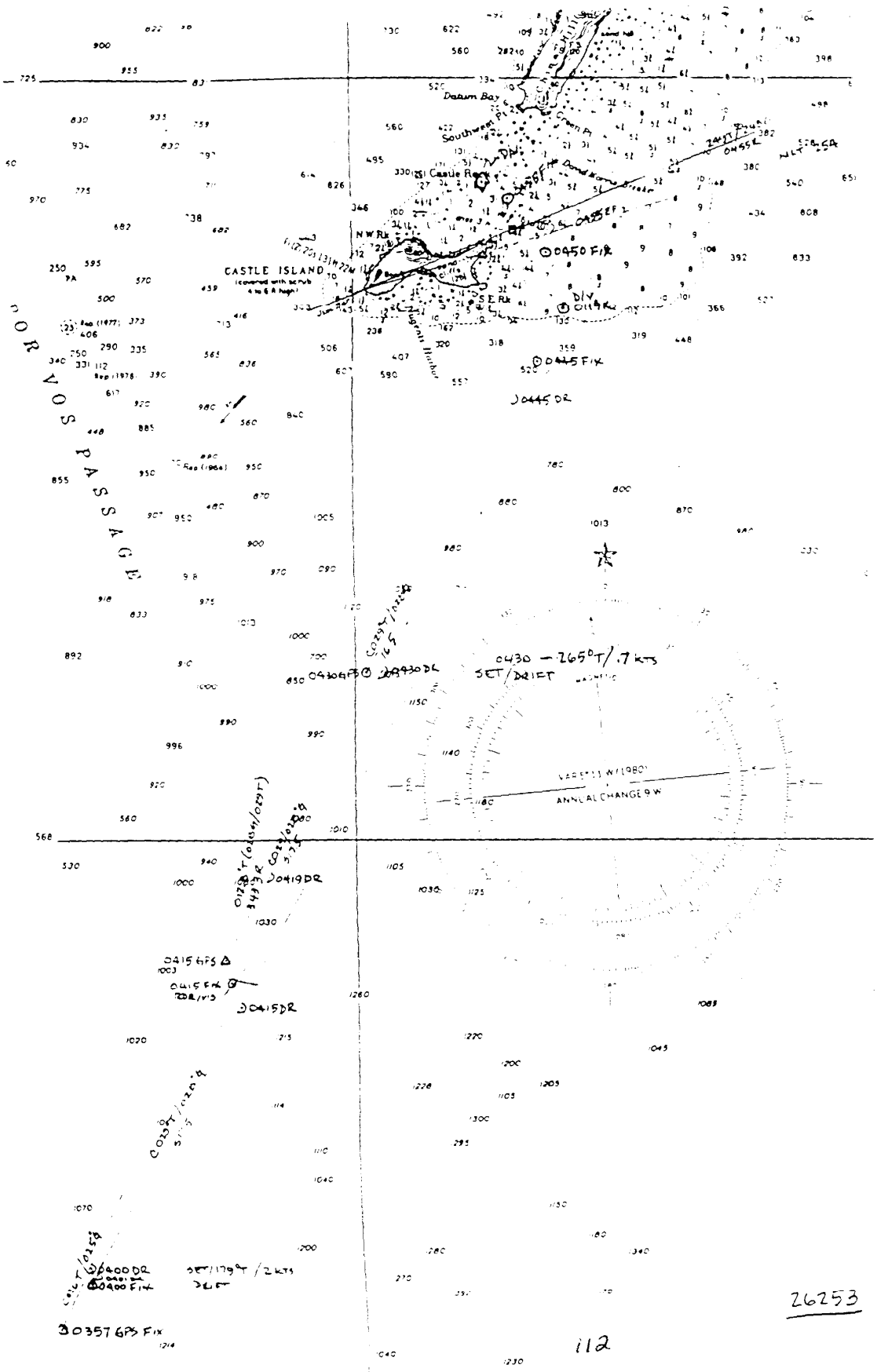
0400DR
CALL CO/XO
22NM
0330FIX
0330DR
0300FIX
0300DR
0230FIX
26240



Datum Bay
Southwest Pt
Castle Rock
N W Rk
CASTLE ISLAND
(covered with scrub 4 to 6 ft high)
S E Rk
0450 FIX
0445 FIX
0445 DR
0430 - 265°T/.7 KTS
SET/DRIFT
0430 GPS
0430 DR
VAR 5°33' W (1980)
ANNUAL CHANGE 9 W
0419 DR
0415 GPS
0415 FIX
0415 DR
0400 DR
0400 FIX
SET/179°T/2 KTS
DRIFT
0357 GPS FIX
POR VOS PASSAGE

26253

COLLISION OF WMEC

WITH CITY PIER

ON 13 JULY 1992

USCGC [redacted]

CLASS C MISHAP

[redacted] MEDIUM ENDURANCE CUTTER

[redacted]

13 JULY 1992

VESSSEL MISHAP ANALYSIS REPORT

FOR OFFICIAL USE ONLY

SPECIAL HANDLING REQUIRED IN ACCORDANCE

WITH COMDTINST M5100.47 (SERIES)

115

ENCLOSURE (5)

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U.S. Department of Transportation

United States Coast Guard

Commanding Officer
USCGC [redacted]

[redacted]

5100
2 August 1992

From: CAPT [redacted] A[redacted], USCG
To: Commandant (G-KSE)
Via: (1) Commanding Officer, USCGC [redacted]
(2) Commander, Coast Guard [redacted] Area [redacted]

Subj: VESSEL MISHAP ANALYSIS REPORT ON THE COLLISION OF USCGC [redacted] WITH [redacted] CITY PIER, [redacted] ISLAND, [redacted] 13 JUL 92

1. The subject analysis report is contained herein. This report is for official use only. Special handling is required in accordance with COMDTINST M5100.47 (series). Copies of this report have been made by the originator for USCGC [redacted], CG [redacted] Area Operations division, and Commandant (G-KSE). Any other copies of this report cannot be made without the permission of Commandant (G-KSE).

[redacted]

VESSEL MISHAP ANALYSIS REPORT

FOR OFFICIAL USE ONLY

SPECIAL HANDLING REQUIRED IN ACCORDANCE

WITH COMDTINST M5100.47 (SERIES)

SYNOPSIS

On 13 July 1992, the Coast Guard Cutter [redacted] collided with [redacted] city pier east extension supporting the [redacted] Harbor Breakwater Light 2 (LLNR [redacted]). The ship was damaged just above the main deck from frame 56 to frame 67 and the light and its platform were sheared from the extension. There were no personnel injuries.

CGC [redacted] anchored at 1132 local, 13 July 1992 in [redacted] Strait outside [redacted] Harbor, [redacted] Island [redacted], just off the [redacted] city pier. Factory visits were conducted using both small boats until early afternoon. With the RHI still underway, Special Sea Detail was set without mooring stations and the ship got underway at 1456 to conduct shiphandling practice for new conning officers alongside the city pier. Posted tides were incorrect (daylight savings time was not taken into account; the tide was actually approaching maximum high water at 1517 rather than past at 1417). Current had not been calculated (ship believed there would be an ebb flowing out of the harbor when in reality there was an almost half knot current to the south and into [redacted] Harbor). Weather was good with a 12 knot wind from 320 degrees T almost perpendicular to and onto the pier and towards the entrance to [redacted] Harbor. A portside landing was accomplished without incident as the ship was brought to all stop alongside the pier with no weigh on. No mooring lines were used. A newly reported deck watch officer (unqualified) relieved the Conn to get the ship underway under instruction of the Commanding Officer and Operations Officer, the latter being the primary coach. After discussing possible forward and astern maneuvers for departing the pier, the astern maneuver was selected. The ship was first operated full ahead with left full rudder to kick the stern away from the pier and provide an angle on the pier for backing out. With approximately a 15-20 degree angle, the rudder was shifted to right full and backed out at a 1/3 bell. Instead of backing into the wind as the maneuver strategy anticipated (with current believed to be either slack or assisting movement away from the pier), as the ship backed and moved away from the pier an unanticipated set towards the harbor entrance was encountered. In an attempt to avoid being set into the entrance and the harbor breakwater north now directly to port, the Conning Officer, under the direction of both the Commanding Officer and Operations Officer, attempted to "cast" the vessel to starboardkeeping right full rudder and shifting three to four times from high power astern to ahead. While the ship's head did swing to starboard, the stern swung to port and the ship drew parallel and towards the city pier breakwater (south) and

continued to be set to port. To prevent the stern from grounding on the south breakwater, the rudder was shifted to left full and engines ahead full to kick the stern out. This was successful. The RHI was also called alongside to port and attempted to assist pushing the bow to starboard. Although the Commanding Officer believed there was maneuvering room aft and called out for a backing bell, he was not heard from his position aft of the bridge (watching the ship's proximity to the breakwater). The ship gained headway, turned to port and struck the pier extension shearing a two foot section of pipe and [redacted] Harbor Light 2 (LLNR [redacted]), which was mounted at the end. Following impact, the momentum carried the ship clear and was subsequently anchored approximately 400 yards west of the harbor. The ship recovered the damaged structure and established a temporary structure within five hours of the incident. The damaged area of the ship was repaired by ship's force within 48 hours and [redacted] resumed patrol on 17 JULY 1992.

1. HISTORY (all times local on 13 JULY 1992)

a. 1132[redacted] - anchored in [redacted] Harbor in position [redacted] degrees [redacted]'N [redacted] degrees [redacted]'W, approximately 300 yards off the [redacted] city pier.

b. 1221[redacted] - commenced small boat operations for factory visits.

c. 1430[redacted] - set Special Sea Detail; RHI remains underway.

d. 1440[redacted] - Ensign B[redacted] assumes the Conn under instruction of LT F[redacted] (Operations Officer).

e. 1456[redacted] - underway for docking drills, Ensign B[redacted] at the Conn.

- alongside [redacted] City pier, all stopped and no way on.

f. 1505[redacted] - Ensign R[redacted] assumes the Conn.
- CO, LT F[redacted] Ensign R[redacted] discussed getting underway tactics, status of wind, tide and current.
- ship full ahead with left full rudder for short period of time.
- rudder shifted right full and back at 1/3 speed after previous maneuver achieved approximately a 15-20 degree angle on the pier.
- a few (3-4) ahead and astern thrusts with right full rudder in a "casting" process as ship swings to port and is set into the entrance of [redacted] Harbor, down onto the harbor breakwater north and then roughly parallel with the pier breakwater south.

- CO moves aft to gun tub (approximately 60 feet aft of the conning station) to get a better perspective of astern maneuvering distance.

g. 1514[redacted] (approx) - rudder shifted left full and engines ahead full.

- RHI alongside port bow and commences attempt to hold bow off pier extension. Clears ahead when the coxswain realizes ship will strike pier.

- CO, now closer to but still aft of the conning station, calls for a backing bell but is not heard.

h. 1515 - ship strikes pier extension sustaining structural damage and shearing off the pier extension with [redacted] Harbor Light No. 2 (LLNR [redacted])

i. 1530 - ship maneuvers and anchors in [redacted] Harbor in position [redacted] degrees [redacted]'N [redacted] degrees [redacted]'W, approximately 300 yards from the pier.

2. DAMAGE TO UNIT

The ship struck the pier extension with navigational aid platform portside at frame [redacted], just above the main deck (9 feet above water line) and carried back along to frame [redacted]. Stanchions in the freeing port (forward of weather bulkhead [redacted]) were first carried away along with two vent pipes and then bulkhead [redacted] was holed (approximately 3 square feet) and buckled inboard and up. The superstructure shell above the main deck was gashed back to frame [redacted] leaving approximately a four foot high opening. A gash was made in the main deck at frame [redacted], approximately ½' X 2' extending inboard.

3. OTHER DAMAGE

[redacted] Harbor Breakwater Light 2 (LLNR [redacted]) and its platform were sheared from the pier extension. The solar panel and one of two day boards were destroyed. Approximately two feet of the 20 inch diameter ½ inch thick pipe extension was carried away.

4. PERSONNEL INFORMATION

a. [redacted], Commanding Officer, [redacted], 44 years of age. Experience as OOD on three cutters (71-76) (although assigned to engineering billets). Command of a 140' WTGB (79-81), XO 378' WHEC (85-87), and command of [redacted] since 90 (2 years). Attended shiphandling school 78 and PCO/PXO course 85 and 90. With two years aboard [redacted] [redacted] was very familiar with the waters where mishap occurred. It was routine practice to visit [redacted] to collect [redacted] intelligence on the way out to patrol. The majority of the time the ship was anchored with occasional mooring at the pier (two times during the last year). Well rested prior to mishap.

b. [redacted], Executive Officer, [redacted] 39 years of age. Experience as DWO 210' WMEC (76-78), command 82' WPB (78-80), XO 180' WLB [redacted] (82-84), and XO [redacted] since 91 (one year). Especially with assignment on [redacted], extensive experience in this area. He was not on the bridge during this evolution. Well rested prior to mishap.

c. LT [redacted] F[redacted] Operations Officer/Navigator, [redacted], 30 years of age. Experience as DWO 378' WHEC (84-85), qualified as OOD 140' WTGB while assigned to OCS as instructor, OPS/Navigator [redacted] since 90, and qualified OOD since 7/90. LT F[redacted] was acting as coach at the time of the mishap. He has been the primary coach for approximately 2 years and has same experience in the [redacted] area as CO. Well rested prior to mishap.

d. LTJG [redacted] D[redacted] Officer of the Deck, [redacted], 29 years of age. Experience on board [redacted] since 3/91. Qualified as OOD 3/92. Well rested prior to mishap.

e. ENS [redacted] R[redacted], Conning Officer, [redacted], 21 years of age. Reported 6/92, break-in OOD. Served aboard [redacted] as 1/C cadet summer 91. Had 0400-0800 watch that morning.

5. VESSEL INFORMATION

[redacted] Medium Endurance Cutter [redacted]

6. METEOROLOGICAL INFORMATION (1515[redacted]).

a. Weather: wind 320 degrees T at 12 knots, visibility 10 miles, barometer 1012.0 and rising the last 3 hours, 56 degrees F DB, 55 degrees F WB, broken 7/10 cumulus, sea temp 48 degrees F, seas calm.

b. Tides: calculated approaching high water at 5.7 feet at 1517[redacted]

c. Current: calculated ebbing at approximately 0.38 knots 199 degrees T in [redacted] Strait. Flooding into harbor entrance as determined by RHI test 14 June 92.

d. Excellent natural light conditions.

7. NAVIGATION

a. Chart [redacted] Islands, [redacted] Island to [redacted] Island. No special information relevant to the mishap.

b. U.S. Coast Pilot [redacted], page [redacted] indicates 0.5 knot current in the N part of [redacted] Strait and sets N on flood and S on ebb. Refers reader to Tidal Current Tables for predictions.

c. Tides calculated and posted but in error by one hour for not taking into account day light savings time (believed maximum high tide was 1417[redacted] rather than 1517[redacted]).

d. Currents not calculated but were assumed to be slack on flooding (favorable) due to error in tide calculation.

e. No other navigational information pertinent to this mishap.

8. COMMUNICATIONS

a. Communications with [redacted] 1 (RHI) maintained during incident.

b. Communications with fishing vessel M[redacted] at 1440 prior to incident.

c. No interference from radios during incident until time 1514 when RHI was contacted to assist [redacted].

d. Stack noise interfered with CO's ability to communicate with Conning Officer and coach immediately prior to mishap from his position aft.

e. No fantail phone talker.

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9. TESTS AND RESULTS. On 14 July 1992 the ship performed a test to roughly determine the effects of current in the vicinity of the mishap from just before maximum high tide. Wind was 8-10 knots in the same direction as experienced the day before. Assuming the RHI was not affected greatly by the wind, a steady, strong current was coming with the tide towards [redacted] Harbor from [redacted] Strait before maximum high tide, as the RHI traveled a good distance in a short period of time. Shortly after and during maximum high tide the current was substantially less, however, the current was still generally in the same direction as the current before maximum high tide.

10. UNIT RESPONSE TO MISHAP. Immediately initiated Pre-Mishap Plan dated 8 April 91. Incident message and CASREP sent immediately. CO[redacted] convened his own Mishap Board consisting of the XO, CWO(ENG), and three first class cadets. The board provided a thorough analysis and brought forth all casual factors. Completed on 22 July 1992. The board evaluated the mishap using Human Error Accident Reduction Training (HEART) Manual format. Twenty-five [redacted] crew members had prior training. This provided valuable lessons learned and training for the entire crew after the incident and added immeasurably to the understanding and correction of all casual factors. Furthermore, it made the MAB's efforts much easier.

11. ANALYSIS.

(a) CONCLUSION. The collision with the pier was caused by those in control being unaware of the current conditions and, in conjunction with an unfavorable on pier wind, the effect on the maneuverability of the ship. This resulted in taking incorrect/inadequate measures to maneuver the ship (a) initially upon getting underway and (b) subsequently when the ship was not reacting as anticipated and found itself in a hazardous situation.

(b) CASUAL FACTORS.

(1) Immediate Causes.

a. Substandard Practices.

[1] Mooring lines were not used. Both Knight's Modern Seamanship and excerpts from an old Aids to Navigation Manual, CG-222, 1964 aboard the ship advise to use extreme precaution when a single screw ship is attempting to clear a pier from a portside to position while being set on. It is cautioned not to get underway without a tug or outlying anchor and should wait for favorable conditions. If the ship must get underway, they call for first working the stern out as far as possible by running a spring line from the bow to a point well inside the pier. Engines backing will allow the ship to pivot until fully perpendicular, if necessary, to get sufficient angle before moving away. The angle in the mishap maneuver was not more than 20 degrees.

[2] Ship was not adequately maneuvered either initially upon getting underway nor subsequently when the ship was clearly in a hazardous situation. Initial backing was too slow for any possibility of backing into the wind. Anchor should have been used during the initial stages when ship first began to be set towards the breakwaters.

[3] Special Sea Detail not fully set. Without the line handlers, caused by the decision not to use mooring lines, the fantail phone talker and deck supervisor were also eliminated. Hence, distance to hazards to navigation astern could not be readily relayed to Conn and caused the CO to leave the bridge and go aft to determine maneuvering room. This effectively took him away from the control of the ship and in the end would not allow the Conning Officer to hear the CO's backing order.

b. Substandard Conditions.

[1] Prevailing wind and current conditions were highly unfavorable for the maneuver selected. Both would set the ship towards the shoal waters of the pier and harbor breakwaters.

[2] Close proximity of hazards to navigation did not make this an ideal pier to use for new Conning officer training. CO made decision to come alongside the pier from the north due to knowledge of shoal water to the south. This set up the alternative of a portside moored single screw ship getting underway with on setting weather, the most unfavorable condition.

(2) Basic Causes.

a. Personal Factors

[1] A sense of familiarity existed concerning shiphandling training and this harbor area in particular causing a lack of preplanning and vigilance. The [redacted] had just completed REFTRA [redacted]. Numerous shiphandling opportunities were experienced by most [redacted] OOD's. An entire afternoon was devoted to approaches and mooring to a pier in [redacted] Their recent past shiphandling experiences influenced attitudes and thinking about the evolution in [redacted] Point, specifically the possibility of a current running was ignored. The ship routinely stops in this area [redacted] but usually only anchors. The last time moored was April 91 and no recent shiphandling training has been conducted using this pier. The CO made a last minute decision to use the afternoon as a shiphandling training opportunity without any preparation time.

[2] The Conning Officer lacked the knowledge and skill to handle this situation as evidenced by him eventually just passing on orders without an understanding of what was happening and what should be done.

[3] The Operations Officer (coach) lacked the complete knowledge of the conditions (tides and currents) and skill to handle this situation. The ship's angle was too shallow, the initial backing was too slow to drive the ship clear and the final maneuver allowed the ship to pivot into the pier. The pier extension was forward of the ship's pivot point and the ship was being set to port simultaneously during the left full rudder/ahead full maneuver.

[4] The Commanding Officer lacked an appreciation and complete knowledge of the situation. He was not aware of and did not fully appreciate the factors that would set the ship into danger. He chose not to use mooring lines. As the situation unfolded and the ship began standing into danger, he decided not to drop the anchor early on and never recognized the need to have the Conning Officer relieved (by himself or the Operations Officer).

b. Job Factors

[1] Tides posted incorrectly and currents not determined. The posted tides indicated approximately one hour after maximum high tide and with calculated currents not available, the ship was lead to believe the current would be either negligible or ebbing out of the harbor to counter the wind. In reality, the 199 degrees T 0.38 knot current in conjunction with the wind would set the ship smartly to port into the mouth of [redacted] Harbor.

[2] There was no independent check of the tide calculations. Junior QM's are responsible for calculating and posting tides, but the senior navigation staff have not been checking the calculations.

c. Control.

[1] The required standard navigation brief for entering port was not held in accordance with COMDTINST 3530.2 (series) and the specific outline (checklist). [redacted] INST 3530.1 is the command navigation standard and it also requires a navigation brief and has a restricted waters transit planning checklist. Both instructions call for computing, graphing and posting currents as well as tides.

[2] Positive control over the Conn was not exercised. Without a complete understanding of the conditions and the seriousness of the situation [redacted] was facing, both the CO and Operations Officer erroneously chose to continue the training evolution although it had quickly overwhelmed the Conning Officer.

12. RECOMMENDATIONS

(a) [redacted] should reemphasize that all training evolutions are inherently hazardous and an important part of any training evolution is doing things "by the book." This includes using mooring lines in alongside pier evolutions and proper setting of Special Sea Detail (maximum state of readiness).

(b) [redacted] should provide adequate preparation time for all training evolutions. Planning should include heightening the awareness of potentially dangerous evolutions for all participants. "What-if" strategy sessions should be held with all perspective conning officers and coaches prior to restricted water and close in shiphandling evolutions.

(c) [redacted] should insure that navigation briefs are held in accordance with their published requirements.

(d) [redacted] should put procedures in place to independently check tide and current calculations prior to posting.

(e) [redacted] should specifically conduct training in getting underway from a portside moor using the backing maneuver with a bow line lead across the pier. This should be made standard operating procedure for getting underway in unfavorable wind and current conditions from a portside to position.

(f) HEART training should be made available to as many high risk Coast Guard units as possible.

(g) In instances where the Mishap Analysis Board can not be held immediately, the unit should complete their own board in the interim.

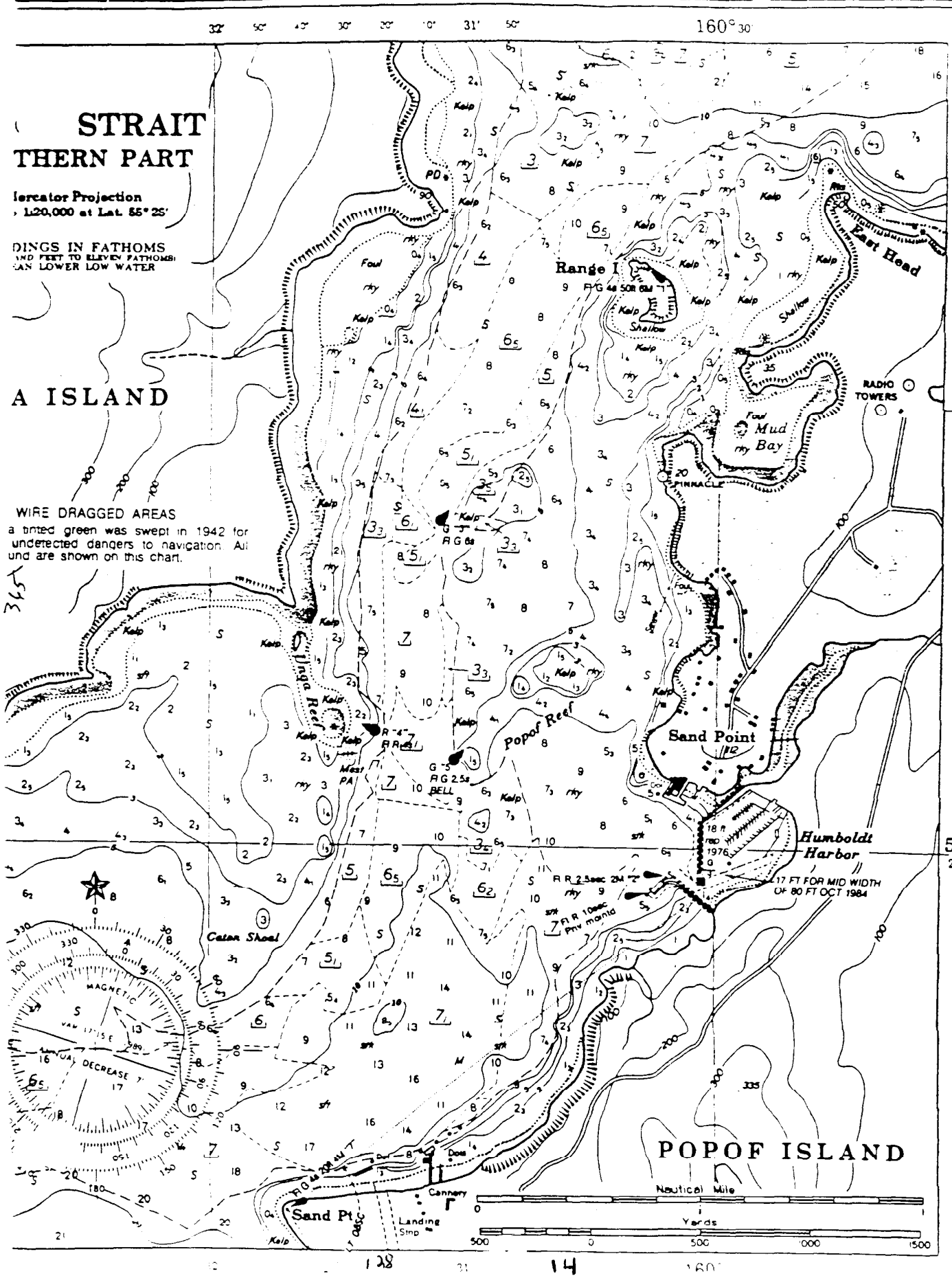
(h) The lessons learned from this mishap should be made available to the fleet. It should be used for training at the PCO/PXO course.

13. INVESTIGATION AND REPORT PREPARATION WORK HOURS

(a) Investigation: 10 hours

(b) Preparation: 50 hours

[redacted]


STRAIT
THERN PART
lercator Projection
1:20,000 at Lat. 55° 25'
DINGS IN FATHOMS
ND FEET TO ELEVEN FATHOMS
AN LOWER LOW WATER
A ISLAND
WIRE DRAGGED AREAS
a tinted green was swept in 1942 for
undetected dangers to navigation. All
und are shown on this chart.
Range I
East Head
RADIO TOWERS
Mud Bay
PINNACLE
Unga Reef
Popof Reef
Sand Point
Humboldt Harbor
17 FT FOR MID WIDTH
OF 80 FT OCT 1984
Caton Shoal
POPOF ISLAND
Sand Pt
Cannery
Landing
Nautical Mile
Yards
160° 30'
55° 20'

POSSIBLE LOSS OF 2 LIVES

IN WINDWARD PASSAGE

DURING MIGRANT INTERDICTION

EVOLUTION BY WMEC ON

28 JANUARY 1990

US Department of Transportation
United States Coast Guard

Commander
Seventh Coast Guard District

Brickell Plaza
Federal Building
909 S.E. 1st Ave
Miami, Florida 33131
Staff Symbol: (dl)
(305) 536-5653
(FTS) 350-5610

5830/AI33-90
APR 30 1990

INVESTIGATION INTO THE POSSIBLE LOSS OF LIFE OF TWO HAITIANS IN THE WINDWARD PASSAGE ON 28 JANUARY 1990 DURING A COAST GUARD ECONOMIC MIGRANT INTERDICTION EVOLUTION BY USCGC 270 (WMEC 270)

ACTION OF THE CONVENING AUTHORITY

USCGC 270 (WMEC 270), on patrol in the Mira Por Vos Passage southwest of Acklins Island on 28 January 1990, sighted an unnamed, twenty-five to thirty foot, single-masted sail vessel. Approximately fifteen people were initially visible on the decks of the vessel; it was later determined that there were fifty people aboard. After determining that the people were economic migrants bound for the United States, 270 personnel started to transfer the migrants to the cutter. During the transfer, the sail vessel capsized, throwing thirty-nine people, including the four members of the boarding team, into the water. Two people, Pajo Lazard, age twenty-five years, and Cerius Alcee, age thirty-five years, both from Cap Haitien, Haiti, were lost and are presumed drowned. All remaining people were recovered from the water.

This investigation was appointed in contemplation of litigation and to assist attorneys acting on behalf of the Chief Counsel, and representing the United States on this matter.

The findings of fact, opinions and recommendations contained in the report of the informal board of investigation are approved, subject to the following comments.

First, the ultimate rescue of forty-eight people can be attributed to the many things that were done correctly. The commanding officer and crew of USCGC 270 recognized and prepared for the contingency of a large number of people in the water. The combination of rescue and assistance and boarding bills reflected a considered and flexible response to the mission. The use of both small boats and decision to stand close by the sail vessel with the cutter reflected a good understanding of the risk involved in an interdiction evolution and was key to the rescue as executed. The care given to the survivors of the capsized vessel and the concern shown by the crew of the 270 was noteworthy and commendable. The efforts of three individuals are specifically noted; LTJG , FA , and CWO2 each exhibited dedication and bravery beyond the normal call of duty.

Unfortunately, other aspects of this incident are troubling.

Two acts that needlessly endangered 270 crewmembers were the attempt to break through the capsized hull with an ax and the placing of a recreational diver in the water to inspect 270's shafts. Though both acts reflect dedication and bravery on the part of the crewmembers involved, the detached supervision required of a commanding officer during a high stress event should have precluded each.

APR 3 0 1990

INVESTIGATION INTO THE POSSIBLE LOSS OF LIFE OF TWO HAITIANS IN THE WINDWARD PASSAGE ON 28 JANUARY 1990 DURING A COAST GUARD ECONOMIC MIGRANT INTERDICTION EVOLUTION BY USCGC 270' (WMEC 270)

The decision to leave LTJG and CWO2 in the water astride the overturned sail vessel led to an additional error; 270 ultimately allowed the sail vessel to become wedged near her shafts. At some point before the sail vessel lodged under 270 s counter, the shafts should have been engaged and 270 should have maneuvered appropriately.

The most troubling error was the failure of the 270 to search more thoroughly for persons known to be missing in the water at a known datum. Without permission of the operational commander, 270 terminated the search and steamed away from the area an hour before sunset, never using the helicopter available on her deck as a search resource. The moment people are in the water, a SAR case must be initiated and cannot be suspended by the on scene commander.

Finally, the videotapes of the incident show confusion, shouting and apparent disorganization during the rescue effort. Many crewmembers were standing at the rail, making no apparent contribution. Personnel not directly engaged in cutter evolutions should be mustered, under the control of an officer or chief petty officer, in a location where they are not in the way, but are readily available for assignment as needed.

The following are general comments applicable to future operations.

At the time a cutter arrives on scene with an overloaded migrant vessel, all hands must regard the situation as a rescue mission, regardless of weather or sea conditions. It is not unusual for a typical migrant vessel to contain three to four people for every foot of its length. Experience has taught us that the arrival of a cutter almost invariably causes rapid deterioration of the conditions aboard the migrant vessel. People who were below deck come topside to see the cutter; their shifting weight raises the vessel's center of gravity. The prospect of imminent rescue encourages an abandonment of bailing efforts. Sails are often struck. The combination of actions may leave the vessel wallowing in the trough with a raised center of gravity and a greatly increased free surface effect below decks. We must not be surprised when such vessels capsize.

When a cutter is alongside an overloaded vessel in high seas and winds, the initial analysis must be whether, under the existing conditions, we would sail away, leaving them as found. If we would not, we must save them first, and ask questions later. Law enforcement and migrant interdiction considerations can be pursued after the people are safe. The urgent nature of the situation must be recognized when we are confronted with vessels under these conditions. We must not fail to recognize and promptly respond to the danger before us.

[illegible], AI33-90
APR 30 1990

INVESTIGATION INTO THE POSSIBLE LOSS OF LIFE OF TWO HAITIANS IN THE WINDWARD PASSAGE ON 28 JANUARY 1990 DURING A COAST GUARD ECONOMIC MIGRANT INTERDICTION EVOLUTION BY USCGC 270 (WMEC 270)

Once we know or suspect that people are lost at sea, we must commence standard search efforts, using all available resources, including an embarked helicopter, all small boats, extra lookouts, and so forth. A distress must be declared via message and voice communications. SAR SITREPs should be initiated. No cutter should leave the scene of a person missing in the water without the prior approval of the operational commander. Our search requirements are identical for any person feared lost at sea; they are established by Coast Guard regulations and custom of the sea.

Migrant boats typically contain inherent hazards; they are often in poor condition, overcrowded, and leaking or shipping water. Given these conditions, we must carefully evaluate whether the boarding party should remain in the small boat; there is sometimes little to be gained by adding their weight to the already endangered vessel. On other occasions, placing the boarding party on the vessel is the best available choice.

Coast Guard cutters operating in Seventh District waters must create a bill adapted to migrant interdiction. The bill must provide for the varied scenarios likely during an interdiction evolution. In particular, cutter personnel must be prepared to recover a large number of people from the water.

Commanding Officer, USCGC 270, is directed to review the performance of LTJG , FA , and CWO2 and, in his discretion, to recommend appropriate awards.

Chief, Seventh District Operations Division, shall revise existing operations plans concerning economic migrant interdiction by 1 August 1990. The revised plans will contain guidance for setting an appropriate bill for migrant interdiction, with a specific consideration of the potential for large numbers of people in the water. The plan will contain guidance concerning appropriate security measures onboard cutters receiving migrants.

Chief, Seventh District Operations Division, shall create a mechanism to publish and promulgate a lessons learned summary that presents the cases where Coast Guard cutters have experienced the capsize of migrant vessels. I recommend that Commander, Atlantic Area, include a discussion of AMIO operations at Area commanding officers' conferences.

I recommend that Commander, Atlantic Area, direct all high and medium endurance cutters to develop an AMIO bill prior to their next deployment to Seventh District waters.

APR [illegible] 1990

INVESTIGATION INTO THE POSSIBLE LOSS OF LIFE OF TWO HAITIANS IN THE WINDWARD PASSAGE ON 28 JANUARY 1990 DURING A COAST GUARD ECONOMIC MIGRANT INTERDICTION EVOLUTION BY USCGC 270 (WMEC 270)

I view the recommendation for persons fluent in French as a desirable option that should be pursued to the extent of identifying French speakers and assigning them to ships when available.

This investigation is forwarded to Commander, Atlantic Area for action.

MARTIN H. DANIELL

Encl: (39) Operations Center case file

Copy: CGC (w/encl)
CDR STUMPFF (w/o encl)
Chief, Operations Division
Superintendent (cn-3)

MAILING ADDRESS:

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Commander
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5102
28 Mar 1990

From: CAPT USCG
To: Commandant (G-KSE)
Via: (1) Commanding Officer, USCGC (WMEC)
(2) Commander, Coast Guard Maintenance & Logistics Command, Atlantic (ksp)
(3) Commander, Coast Guard Atlantic Area (Aop)

Subj: **FORWARDING OF CLASS A MARINE MISHAP ANALYSIS BOARD**

Ref: (a) Your msg 232039Z FEB 90

1. Reference (a) assigned me a Class A Marine Mishap Analysis Board to investigate the circumstances surrounding the interdiction of a 30 foot wooden sailboat by USCGC on 28 January 1990, during which the sailboat capsized resulting in two Haitians presumed drowned.

2. Enclosure (1) is the report of my findings in this matter.

Encl: (1) Results of Class A Marine Mishap Analysis Board

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1. Synopsis.

CC intercepted a 25-30 foot sailboat about 20 miles west of Castle Island, BF, between 0900 and 1000 on 28 January 1990. Fifteen people were seen on deck. The vessel appeared to be a nondescript sailboat typical of those which transport Haitian migrants to the US. contacted CGC VALIANT, the AMIO cutter, and talked to the INS agent who recommended waiting for him to be heloed to prior to boarding the sailboat. The agent and his interpreter were aboard approximately 3 hours later. The agent noted he had seen about 50 people on the sailboat when he over flew it. After a planning session sent a boarding party including the INS personnel to investigate the sailboat and its crew. The boat was determined to be Haitian and the passengers illegal aliens. Removal of the crew to the by small boat was started. During this evolution the Haitian boat capsized. 48 Haitians, the INS agent, and the CG boarding party were recovered by . Two Haitians were unaccounted for and are believed to have drowned. The primary cause of this accident was the overloading of an unseaworthy sailboat. No safety policies were violated. However, some actions could have increased the possibility that all the Haitians could be saved.

2. History.

was underway in the SE Bahamas on 28 January 1990 under the operational control of CCGD7 on law enforcement patrol. was en route to Puerta Plata, DR, for a scheduled port call. About 0930 lookout sighted a 25-30 foot sloop rigged sailboat. The wooden boat was heavily laden and making slow but steady progress in moderate seas. Approximately 15 people were visible on deck. Believing he had an alien interdiction situation, CDR , CO, , contacted INS agent Michael who was aboard The decision was made to helo and his interpreter, Mr Greg , to before approaching the sailboat. Twice during the wait for the INS personnel, the sailboat approached . Both times turned away from the sailboat. and landed aboard about 1245. After a planning meeting, RHI and MSB were lowered by 1310 with a boarding party including and . The boarding team was aboard the sailboat at 1350. At 1400 commenced transferring passangers from the sailboat. The sailboat capsized at 1432 in approximate position 22-04N, 74-42W. The crew retrieved people in the water including the boarding party. THETIS had been positioned up wind of the sailboat to provide a lee. It drifted down on the overturned boat while rescue efforts were in progress. The sailboat fetched up along the starboard side of eventually working her way aft under the turn of the hull and fouling in the propellers. A cursory search for survivors lasting about 45 minutes was made upwind by the RHI. After about a half an hour the sailboat cleared itself and was

History [cont'd] towed away from by the RHI. The elapsed time from the capsizing until departed the scene en route Haiti was about two hours. Almost immediately following their recovery, several Haitians expressed concern over the fate of two members of their group. Formal interviews conducted much later confirmed that two Haitians were lost at sea as a result of the capsizing.

3. Personnel injuries.

There were no significant injuries reported by Coastguardsmen. Two Haitians, Pajo Lazard [male, age about 25] and Cerius Alcee [male, age about 35] are believed to have drowned in this incident.

4. Damage.

suffered no damage although a lifering and its line became tangled in the port screw which limited the ship to one shaft operation until it was removed. The Haitian sailboat was a total loss and had to be abandoned at sea. The cost of the sailboat is unknown.

5. Personnal Information.

Statements from the key witnesses include member's qualifications, experience, physical condition, etc. It is significant to note that neither the CO nor any of the department heads had been involved in interdiction efforts. Only the Executive Officer, LCDR was a veteran of interdiction operations.

6. Unit Information.

is a 270 foot cutter that was commissioned on 30 June 1989. This incident occurred during second operational patrol.

7. Meteorological Information.

Winds were from the E-ESE at 11-23 knots. Visibility was 8-9 miles. Waves were from the E at 3-5 feet. Seas were from the E at 4-7 feet. Air and sea temperature was 80 degrees F. Cloud cover was about 50 per cent.

NOTE: These data were extracted from the unit log. Log entries were found to be woefully lacking in quality and quantity of entries. Therefore there is serious doubts as to the accuracy of these data. However, after reviewing the videos and the statements, I believe the conditions were generally as recorded.

8. Analysis.

was to relieve as AMIO cutter on 1 February 1990. Very few if anyone on board besides the Executive Officer had ever participated in migrant interdiction operations. Therefore, prior to sailing had an INS agent come to Key West and brief them on AMIO. In addition the XO reviewed with the crew the incident involving the CGC 378" and a capsized Haitian sailboat that took place several years ago. Only three days prior to this incident the ship had conducted an R&A drill with the scenerio of multiple survivors in the water which was remarkably similar to the actual capsizing.

The CO had prepared a pre interdiction plan.

The unnamed sailboat left Port de Paix, Haiti, on 25 January 1990 and had traveled roughly 150 nm prior to being intercepted by From the videos and photographs, it appears to be a classic Haitian sailboat bringing illegal aliens to the U.S. This vessel would be considered crowded with 15 people on board. With 50 or more it was clearly overloaded. The English speaking master claimed to have been to the U.S. on several occasions and knew how to get there although he had no navigational gear on board. It is noted that he was headed in the correct general direction. Although wind and sea conditions were not favorable, they were well within the operating parameters of small boats. As can be expected the MSB was far more difficult to handle alongside the sailboat then the RHIB. Thus, rather than place the Haitians in the MSB as planned, they were first put into the RHIB and transferred to the MSB for transport to

PFDs were provided only to the people who were going to be loaded into the small boat. This gave clear indication of who would be loaded next, but it caused a hassle concerning who would get the PFDs. There is no SOP relating to PFDs and aliens.

intercepted the sailboat shortly after 0900. There was little doubt they had a probable interdiction case. The sailboat appeared to be in no immediate danger. Agent recommended that boarding activities be delayed until he and Mr could be airlifted aboard has about 2 years experience with AMIO. boarded the sailboat with the boarding party and stayed on board until it capsized. went with the boarding party but he never boarded the sailboat. He returned with the first boat load of aliens and stayed aboard

The boarding officer, LTJG was aware that the boat was taking on water. He relayed this information to the CO but did not stress any urgency to the situation. also relayed that the master stated he had sailed with 56 Haitians on board.

Analysis [cont'd] When changed course to receive the helicopter, the sailboat matched the course change. About this time the tiller was disabled and the main sail was lowered. People began coming up from below decks reducing the stability of the sailboat by raising the center of gravity. This also increased the free surface effect as they were no longer acting as human baffles. was positioned upwind of the sailboat with wind on her port beam to provide a lee. Her large sail area eventually caused her to drift down onto the capsized sailboat, debris, and people in the water. With main engines declutched and unable to maneuver, THETIS was forced to allow the sailboat to drift aft and become entangled temporarily in the propellers.

As the sailboat worked along , tried to chop through the hull with an axe to determine if anyone was trapped inside, but had to give up as the sailboat drifted under the stern of the

The small boat made a cursory search up wind for any Haitians that may have been in the water after it towed the sailboat away from the . There was no apparent attempt to establish datum, compute wind drift, create a search plan for the small boat, etc. got underway for Port au Prince at 1638. This was one hour prior to sunset.

9. <u>Conclusions</u>. It is a difficult and unpleasant task to try and analyze/second guess/Monday morning quarterback from a comfortable office an operation that required rapid reactions in very difficult conditions. However, because of my hands on experience with the Haitian migration problem [4 1/2 years at groups Miami and Key West and 2 years as CO,], I believe I understand what the crew of was going through on 28 Jan 1990. None of the alternate courses of action I suggest would guarantee that the two Haitians would not have been lost, only that the probability of saving their lives would have been increased.

crew was very inexperienced in AMIO. They conducted a great deal of training prior to the incident which proved to be very helpful.

After sighting the sailboat, delayed any operations until arrival of the INS agent and his interpreter. As the sailboat was believed to have aliens aboard, a more appropriate action would have been to put both small boats in the water and investigate. A quick close up survey would have found the vessel to be manifestly unsafe. According to the CO's pre-interdiction plan, a transfer of the Haitians to would have commenced immediately. At that time the boat was riding well which should have allowed for the removal of all passangers. Even if there were no English speakers on board the sailboat, experience has shown that with pointed

Conclusions [cont'd] commands and hand signals, the Haitians know what to do and generally cooperate well.

The instability of the sailboat increased over time but most notably when it changed course to match --- helo recovery maneuver. About three hours after the initial sighting and while on this course, the rudder broke. Next the sail was lowered, further reducing the stability.

The boarding team either did not recognize or did not communicate the severity of the condition of the sailboat when they went aboard.

Because PFD issuance was used as a sorting as well as a safety tool, all the Haitians were not given PFD's. The passing out of PFD's created some hassles as people fought for them. The overcrowded conditions made it impossible to put everyone in PFD's. It is often more expeditious to simply move quickly through the transfer process than to waste precious time trying to manage PFD distribution and donning.

CO, , pre-interdiction plan was flawed in regards to the use of the INS interpreter. After initial interrogation the plan calls for the interpreter to return to which he did. Meanwhile Haitians on the sailboat were aggravating the stability problem by moving out of the hold, arguing over PFD's, and generally acting restlessly. The Haitian captain who could speak some English could not control the situation. After waiting three critical hours for the interpreter, he should have been used where he would have been most effective: on the sailboat.

was purposely postioned perpendicular to the wind to provide a lee for the sailboat. It provided an excellent lee, but drifted down on the capsized boat requiring the engines to be declutched. This rendered the ship helpless as the sailboat drifted into the ship's propellers. Positioning the ship 45 degrees off the wind would have probably reduced the lee somewhat, but would have allowed the ship to remain under command and to maneuver after the capsizing. People in the water, debris, and the sailboat could have been kept forward, away from the propellers.

An order was given to launch a liferaft shortly after the sailboat capsized. This order was countermanded prior to exection. Later there was concern that the small boats were becoming overloaded. A liferaft would have provided an excellent place to put several Haitians and reduce the overloading problems.

LTJG effort to chop through the sailboat hull was gallant but futile and almost cost him his life. The command should have stopped this prior to him getting into extremis.

Conclusions [cont'd] The attempt to use swimmers to check the propellers was logical and sound. It was a wise decision to stop the operation when the swimmers were concerned about the sea conditions.

The master reported 56 people aboard the sailboat during the boarding. (Extensive interviews later revealed that most likely there were 50 Haitians aboard the sailboat.) The survivors only numbered 48. Knowing this only a cursory search was made upwind by the small boat. left the scene only two hours after the accident and one hour before sunset. Even though this was most likely a body search, Coast Guard tradition is that we give a search our best effort despite extremely low odds of success. There are three possibilities as to what happened to the two missing people. First and most likely, the two drowned shortly after the boat capsized and sank immediately. CWO statement that he had to shake people off his leg to save his own life make this a distinct possiblity. Second, the two may have been trapped in the vessel. Although the XO got a good look into the vessel he noted that people could be trapped forward. Third, the two may have drifted under or forward/ aft of . This seems unlikely but with everyone concentrating on the boat, it would not be impossible.

The primary cause of this incident was that the Haitian vessel was extremely overloaded and could not survive the unfavorable sea and wind conditions.

9. Related Actions.

I question several aspects of survivor care. The first load of survivors were given showers while fully clothed. This provided limited cleansing and made the Haitians very uncomfortable. Because of the windy conditions each Haitian was then wrapped in a thermal blanket. As the Haitians were not going to be taken inside the ship, I find the showers to be unnecessary.

Guarding the survivors with a shotgun was totally unnecessary. No one would try to shoot a Haitian on deck with a shotgun. In addition to being unsafe, it presents a terrible image. Guards with standard equipped L/E belts are all that is needed. For further backup fire hoses can be laid out and charged when appropriate.

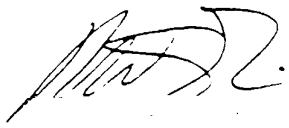
Survivors were required to lay face down on the deck with a PFD as a pillow. It would have been far more compassionate to allow them to sit together in a section of the flight deck when they were physically able.

Related Actions [cont'd] A phone talker was wearing dark blue shorts with his uniform. This is an unsafe practice. While working aboard ship, long trou should be required.

10. Final Comments.

I have questioned several decisions and practices that occurred during this incident. However, no one can question the effort of the crew of during incident. They responded quickly and professionally. Some even risked their lives in an effort to save the lives of others.

Hopefully this incident and my comments will be used by others who may be confronted with similar situations. This can only happen if this information is disseminated. I suggest such forums as PCO/PXO, and MLE schools would be appropriate.



U.S. Department of Transportation
United States Coast Guard

USCGC (WMEC)

16245.1C
12 APR 90

(WMEC) INSTRUCTION 16245.1C

Subj: PRISONER/MIGRANT/SURVIVOR WATCH STANDING AND EMBARKATION PROCEDURES

1. Purpose. This instruction sets forth assignments and procedures for prisoner/migrant/survivor watch standing and embarkation.

2. Directives Affected. INST 16245.1B dated 21 SEP 1988 is canceled.

3. Responsibility. The executive officer is responsible for maintaining this instruction.

4. Personnel Duties and Assignments.

a. The executive officer shall act as overall supervisor for the handling and care of prisoners/migrants/survivors.

b. The Weapons Officer shall:

(1) Act as senior watch officer and assist the executive officer with the handling and care of prisoners/migrants/survivors.

(2) Promulgate, with the assistance of the leading gunner's mate, a watch schedule for guard duty. The Emergency Response Team will consist of all off-duty guards. Guards will consist of FT's, GM's, GN's and SK's. All guards will endeavor to qualify in the 9mm pistol. Those guards who do not qualify in the 9mm will wear a night stick or expandable baton when appropriate.

c. The 1st LT shall:

(1) Prepare with the assistance of the chief master at arms (CMAA) an area suitable for the prisoners/migrants/survivors to be maintained on board. This will normally be the flight deck or the fantail. The area must be policed prior to the arrival of the prisoners/migrants/survivors for any items that could be used as weapons. These items, along with loose gear and other unnecessary items, will be removed from the area.

(2) Ensure the following water tight doors and hatches are physically secured on the inside of the indicated compartment.

(a) When prisoners/migrants/survivors are located on the flightdeck.

ENCLOSURE (2)

including an embarked helicopter, all small boats, extra lookouts, and so forth. A distress must be declared via message and voice communications. SAR SITREPs should be initiated. No cutter should leave the scene of a person missing in the water without the prior approval of the operational commander. Our search requirements are identical for any person feared lost at sea; they are established by Coast Guard regulations and custom of the sea.

Migrant boats typically contain inherent hazards; they are often in poor condition, overcrowded, and leaking or shipping water. Given these conditions, we must carefully evaluate whether the boarding party should remain in the small boat; there is sometimes little to be gained by adding their weight to the already endangered vessel. On other occasions, placing the boarding party on the vessel is the best available choice.

Coast Guard cutters operating in Seventh District waters must create a bill adapted to migrant interdiction. The bill must provide for the varied scenarios likely during an interdiction evolution. In particular, cutter personnel must be prepared to recover a large number of people from the water....

Subj: PRISONER/MIGRANT/SURVIVOR WATCH STANDING AND EMBARKATION PROCEDURES

4.c.(2)(a) 1. QAWTD 01-103-4 / 01-99-2-L To DECON Locker portside

2. QAWTD 01-103-5 / 01-95-1-Q To MSB Hydraulic Machinery Room.

3. WEATD 02-118-0 / 02-106-0-Q To ET stores

4. QAWTD 01-117-1 / 01-103-0-Q To Avionics Work Shop

(b) When prisoners/migrants/survivors are located on the fantail.

1. QAWTD 1-214-1 / 1-186-01-L To Aft Vestibule

2. RQAWTS and RWTH 1-244-1 / 3-228-0-E To After Steering

3. RQAWTS and RWTH 1-216-2 / 2-207-0-L To passage outside Repair III

(3) Ensure that the special wrenches used to open the flightdeck emergency escape scuttles and mess deck hatch (FQAWTH 01-163-1, FQAWTS 01-125-1, FQAWTS 01-163-1, FQAWTS 01-175-2 and FQAWTS 01-197-2) are secured in compartments 01-95-1Q, 01-103-1-Q and 01-95-2-L for easy access in the event of an emergency.

(4) Ensure the starboard boat deck and the port exterior passageway are roped off at the hangar.

(5) If the flightdeck is the designated control area, ensure the hangar is prepared for extension to provide shelter (e.g., remove gear secured to hangar which will prevent it from being extended).

(6) After disembarkation, swab down and disinfect all control area weather decks, if necessary.

d. The CMAA shall:

(1) Ensure blankets are provided. These blankets must be cleaned after each use.

(2) Ensure adequate sanitation facilities are provided including cleaning and stowage after use (normally a metal garbage can with plastic bag inside).

(3) Ensure feeding and interview tables, water jugs and personal flotation devices are available.

SUBJ: PRISONER/MIGRANT/SURVIVOR WATCH STANDING AND EMBARKATION PROCEDURES

4.d. (4) After disembarkation, ensure all blankets, pads, water jugs and PFD's are collected. Blankets and pads will be placed in plastic bags marked "SOILED", PFD's will be aired on lifelines on the fantail then secured and water jugs will be cleaned.

e. The Corpsman shall:

(1) Act as health and safety advisor.

(2) Provide health inspection and necessary medical care.

f. The Food Services Officer shall:

(1) Provide meals at regular times, usually 1000 and 1800 for illegal migrants.

(2) Ensure disposable cups, plates and utensils are available.

g. The leading Gunner's Mate shall:

(1) Assist the Weapons Officer to develop the guard watch list.

(2) Ensure necessary law enforcement equipment is available to qualified personnel.

(3) In the event of a security alert, issue weapons to qualified personnel of the Emergency Response Team.

h. The supply officer shall coordinate the receipt of prisoners/migrants/survivors; inventory belongings; provide safe stowage for valuables and provide receipts for items taken into temporary custody. Note: Migrant belongings will not be inventoried, instead, just put into large plastic bags and secured.

i. The Officer of the Deck shall:

(1) Ensure a VHF-FM radio is made available to the guards.

(2) Advise the weapons officer if additional guards are needed.

(3) Make frequent checks of the exterior passageways. Have watch standers do the same.

(4) Use the SONAR alarm as a means of initiating a security alert. Ensure the SONAR alarm is tested at 1200 local time when prisoners/migrants/survivors are on board.

Subj: PRISONER/MIGRANT/SURVIVOR WATCH STANDING AND EMBARKATION PROCEDURES

4.i.(4) (a) Be prepared to issue orders to the Emergency Response Team.

(b) Be prepared to issue orders to the firehose teams.

(c) Be aware that M-16 rifles and ammunition are available on the bridge underway for use by qualified personnel.

j. The Engineering Officer shall:

(1) Ensure fire hoses are faked out and ready at fire stations FS-01-130-2 and FS-01-130-1.

(2) Assign personnel responding to man these fire hoses and the fire hose at fire station FS-1-195-1 upon sounding the SONAR alarm. These personnel will be instructed in the use of fire hoses as crowd control and must be aware of Commandant's Use of Force Policy.

(3) When the control area has been designated to be the flight deck, and more than 30 prisoners/migrants/survivors are expected, ensure the hangar is fully extended.

k. Upon the sounding of the SONAR alarm the Emergency Response Team shall:

(1) Report to the Ordnance Workshop to be issued weapons and law enforcement gear.

(2) Report to the bridge for further instructions.

5. Embarkation Procedures.

a. The deck department will raise, lower, crew and coxswain the ship's small boats to transfer migrants/prisoners/survivors.

(1) Prisoners/migrants/survivors who cannot disembark using the port boat deck will be transferred and raised using the MSB.

(2) The small boats will carry up to twelve PFD's for those being transferred. Each person in the boat shall have a PFD on and be seated.

b. Guards will perform a pat down search on each prisoner/migrant/survivor for weapons. Personal baggage will be searched for food items and weapons. The baggage will then be placed in a safe location not available to the prisoners/migrants/survivors.

Subj: PRISONER/MIGRANT/SURVIVOR WATCH STANDING AND EMBARKATION PROCEDURES

5. c. Prisoners/migrants/survivors shall have a blanket to lay on and a blanket to use as a cover when possible. Meals will be served with fresh disposable plates and flatware.

d. Prisoners will be leg cuffed, with handcuffs available for further restraint. Migrants/survivors will not be cuffed unless their actions deem it necessary. Strict control of hand and leg cuffs will be ensured by the guards. Prisoners/migrants/survivors will normally use head facilities provided in the control area. Only one prisoner at a time may be uncuffed for head facility use. Guards will check with the OOD prior to dumping sewage.

e. Two guards shall be present in the control area at all times. Reliefs will only be made by qualified personnel and will be coordinated with the OOD. The Commanding Officer will determine the level of protection to be worn by the guards. Weapons may only be issued to qualified personnel. Commandant's Use of Force Policy will be adhered to at all times. Guards will make a VHF-FM radio report to the OOD every 15 minutes. The BMOW will make the designated area a portion of his round and make reports to the OOD.

f. The guards must maintain absolute vigilance at all times. Three areas that must be kept off-limits to all prisoners/migrants/survivors are:

(1) The exterior passageway leading to the bridge on the port side.

(2) The starboard boat deck.

(3) The exterior ladder leading from the fantail to the flightdeck.

g. The designated area for prisoner/migrant/survivor control shall be off-limits except for official business. Examples of official business are boarding teams, boat crews, boat lowering details, boat checks, SS's, HS's personnel mentioned in this instruction in the act of carrying out their official duties. All personnel in the prisoner/migrant control area are subject to the orders of the guards with the exception of the Commanding Officer, Executive Officer, Engineering Officer, Operations Officer, Weapons Officer, and Supply Officer.

Dist: CO
XO
DEPARTMENT HEADS
WEAPONS OFFICER
CMAA
BRIDGE

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GROUNDING OF WMEC

AT CAP-HAITIEN, HAITI

ON 21 JANUARY 1989

US Department of Transportation
United States Coast Guard

Commander
Seventh Coast Guard District

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5830/BI 22-89
MAR 06 1989

INVESTIGATIO: INTO THE CIRCUMSTANCES SURROUNDING THE GROUNDING OF USCGC (WMEC) ON 21 JANUARY 1989 AT CAP-HAITIEN, HAITI (19-46-05N, 072-11-18W).

ACTION OF THE CONVENING AUTHORITY

The findings of fact, opinions and recommendations contained in the report of the informal board of investigation, are approved, subject to the following comments.

On 21 January 1989, USCGC , under the command of CDR , USCG, was underway near the island of Hispaniola conducting Haitian Migrant Interdiction Operations (HMIO) when she was directed by the Commander, Seventh Coast Guard District to proceed to Cap-Haitien, Haiti to provide assistance to the government of Haiti in searching a seized Honduran freighter, LOVELY HANNI. This transit into port was made at a speed of advance of about six knots and it was noted that numerous aids to navigation appearing on the chart were missing and that other aids, not charted, were present.

Upon mooring, at 0948, an eight member boarding party under the direction of LT , the assigned navigator, was dispatched to LOVELY HANNI to conduct the boarding. At the same time, the assistant navigator, QMC , departed in a small boat to conduct a harbor survey. QMC verified the position of each floating aid to navigation and replotted them on chart # 26147. The positions of landmarks and land based navigational references were not checked. The gyro error was determined to be zero.

The embarked HH-65 helicopter had been flown off earlier in the day before entered harbor on a sortie to Guantanamo Bay, Cuba. At about 1710, it was decided by CDR , after consultation with the aircraft commander, that 210 would get underway to recover the helicopter. This action was necessitated because the aircraft commander stated that with five passengers he was too heavy to attempt a dockside landing due to a need for a higher relative wind than was available while 210 was moored. At 1731, 210 got underway to proceed to open sea to recover the helicopter. The boarding party and the navigator were left behind to finish the boarding.

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INVESTIGATION INTO THE CIRCUMSTANCES SURROUNDING THE GROUNDING OF USCGC 210 (WMEC 210) ON 21 JANUARY 1989 AT CAP-HAITIEN, HAITI (19-46-05N, 072-11-18W).

210 departed Cap-Haitien without incident using a speed of advance of 14 knots. As sunset was at 1733, this transit was made during twilight. Upon reaching open sea, the helicopter was successfully recovered at 1756 and a refueling operation commenced. During the refueling operation, 210 headed toward Cap-Haitien. Due to the possibility of RF emission induced electrical arcing during the refueling operation, both the bridge and CIC radars were secured, although the bridge radar was energized for brief periods during the in-transit. Refueling was completed at 1811, both radars were re-energized, and the Special Sea Detail was set.

All stations reported manned and ready at 1813 and 210 proceeded to port on a course of 195, speed 15 knots. It was dark with a 30% cloud coverage, but there was a full moon which had risen at 1720. Although CIC was manned in accordance with the Ship's Organization and Regulations Manual(SORM), there was no full radar navigational team operating in CIC. Nevertheless, those personnel assigned in CIC were attempting to take radar fixes. Since the SORM does not provide for a leadsman to be on the forecastle during Special Sea Detail, no leadsman was present, nor was the leadline broken out. Although danger bearings had been plotted on the navigational chart in use, one of the danger bearing objects was obscured by a contour of land and was unusable. CIC was unable to plot any fixes until 1816, when it was determined 210 was 40 yards to the right of track. This first CIC fix was obtained approximately one minute before the grounding.

The bridge piloting team had been set and was taking fixes that showed 210 to be approximately 50 yards to the right of track. At 1817, CDR CO , who was conning the vessel, ordered 10 degrees left rudder to return to track. Before the ship could respond to the rudder command, 210 began to shudder and slow rapidly. Her head began to fall off to port rapidly. Various witnesses reported hearing scraping noises against the hull. General Quarters was immediately set and the vessel inspected for internal damage and flooding.

210 ran aground on Mardi Gras Reef in position 19-46-09N, 72-11-19W in approximately 10 feet of water. This position is approximately 150 yards to the right of the intended track.

Upon determination that the watertight integrity of the vessel had not been breached, 210 proceeded to the pier and moored without further incident at 1845.

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INVESTIGATION INTO THE CIRCUMSTANCES SURROUNDING THE GROUNDING OF USCGC 210 (WMEC 210) ON 21 JANUARY 1989 AT CAP-HAITIEN, HAITI (19-46-05N, 072-11-18W).

The proximate cause of the grounding of 210 was the negligence of the commanding officer. The decision to enter an unfamiliar foreign port at night, using charts of known unreliability, without a CIC radar navigation team or leadsman, and using the assistant navigator, in place of the readily available navigator, was negligent in and of itself. To do so while proceeding at a speed of 15 knots was grossly negligent as was the prior outbound transit at 14 knots. Had 210 been proceeding at a reasonable speed of six knots, as was the case during the morning daylight transit, it is likely that this grounding and near disaster would have been averted. The commanding officer had no reason for operating his vessel in this risky a manner. While his concern for the continued safety of the boarding party was genuine, there were numerous safer alternatives available to guarantee their safety without jeopardizing the lives of other crewmembers and the safety of his cutter.

The numerous navigational errors identified by the investigators show that 210 was subject to poor bridge organization, poor use of available resources, and poor ship control.

Travelling at 15 knots, 210 was covering 500 yards each minute. Even assuming that the plotting team could start, take, record, plot and evaluate a fix within one minute, 210 was already a quarter mile further on her path to disaster before any recommendations could be acted upon. Given the difficulty encountered in obtaining fixes, all involved (CO, XO, OOD, and assistant navigator) should have recommended slowing or stopping the vessel until a good fix and accurate recommended course could be determined.

This incident further highlights the dangers inherent in the commanding officer taking the conn of a vessel in all but the most emergent of situations. The commanding officer's primary role is to ensure that his vessel is safely navigated and that her mission is successfully, and safely, completed. The commanding officer is the final and best safety observer in any evolution. By taking the conn, the commanding officer makes this last line of defense the only line of defense.

A contributory cause of this grounding was the failure of the executive officer to advise the commanding officer of his concern over the ship's speed. In his statement, the XO comments that he was uneasy with entering port at this speed, but he never

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INVESTIGATION INTO THE CIRCUMSTANCES SURROUNDING THE GROUNDING OF USCGC 210 (WMEC 210) ON 21 JANUARY 1989 AT CAP-HAITIEN, HAITI (19-46-05N, 072-11-18W).

communicated this concern to the commanding officer. Further, although the XO was on the bridge acting as a safety observer, he either failed to recognize the impending danger or elected to make no mention of it if he did.

The officer of the deck also failed to appreciate the danger into which the ship was standing, or if she did, failed to make the commanding officer aware of her concerns. Even though the commanding officer had the conn, the officer of the deck was not relieved from responsibility for ensuring that the vessel was navigated safely.

All of the factors in this grounding point to errors in navigation and ship control that are so fundamental that evidence of the poor judgment of the commanding officer in allowing them to occur and continue uncorrected is obvious and overwhelming. Recommendation #6 is, therefore, disapproved as an inappropriate response to this situation. Disciplinary action under the UCMJ is recommended.

This investigation is forwarded to Commander, Atlantic Area for further review and disciplinary action.

MARTIN H. DANIELL
Rear Admiral, U. S. Coast Guard
Commander, Seventh Coast Guard District

GROUNDING OF WMEC

AT PORTSMOUTH, VA

ON 3 SEPTEMBER 1995

U.S. Department of Transportation
United States Coast Guard

Commander
Atlantic Area, U.S. Coast Guard

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5800
96-LO-0078
MAR 21 199

INVESTIGATION INTO THE GROUNDING OF USCGC (WMEC)
AT PORTSMOUTH, VA ON 03 SEPTEMBER 1995

FINAL ACTION OF THE CONVENING AUTHORITY

On the morning of 3 September 1995, USCGC returned to its homeport from a deployment for Refresher Training. While mooring to the south face of the south pier at Support Center Portsmouth, line four was sucked into the starboard propeller, fouling the starboard shaft and causing line four to part. As efforts to moor the ship continued, the port propeller struck the bottom in two locations along a 10-foot shoal south of the assigned berth sometime between 1100 and 1114. An underwater inspection of the vessel conducted on 5 September revealed damage to the tips of all four blades on the port propeller and some scraping and slight damage to one blade of the starboard propeller. An emergency drydocking of the cutter was ordered to replace the blades and repair other damage resulting from the mooring. I convened a one officer informal investigation to inquire into the circumstances surrounding the grounding. A very thorough investigation report was submitted by Captain on 20 November 199 . The review process to date has been far too long.

The investigating officer found that the grounding was caused by the combined effects of a poor approach to the pier, a slight off the dock wind, tentative shiphandling alongside the pier, and poor judgment in the use of line four initially, which resulted in the loss of line four and use of the starboard shaft after the line was sucked into the propeller. These factors, he suggests, resulted in loss of control of the movement of the stern. The investigation found that drydocking, services, and repairs to the ship cost approximately $125,000. One mooring line was damaged. There was no damage to the pier, other vessels, or other equipment in the vicinity.

The investigation found that the Executive Officer (XO), who was coaching a junior officer (JO) during the evolution initially, was directed to assume the conn seven minutes after line 4 parted, after the JO requested to be relieved. After assuming the conn, the XO retained it for the duration of the mooring and was conning when the ship grounded.

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INVESTIGATION INTO THE GROUNDING OF USCGC (WMEC)
AT PORTSMOUTH, VA ON 03 SEPTEMBER 199

The investigation reveals that the commanding officer did not at any point relieve the XO of the conn, though he does appear to have considered the option. In addition to shiphandling errors and the failures to assert command authority noted above, the investigation found that the command had a deficient seamanship training program. This failure was evident during the recent Refresher Training (REFTRA) period at Mayport, Florida. The Navigation and Seamanship Training Team (NSTT) was not functioning at all prior to REFTRA, but was certified at REFTRA to conduct seamanship training for the crew upon the ship's departure. The NSTT was not functioning on the morning of 3 September as attempted its first docking since departing Mayport.

Captain has erred on the side of overanalysis. I credit him with that so as to allow me as convening authority, to consider absolutely all he presents and then focus on the primary causal factors of this grounding. I find them to be as follows:

Commander displayed poor operational judgement during the mooring evolution. There were key points reached in the mooring sequence where he should have stepped in to "save" the approach. They were when #4 line parted, when the Conning Officer asked to be relieved and when the stern was obviously standing into shoal water as daymark #7 passed astern from the port quarter to the starboard quarter. I remain concerned as to why he chose NOT to step in.

Seamanship training aboard is apparently at an unsatisfactory state. Inattention over many months to a sound, PQS based training regimen can methodically bring a cutter to a point of guaranteeing poor performance. In this instance, the poorest elements of seamanship are exhibited by the bridge team in approach speed; line handling from the perspective of using lines to assist in an off the dock wind situation (mostly poor utilization of lines #1 and 2 and seeming failure to understand the functional value of breast lines and spring lines); errant direction and execution of line 4's handling which stemmed from a focus on the use of line 4 as the only way to get the stern alongside. The history of the non-existent NSTT prior to REFTRA, its minimal training at REFTRA and its continued non-use on 3 September 199 suggest a pattern of inattention to seamanship training that resulted in unsatisfactory performance during this mooring evolution. This is the exclusive responsibility of the Commanding Officer.

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INVESTIGATION INTO THE GROUNDING OF USCGC (WMEC)
AT PORTSMOUTH, VA ON 03 SEPTEMBER 199

Thirdly and lastly, I am concerned as to the investigation's opinions and recommendations about our preparation process for PCOs and PXOs.

When all is said and done here, this was a straightforward, even easy, starboard side to landing in optimum conditions, save 6-8 knots of off the dock breeze. It was botched by many in the [redacted] team. My specific decisions with respect to the investigating officer's recommendations are as follows:

Recommendation 1 is disapproved. The commanding officer will report to Commander, Atlantic Area at 1000 on 4 April 199 for a formal counseling session with the Area Commander.

Recommendation 2 is disapproved. Recommendation 3, 6, 7 and 8 together with a redacted copy of this investigation shall be forwarded to the Prospective Commanding Officers' (PCO) School, via the chain of command, so that they may act on the lessons learned from this incident, particularly as they apply to the PCO school curriculum. The same package will be forwarded to G-O as the program director.

Recommendations 4 and 5 are disapproved. The use and role of a coach will remain an individual cutter decision. However, the shiphandling coach has no authority or responsibility for the conning or safe navigation of the vessel. The authority and responsibilities of the conning officer and the commanding officer are clearly delineated in Coast Guard Regulations and navigation standards.

Recommendation 9 is disapproved. The nature of a ship's movement and the requirements to safely execute that movement should determine which ship's systems a commanding officer orders activated.

Recommendations 10 and 11 are disapproved. An aggressive and attentive log keeper following proper procedures will capture information needed for training and reconstruction of events.

Recommendation 14 is disapproved. The ship's needs for additional training, particularly in seamanship, can be adequately met through the use of limited team training tailored to address the deficiencies identified during refresher training and exhibited during this mooring evolution.

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INVESTIGATION INTO THE GROUNDING OF USCGC (WMEC)
AT PORTSMOUTH, VA ON 03 SEPTEMBER 199

Subject to the above comments, the finding of fact, opinions, and recommendations of the Investigating Officer are approved. This is a final action within the meaning and under the authority of Section 1-K-1.c. of the Coast Guard Administrative Investigations Manual (COMDTINST M5830.1).

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U.S. Department of Transportation

R te Slip

Distribution

To Name: Captain

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Remarks:

Here's a copy of the investigation. The original was mailed to A today.

I'd welcome any feedback/comments after you + your staff have reviewed it. TX in advance

___Per Your Request
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___Prepare Reply For Signature Of

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U.S. Department of Transportation
United States Coast Guard

Commandant
United States Coast Guard

Washington, D.C. 20593-0001
Staff Symbol: G-PLD
Phone: 202-267-6724

5830
20 November 199

From: CAPT USCG
To: Commander, Atlantic Area

Subj: INVESTIGATION INTO THE GROUNDING OF USCGC (WMEC) AT PORTSMOUTH, VA ON 03 SEPTEMBER 1995

Preliminary Statement

1. On 3 September 1995 USCGC (WMEC) was returning to home port in Portsmouth, VA following a month long refresher training (REFTRA) period in Mayport, FL. During the course of the mooring evolution CGC grounded on a shoal area south of the south pier at CG Support Center (SuprtCen) Portsmouth, VA. CGC FORWARD's port propeller blades were damaged and subsequently replaced during an emergency drydock period. Upon being assigned as investigating officer I visited CGC while moored at SuprtCen Portsmouth to gather evidence; CG procedural requirements regarding the gathering of evidence were followed. Additionally, I visited CGC while in emergency drydock to observe the damage and gather additional evidence.

2. The command and crew of CGC were cooperative throughout the investigation. I particularly appreciate the assistance and cooperation of CAPT USCG and LCDR USCG, Commanding Officer and Facility Engineer of CG SuprtCen Portsmouth (respectively), and CDR USCG, Commanding Officer, CG Naval Engineering Support Unit (NESU) Portsmouth, VA.

3. The nature of the incident is unusual in and of itself ... grounding while moored. This presented unique challenges to the nature of the investigation; pertinent information to a shiphandling incident, such as ships heading and line commands, are not required to be logged, and facts as remembered and presented by individuals involved in the events of the morning of 3 September were at times conflicting. This, the delay until drydocking and subsequent reports were available, and the requirements of my current assignment in CG Headquarters, resulted in the delay of submission of this report past the deadline given in the convening order. All directives contained in the convening order have been met.

5830
20 November 199

Subj: INVESTIGATION INTO THE GROUNDING OF USCGC (WMEC) AT PORTSMOUTH, VA ON 03 SEPTEMBER 199

Findings of Fact

1. That on the morning of 3 September 199 CGC was inbound in lower Chesapeake Bay proceeding to SuprtCen Portsmouth, VA with plans to moor starboard side to berths S3 and S4 at the seaward end of the south side of the south pier (Enclosures(3 and 4)).

2. That CGC had requested that specific berth at the SuprtCen in order to onload ammunition and be starboard side to in order to offload the MSB and perform maintenance on the starboard anchor (Enclosures(3 and 4)).

3. That the seaward end of the south pier on either side of the pier are the only berths at the SuprtCen where ammunition can be handled (Enclosure(5)).

4. That CGC is a Famous Cutter Class medium endurance cutter with the following characteristics: 270 feet in length, 38 foot beam, 2 shafts, 2 rudders, and 2 controllable pitch propellers (each 4 bladed with a 9 foot diameter) (Enclosures(6 and 7)).

5. That CGC navigational draft is 20 feet (Enclosure(9)).

6. That CGC defines shoal water as 20 feet of water beneath the keel (Enclosure(9)).

7. That CGC draft calculations on 3 September were 13'2" forward, 14'4" aft, and 13'9" mean (Enclosure(10)).

8. That the entire SuprtCen turning basin and pier vicinity are less than 25 feet depth of water (Enclosure(11)).

9. That the 20 foot depth of water curve runs approximately 87 feet south of the south pier, the 15 foot depth of water curve is approximately 131 feet south of the south pier (both parallel to the pier), and day marker #7 is approximately 200 feet south of the seaward end of the south pier (Enclosure(11)).

10. That the CO and XO had both been onboard CGC when the cutter had previously moored at SuprtCen Portsmouth south pier berths S3 and S4 (Enclosures(13 and 15)).

11. That the CO was aware of and concerned about the shoal water south of the south pier (Enclosures(12 and 13)).

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12. That the conning officer had previous experience mooring CGC but never at SuprtCen Portsmouth (Enclosures(16 and 18)).

13. That the navigation detail was set at 0800 and the special sea detail was set at 1009. The navigation detail was subsequently secured at 1037 (Enclosures(19,20,and 21)).

14. That the following personnel/WQSB/location assignments were in effect on the morning of 3 September (Enclosures(12,13,14,15, 16,17,18,19,29,30,32,33,and 48)):

Name	Assignment	Location
CDR	Command	Bridge
LCDR	OOD/Conn coach	Bridge
ENS	Conning officer	Bridge
BMC	Aft safety observer	Flight deck

15. That the first approach on the pier was aborted by the conning officer at a distance of approximately 150 feet from the pier due to improper alignment to approach the pier (Enclosures(12,14,17,and 18)).

16. That the approach angle between the ship and the pier on the second approach was approximately 20 degrees and the approach was begun from a distance of approximately 300 feet (Enclosure(18)).

17. That the first and second approaches to the pier were made at very slow speeds of advance, all ahead 1 equaling turns for 2 to 2.5 knots (Enclosure(19) and Personal Observation).

18. That the lay of the pier to which CGC was mooring is east/west (090/270 degrees true) (Enclosure(103)).

19. That the wind at the time of mooring was NNE (020-030 degrees true) veering slowly toward ENE (050-070 degrees true) at speeds of 5-6 knots increasing to 8 knots during the mooring, putting the wind directly on CGC starboard beam and making for an off-dock wind approach for a starboard side to mooring (Enclosures(18,19,23,24,and 25)).

20. That the hanger was not extended during the approach or mooring evolutions (Enclosure(33)).

21. That 270 foot class WMEC's are sensitive to wind effects due to the large sail area (Enclosure(69) and Personal Observation).

22. That the current in the main channel at the closest current station to the SuprtCen was ebbing between 0.4 to 0.2 knots and decreasing toward an 1140 slack water during the time of the approach and mooring, and that currents in the SuprtCen turning basin are negligible, no matter what the state of current at the nearest station (Enclosures(96,97,98,and 99) and Personal Observation).

23. That the XO, as a coach to the conning officer, generally uses a less directive approach to advise and provide recommendations to the conning officer. And that during the course of the mooring on 3 September the XO gradually became more directive in guidance to the conning officer (Enclosure(15)).

24. That the CO occasionally provided recommendations to the conning officer, but never relieved the conn (Enclosure(18)).

25. That in the 2 minutes prior to mooring the conning officer ordered the rudder to right 30 degrees and the engines opposed for a starboard twist (port ahead 1 and starboard back 5) in order to bring the bow closer to the pier to get the bow lines across (Enclosures(14,15,19,and 22)).

26. That the ship was brought alongside the pier on the second approach and moored at 1047 with line 1 being first on the pier followed by line 2 (Enclosures(12,14,15,18,19,and 44)).

27. That at the time of mooring the bow of the ship was alongside the pier past the quarterdeck shack which was 93 feet from the seaward end of the pier, meaning that CGC stern was approximately 150 feet seaward from the end of the pier at the time of mooring (Enclosures(18,26,44,and 45)).

28. That at the time of mooring the engine commands were port back 3 and starboard ahead 5 to achieve a port twist and move the stern toward the pier. Between minutes 47 and 50 the rudder was at right 30 degrees; the rudder was shifted to left 30 degrees at minute 50 (Enclosures(19 and 22)).

29. That the ships mooring lines are 220 feet in length and are 5 and one half inch double braided nylon (Enclosures(33 and 37)).

30. That as the conning officer ordered line 1 be put out, he also ordered line 4 put out from the fantail (Enclosures(12,14,15,16,17,and 18)).

31. That line 4 is made up on the fantail as follows: the line is faked on the fantail, the eye which will be sent to the pier is led out through the stern chock and outboard of the fantail railing (on whichever side the ship will moor - in this case the starboard side) to the break in the railing where the brow can be connected (approximately midway up the fantail from the stern). At this point the heaving line is bent to the mooring line and led outboard to the flight deck from where the heaving line will be thrown (Enclosure(35)).

32. That the heaving line is a 150 foot piece of cotton line with a ball at the end (Enclosure(35)).

33. That the following were the positions and locations of key fantail personnel: the BMC was the safety officer stationed on the flight deck, a BM2 was in charge of the fantail, the SN line captain for line 4 was stationed forward on the fantail (he also manned the aft capstan), and the aft phonetalker was located on the flight deck, as was the GM with the shoulder line throwing gun (SLTG) (Enclosures(32,33,34,35,36,37,and 52)).

34. That 4 linehandlers from other inport 270 WMEC's were provided to handle CGC lines on the pier (Enclosure(45)).

35. That the BMC elected to have the GM use the SLTG to pass line 4 to the pier when directed by the bridge to put out line 4 since the distance to the pier was approximately 150 feet and beyond heaving line distance (Enclosures(15,32,33,and 34)).

36. That one shot from the SLTG was used to send the shot line to the pier, which was bent to the heaving line, which in turn was bent to the number 4 mooring line (Enclosures(33,34,37,and 53)).

37. That no bolos were available for use at line stations (Enclosure(35)).

38. That 180 feet of line 4 was used between the bollard on the pier and the stern of the ship (Enclosure(33)).

39. That at 1053 line 4 was reported fouled in the starboard propeller, the line was cut by the propeller and parted, and at minute 54, control of the starboard shaft was lost (Enclosures(12,14,15,16,17,18,19,20,22,30,and 31)).

40. That prior to the line parting there was confusion on the fantail caused by the BM2 ordering the SN in charge of line 4 to take line 4 to power while the Operations Officer (OPS), LT , was standing on the aft end of the flight deck ordering that line 4 be taken off the capstan (Enclosures(27,32and 37)).

41. That OPS is also the ship's navigator (Enclosures(65 and 84)).

42. That OPS was performing no designated duties on 3 September after the navigation detail was secured and he had completed training the new assistant navigator who had been navigating mode 1 (COMDAC) during the ship's transit to the SuprtCen (Enclosures(16,48,and 52)).

43. That there were no injuries caused by the parting of the line (Enclosure(12)).

44. That the BMC proceeded from the flight deck to the fantail after line 4 parted and relieved the BM2 as in charge of the fantail (Enclosures(33,37,and 38)).

45. That the Engineer Officer (EO), LT , was at his sea detail station in main control. He heard the noise, later determined to be the parting of line 4, monitored the declutching of the starboard shaft, and left main control to proceed to the main deck (Enclosures(39 and 41)).

46. That communications between linehandling stations was by sound powered phone talkers using the 1JV circuit. The XO occasionally called out commands to the foc'sle detail (Enclosures(28,33,36,39,42,and 44)).

47. That the conning officer had observed line 4 in the water and had ordered the starboard shaft placed in clutch control pilothouse, and that as the conning officer observed line 4 become taut he ordered starboard stop which automatically declutched the starboard shaft (Enclosures(17,18,20,39,40,and 41)).

48. That the conning officer was maneuvering the ship with engines ordered port back 8 and starboard ahead 3 at the time line 4 was slack in the water at the stern (Enclosures(12,16,17,18,19,22,and 33)).

49. That from 1054 until 1125 the ship was handled alongside the pier with only the port engine (Enclosures(19 and 20)).

50. That in the 5 minute period after the starboard engine was secured CGC angle to the pier changed in reference to the position of day mark #7 ... the day mark relative position shifting from the port to starboard quarter. (Enclosures(12,15,16,and 19)).

51. That day mark #7 was used as a visual cue as to the set of the ship, and as a general indicator of a foul area (Enclosures(12,13,14,and 15)).

52. That a visual danger bearing was never established to provide any indication that any part of the ship may be entering foul waters (Enclosures(16 and 27)).

53. That based on various comments and lack of information regarding the heading of the ship while moored, the angle of the ship to the pier throughout the incident cannot be resolved (Enclosures(14,15,17,18,19,21,26,29,33,44,45,and 46)).

54. That ENS maintained the conn for 6 minutes following the securing of the starboard engine, and attempted to maneuver the ship toward the pier using lines 1 and 2 which were on the pier and by alternating ahead and astern commands to the port engine with left 30 degrees rudder (Enclosures(14,15,17,18,19,and 22)).

55. That the XO was directed by the CO to relieve the conn at 1100 after ENS requested to be relieved; the XO did so relieve the conn (Enclosures(12,13,14,15,17,18,19,and 29)).

56. That the BMC directed members of the fantail detail to obtain a replacement mooring line which they did (Enclosures(32,33,35,37,and 38)).

57. That the ships anchors were not used and that the port anchor was the ready anchor (Enclosures(14,16,28,and 100)).

58. That crewmembers on the fantail and in main control heard unusual (rumbling/grinding) noises which they attributed to the grounding of the port propeller (Enclosures(35,36,37,39,40,41,42,and 43)).

59. That a report of unusual noise was made from main control through the phonetalker to the bridge; the fantail did not report the unusual noises (Enclosures(28,36,39,40,41,and 42)).

60. That neither the CO or XO recall reports made to them detailing unusual noises from the vicinity of the port propeller (Enclosures(12 and 15)).

61. That no unusual pitch or shaft RPM deviations of the port shaft were observed by watchstanders on the bridge or in main control during the time unusual noises were being reported (Enclosures(30,31,40,and 43)).

62. That a second SLTG shot was made to pass a new line 4 to the pier (Enclosures(32,33,34,35,and 53)).

63. That the distance to the pier exceeded the length of a single mooring line. Two lines were bent together to allow 240 feet of line to be put out to reach the pier (Enclosures(32,33,37,and 38)).

64. That from 1101 until 1125 the XO maneuvered the ship using left 30 degrees rudder and ahead commands to the port engine, with the exception of one period of 5 minutes when the engine was stopped, while line 4 was taken to the aft capstan and power used to haul the ships stern to a position where the entire ship was alongside the pier (Enclosures(12,14,15,16,19,22,32,33,37,and 38)).

65. That CGC made no calls for assistance during the mooring at SuprtCen Portsmouth on 3 Sep 95 (Enclosures(12,109,and 110)).

66. That the special sea detail was secured at 1128 (Enclosure(19)).

67. That divers inspected CGC underwater body on 5 September and reported blade tip damage to the port propeller (Enclosures(54 and 55)).

68. That CGC was drydocked on 25 September 1995 at Norfolk Shipbuilding Company's (NORSHIPCO) Brambleton Plant (Enclosures(54 and 56)).

69. That the blades of both propellers had a light coating of marine growth except for portions of the tips of each blade on each of the port (4-6") and starboard (1-2") propellers where the surface fouling had been scraped off (Enclosures(54 and 59)).

70. That the tips of each of the 4 port propeller blades were damaged and the blades required replacement (Enclosures(54,55,59,and 60)).

71. That there was a gouge in one of the starboard propeller blades which was repaired in place (Enclosures(54,58,59,and 60)).

72. That the upper half of the starboard propeller rope guard was missing, and the starboard propeller strut barrel, lower rope guard, fairwaters, and hub all exhibited signs of line-wrapping (Enclosures(54 and 60)).

73. That the total cost of repairs (including drydocking and services) was approximately $125,000 (Enclosure(54)).

74. That both controllable pitch propeller systems were serviced by a contract expert during the drydocking who found misalignment between the main control console and the actual blade pitch as noted at the propeller hub (Enclosure(58)):

	Actual (hub)	Console
Port	100% ahead	114% ahead
	76%(full) astern	90% astern
Starboard	100% ahead	91% ahead
	76%(full) astern	95% astern

75. That repairs were completed and CGC undocked on 29 September (Enclosure(60)).

76. That no unusual hull vibrations were noted during CGC transit from Mayport to Portsmouth over several days prior to 3 September (Enclosures(39,40,and 54)).

77. That the propellers had been inspected on 27 June 1995 and had been found to be in good condition (Enclosure(61)).

78. That during a search of the bottom by contract divers on 7 September the divers located two freshly cut out areas (which appeared to be in the process of filling in) on the south edge of the channel south of the south pier and approximately 20 and 45 feet west of day mark #7 (Enclosure(62)).

79. That the bottom west of day mark #7 along the channel edge was hard sand imbedded with golf ball to grapefruit sized stones (Enclosure(62)).

80. That a hydrographic survey of the SuprtCen basin and pier area was conducted in 1990 (Enclosure(11)).

81. That a depth survey was conducted on 13 and 14 September 1995 in the vicinity of the south pier and south of the south pier to beyond the edge of the channel (Enclosure(63)).

82. That the 1995 depth survey showed an anomaly in soundings approximately 53 feet west of day mark #7 (Enclosure(63)).

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83. That CDR USCG relieved as Commanding Officer, USCGC on 7 July 1995 (Enclosure(64)).

84. That CDR had signed an order to the effect that all previously issued orders and instructions remained in effect (Enclosure(64)).

85. That the CO bears absolute responsibility for the command (Enclosures(9,12,and 66)).

86. That the CO and the XO were given their rights prior to questioning concerning facts and circumstances of this investigation (Enclosures(67 and 68)).

87. That a major AC&I project to make waterfront improvements at SuprtCen Portsmouth has been approved (Enclosure(69)).

88. That the approach channel to the south side of the south pier is too narrow and shallow to permit the use of tugs for mooring/unmooring evolutions (Enclosure(69)).

89. That each mooring at the south side of the south pier requires a very high level of precision and skill leaving no room for mistakes when contending with high winds or engineering casualties; and that prevailing northerly (off dock) winds make mooring a career threatening experience (Enclosure(69) and Personal Observation).

90. That all required electronics and engineering systems and equipment were on the line and operating properly on the morning of 3 September (Enclosures(19,20,21,70,71,72,100,and 101)).

91. That the COMDAC cartridge magnetic tape unit (CMTU) #1 drive C(2) can be used to store navigation fix data (black box) recording information such as speed made good, and true and relative wind direction and speed (Enclosures(73 and 74)).

92. That CMTU #1 drive C(2) is not used onboard CGC FORWARD (Enclosure(46)).

93. That there is no CG policy which requires CMTU #1 drive C(2) to be used (Enclosures(12 and 73)).

94. That the COMDAC Prospective Commanding Officers (PCO) course does not go into detail regarding COMDAC magnetic taping capabilities (Enclosure(73)).

95. That POS is a mandatory cutter qualification program for officers and enlisted personnel (Enclosure(75)).

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96. That the bridge watchstanders had all properly completed their watchstation PQS, the foc'sle and fantail 1JV phonetalkers had completed their phonetalker PQS. The bridge 1JV phonetalker had not completed his phonetalker PQS (Enclosures(16,28,77,78,79,80,81,82,83,and 84)).

97. That deck seamanship PQS was not being used to qualify personnel: Navigation and Seamanship Training Team (NSTT), line handlers, capstan operator, detail PO in charge, and deck safety observer (Enclosures(18,75,and 76)).

98. That LT was properly qualified and designated as navigator (Enclosure(84)).

99. That a NSTT is established as required (Enclosures(75,85,and 86)).

100. That the NSTT was not functioning prior to REFTRA 95 (Enclosure(86)).

101. That graded mooring exercises (MOB-S-5-SF: mooring to a pier/ship) are required quarterly for 270 WMEC's (Enclosure(75)).

102. That no moorings had been graded prior to REFTRA (Enclosure(26)).

103. That the NSTT was evaluated as effective and capable of continuing self training at the conclusion of REFTRA (Enclosure(87)).

104. That no graded moorings were conducted during REFTRA (7 August - 1 September 1995) (Enclosures(87 and 88)).

105. That 12 of the scheduled 26 REFTRA training days were spent inport due to weather and equipment casualties, and that CGC was allowed to depart REFTRA without completing a good portion of the required training (Enclosure(88)).

106. That feedback from Fleet Training Group (FTG) shiprider observations on 29 August indicated: substandard performance by the conning officer, unsafe line handling practices, and no safety observer assigned forward (the CO was informed that the cutter would have failed if the mooring had been graded due to no safety observer forward) (Enclosure(88)).

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107.That personnel assigned as conning officer and coach on 29 August were the same as assigned to those roles on 3 September, namely ENS , the 1ST LT and the XO, and similarly, there was no safety observer assigned forward on 3 September (Enclosures(48,52,and 88)).

108.That ship's doctrine contains provisions for a safety observer forward during special sea detail (Enclosures(52 and 90)).

109.That the XO is the chairman of the planning board for training (Enclosures(65 and 75)).

110.That the head of a department shall plan, direct, and supervise the work and training of personnel within the department (Enclosures(66 and 75)).

111.That the CO attended PCO school at the Coast Guard Academy prior to reporting onboard CGC (Enclosures(91 and 92)).

112.That the CO attended COMDAC command overview course in February 1990. This training was waived and not attended prior to reporting onboard CGC (Enclosure(91)).

113.That PCO underway familiarization was waived for the CO prior to reporting to CGC (Enclosure(91)).

114.That there are no formal training objectives for PCO underway familiarization (Enclosure(75)).

115.That the XO attended PXO and COMDAC overview courses prior to reporting onboard CGC (Enclosure(91)).

116.That OPS attended COMDAC training in 1988 and 1993, and bridge resource management training in July 1994 (Enclosure(91)).

117.That the PCO course contains a shiphandling objective which requires 5 hours of classroom and underway time to meet (Enclosure(92)).

118.That the PCO class attended by CDR was given an option, which they did not choose, to get underway on T-boats to receive shiphandling training (Enclosure(47)).

119.That the PCO curriculum does not provide extensive training regarding shiphandling using controllable pitch propeller systems, nor are there advanced objectives on emergency shiphandling (Enclosure(92) and Personal Observation).

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120.That U. S. Navy officers attending the Navy's PCO training receive extensive shiphandling training (Enclosure(93)).

121.That the COMDAC video recorder was secured at time 10h38m51s, 8m9s prior to mooring and 49m prior to securing the special sea detail (Enclosure(26)).

122.That ships doctrine requires the COMDAC video recorder to record the graphic display of the navigators console for reconstruction purposes if necessary (Enclosure(94)).

123.That the ships draft was not entered into the ships log for 3 September 1995 (Enclosure(19)).

124.That the navigator is required to ascertain the draft of the ship, fore and aft, and enter it in the log as soon as practical after entering port (Enclosures(9,12,66,95,and 102)).

125.That the Officer of the Deck is responsible for recording drafts fore and aft upon mooring (Enclosure(100)).

126.That the navigator is charged with the safe navigation of the ship, and is instructed to advise the CO and OOD if the ship is running into danger (Enclosures(9 and 66)).

127.That danger bearings are required to be used (Enclosures(9 and 95)).

128.That a navigation/port brief was given (Enclosures(15,18,96,and 99)).

129.That an entering port check list was completed prior to entering port (Enclosure(100)).

130.That the tidal state for 3 September using the closest reference station to the SuprtCen was as follows: low tide - 1006 - +0.3 feet above MLW; between 1100 and 1200 the tide increased from +0.4 to +0.6 feet above MLW (Enclosures(96,97,and 99)).

131.That CGC personnel miscalculated the currents through reversal of the velocity ratios which are applied between the reference and local station (Enclosures(96,97,and 98)).

132.That actual currents were slightly less that those calculated by CGC personnel and were at 1000 - 0.4 ebb, 1100 - 0.2 ebb, and slack water at 1140 (Enclosures(96,98,and 99)).

133.That the bridge log keeper exceeded the requirements of doctrine by logging engine and helm commands after the ship commenced maneuvering at various courses and speeds alongside the pier (Enclosures(19 and 102)).

134.That specific, detailed line commands and timing could not be reconstructed, nor could the heading of the ship be known after 1025 (Enclosures(13,19,26,28,and 46)).

135.That command navigation standards have been promulgated (Enclosure(9)).

136.That standard engine, line handling, and helm commands were used (Enclosures(29,30,31,and 44)).

137.That the correct, up-to-date chart was used for navigating, and that the chart was marked appropriately (Enclosure(103)).

138.That the CO is responsible for all maneuvering of the vessel, for directing the officer handling the vessel if necessary, and if necessary or desirable to personally handle the ship (Enclosure(66)).

139.That the CO is encouraged to entrust shiphandling to the XO during important evolutions, and to afford frequent opportunity to others to acquire and improve their shiphandling skills (Enclosure(66)).

140.That CO's may take the conn or designate another officer to relieve the officer of the deck of that position, especially when intricate or dangerous maneuvers are performed (Enclosure(66)).

141.That the Commandant encourages junior officer shiphandling opportunities, acknowledges increased risk of damage, and requires investigating officers to consider this when evaluating the fitness of CO's (Enclosure(104)).

142.That CDR preferred that either the XO or OPS relieve the conning officer if that action was dictated in order for the CO to be able to maintain a more objective safety observer position. Additionally CDR believes that personnel may be more willing to offer advice to XO or OPS where they may hesitate to do so to the CO (Enclosure(13)).

143.That it is customary for the CO to take the conn for a dangerous or intricate maneuver (Enclosure(105)).

144.That the conn should concentrate all attention on the job at hand (Enclosure(105)).

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145.That the role of a coach/advisor to the conning officer is not officially defined (Enclosures(15,18,66,104,105) and Personal Observation).

146.That the conning officer should delegate OOD responsibilities to another qualified individual during maneuvers to lessen the possibility of being distracted and confused by the duties of running the watch (Enclosure(105)).

147.That the wind has a significant impact on the movement of the ship, and is often a hazard to the shiphandler (Enclosure(107)).

148.That springing on a line is a very useful practice, and using all forces, can be used to work the ship in to the pier (Enclosure(107)).

149.That when the wind is blowing off the pier it is necessary to approach faster and closer in order to get the lines over before the wind blows the ship away from the pier (Enclosure(107)).

150.That there is a loss in directional stability with a controllable pitch propeller system when slowing down (Enclosure(106)).

151.That the communication of accurate information between stations is imperative (Enclosure(106)).

152.That the importance of the competence of the person in charge of handling lines aft and their role in keeping the lines out of the propellers cannot be emphasized enough (Enclosure(108)).

153.That controllable pitch propeller systems rotate at a high speed even when the ship is dead in the water with zero pitch (Enclosure(107)).

154.That twin rudders are mounted directly aft of the propellers and that when zero pitch (stop) is ordered the effect of the propellers is to blank off the flow of water to the rudders and greatly reduce their effectiveness (Enclosure(107)).

155.That the XO and conning officer had discussed and agreed to a plan of attack for the mooring at the SuprtCen on 3 September (Enclosures(15 and 18)).

156.That Station Portsmouth had a UTB at the station on bravo 0 status which could have responded to the south pier with 7-10 minutes (Enclosures(109 and 110)).

157.That there is no key in cutter doctrine for abbreviations used to document helm and engine commands on the navigation data sheet (Enclosure(9)).

158.That fatigue was not a factor (Enclosures(15 and 18)).

Opinions

1. That all proper preparations for entering port were made (Findings(2,3,13,34,90,128,129,and 137)).

2. That the grounding and damage to CGC occurred on 3 September 1995 while attempting to moor at SuprtCen Portsmouth, VA (Findings(58,67,69,70,71,76,77,78,79,and 82)).

3. That the grounding was not caused by equipment or machinery failure (Finding(90)).

4. That the NSTT was not properly qualified (Findings(95 and 97)).

5. That the Coast Guard does not adequately prepare cutter PCO's for afloat command due to minimal/basic shiphandling training, waivers of required training, and no specific/mandatory underway familiarization training objectives (Findings(113,114,117,118,119,and 120)).

6. That installed equipment which could have provided additional facts during the investigation was either not used or secured (Findings(91,92,and 121)).

7. That the Coast Guard needs to institute means to capture ships information in order to reconstruct and learn from incidents which may occur while a cutter is moored (or mooring) (Findings(93,121,133,and 134)).

8. That while danger bearings are not specifically required while moored, it would have been prudent to have established and monitored a danger bearing as the ship continued to drift away from the pier based on the principles of maintaining the safety of the cutter (Findings(9,11,13,51,52,85,98,126,and 127)).

9. That the physical characteristics (depth of water, channel edge contours, etc.) of the area south of the south pier do not appear to have changed significantly in the past 5 years (Findings(80 and 81)).

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10. That propeller pitch misalignment between the main control console and the actual propeller hub can adversely impact the handling of the ship, but that this was not a contributing factor to CGC grounding (Findings(74,150,and 153)).

11. That the role of a shiphandling coach is ill-defined (Finding(145)).

12. That the role and responsibility of coaching (pseudo-conn) is not complimentary with also being assigned as the OOD (Findings(144 and 146)).

13. That deck personnel were not properly qualified for their watch stations (Findings(95 and 97)).

14. That the command was not executing a proper training program for deck seamanship (Findings(95,97,100,101,102,104,106,109,and 110)).

15. That the Operations and Engineer Officers should not have left their assigned sea detail billets (Findings(40 and 45)).

16. That better communications could have helped minimize damage, but in any case would have provided vital information to the CO (Findings(59,60,and 151)).

17. That the fantail phonetalker and line 4 line captain were improperly positioned to properly carry out their responsibilities, and that the line 4 line captain should not have been distracted by being assigned additional capstan responsibilities (Findings(31 and 33)).

18. That the attempted port twist from minutes 1047 to 50 with right rudder as opposed to left rudder contributed to the cutter being set further off the pier (Findings(28 and 148)).

19. That the grounding was caused primarily through the combined effects of a poor approach to the pier; a slight off-the-dock wind; a lack of aggressive and proper shiphandling to align the ship alongside the pier initially and once alongside; a lack of judgment by ordering line 4 put out when the stern was 150 feet away from the end of the pier, particularly considering the manner in which the line was made up on deck to put out given the angle to the pier; and maneuvering while the line was in the water (Findings(15,16,17,18,19,21,25,27,28,38,39,and 64)).

Incomplete

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20. That it is not unusual to expect line 4 to have been in the water considering the amount of 5½ inch mooring line which had to hauled to the pier by the lighter weight shot and heaving line (Findings(31,32,36,and 38)).

21. That the CO used poor judgment by leaving ENS in the position of conning officer when it became clear that it was not a "win-win" situation for an inexperienced shiphandler (Findings(11,12,15,21,25,27,28,48,54,55,85,138,140,and 143)).

22. That the CO exercised a lack of judgment by not personally relieving the conn when emergency maneuvers were required and the ship was likely entering danger (Findings(9,11,39,50,85,89,138,and 143)).

23. That the CO exercised a lack of judgment in not requesting outside assistance once the starboard shaft was lost (Findings(65,85,and 156)).

24. That it is the duty of the CO to establish an environment where ship's company and advisors to the CO feel comfortable making recommendations to the CO concerning the safe navigation and handling of the ship (Finding(142)).

25. That the CO ignored the advice of the REFTRA shiprider provided on 29 August (Findings(14,33,106,107,and 108)).

26. That completion of all scheduled underway days at REFTRA and all deck seamanship and alongside shiphandling exercises would have increased the opportunity for expert feedback to the CO, training for the officers and crew, and identification for training/system shortcomings (Findings(104 and 105)).

27. That ENS used good judgment when he ordered the starboard engine placed in clutch control pilothouse (Finding(47)).

28. That had the log keeper not recorded engine and helm commands it would have been difficult, if not impossible, to have factually ascertained the cause(s) of this mishap (Findings(133,134,and 157)).

29. That QM3 did an outstanding job of log keeping (Finding (133)).

30. That use of the ship's ready anchor may have helped in the shiphandling efforts alongside the pier prior to mooring, but that after mooring would have had little impact, and is not believed to be a contributing factor to the grounding (Findings(26,57,and 149)).

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31. That the fact that there was no safety observer forward during the mooring was not a factor in the grounding (Findings(26,106,and 107)).

32. That the current was not a factor in the grounding (Finding(22)).

33. That fatigue was not a factor in the grounding (Finding(158)).

Recommendations

1. That the CO receive Flag mast for violation of Article 92 of the UCMJ: Dereliction in the performance of duties, and violation of Article 110 of the UCMJ: Improper hazarding of vessel (Opinions(2,3,4,8,13,14,18,19,21,22,23,and 25)).

2. That the PCO school chief receive counseling based on failure to insure trainees meet all course objectives (Opinion(5)).

3. That the Coast Guard develop a more comprehensive shiphandling training program for PCO's to include controllable pitch systems and emergency shiphandling (Opinions(5 and 19)).

4. That CO's include written instructions in their shipboard doctrine regarding the responsibilities of the shiphandling coach and the relationship between the CO, XO, conning officer, navigator, and coach, and instruct their personnel accordingly (Opinions(11 and 12)).

5. That PCO school include shiphandling objectives in their curriculum incorporating a coach as one of the key bridge personnel in order to train realistically (Opinions(5,11,12,and 21)).

6. That specific objectives be developed by the Coast Guard for PCO's to achieve during their underway familiarization related to shiphandling and which are tied to PCO school curriculum (Opinion(5)).

7. That PCO pipeline training not be waived (Opinion(5)).

8. That PCO COMDAC orientation include specific objectives regarding PCO knowledge of onboard information recording capabilities (Opinion(5)).

9. That the operational commander require installed onboard information systems be on the line whenever the cutter is moving (Opinions(6 and 7)).

No - lift to CO. 182

10. That the Coast Guard investigate the feasibility of installing voice recording equipment on the bridge in order to have record data which can aid in the reconstruction of helm, engine, and line commands and timing in the event of an incident or to aid the CO in providing accurate feedback and training to appropriate personal (Opinion(7)).

11. That the Coast Guard require all helm and engine commands to be logged on the navigation data log sheet and delete the ability to at some point log that the ship is maneuvering at various courses and speeds, and thereby remove the requirement for logging individual orders (Opinion(7)).

12. That the CO counsel the Operations and Engineer Officers regarding their duties and responsibilities at the assigned WQSB location (Opinions(8 and 15)).

13. That the CO counsel the XO and 1ST LT regarding their responsibilities to ensure that the PQS training system be used onboard as required, and that all efforts be made to get the training program on track and maintained (Opinions(4,13,and 14)).

14. That CGC be scheduled to complete a full REFTRA during CY96 (Opinion(26)).

15. That cutter navigation standards be required to include a key to onboard abbreviations used in any of the ships official logs, in particular the navigation data sheet (Opinion(28)).

16. That CGC use PQS as the cornerstone of their deck seamanship training program and complete required mooring exercises (Opinions(4,13,and 14)).

17. That the CO review the ships organization manual/WQSB to ensure that personnel are not assigned conflicting roles which detract from the safety of the evolution (Opinions(12,17,and 31)).

18. That the CO ensure all required safety positions are manned by properly qualified personnel (Opinions(25 and 31)).

19. That CGC be inspected by their operational commander to ensure compliance with training requirements and other identified shortcomings in this investigation after it is approved, and CGC has received a copy of the investigation and time to take appropriate action (Opinions(4,13, 14,16,and 24)).

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5830
20 November 199

Subj: INVESTIGATION INTO THE GROUNDING OF USCGC (WMEC) AT PORTSMOUTH, VA ON 03 SEPTEMBER 199

Enclosures:

(1) Convening order
(2) Aerial view of CG Support Center Portsmouth, VA
(3) CGC logistics request message
(4) CG SuprtCen Portsmouth logistics request response
(5) Atlantic Area Instruction M8023.1
(6) Janes Warships 270 MEC description
(7) CGC principal characteristics
(8) 270 MEC hull drawing
(9) CGC standing orders and navigation standards
(10) CGC stability form 3 Sep 9
(11) CG SuprtCen Portsmouth hydrographic survey
(12) CDR statement 5 Sep 9 (unsolicited)
(13) CDR statement 14 Sep 9
(14) LCDR statement 3 Sep 9 (unsolicited)
(15) LCDR statement 14 Sep 9
(16) LT statement 12 Sep 9
(17) ENS statement 3 Sep 9 (unsolicited)
(18) ENS statement 14 Sep 9
(19) CGC logs - remarks, nav data, weather - 3 Sep 9
(20) CGC machinery log 3 Sep 9
(21) CGC CIC log 3 Sep 9
(22) Compiled sequence of events 3 Sep 9 (CAPT Loew)
(23) CGC weather log 3 Sep 9
(24) CGC weather log 3 Sep 9
(25) Mr. - NWS Norfolk, VA - statement 20 Sep 9
(26) CAPT statement 26 Sep 9
(27) ENS statement 13 Sep 9
(28) SK1 statement 20 Sep 9
(29) QM3 statement 13 Sep 9
(30) QM3 statement 13 Sep 9
(31) SA statement 13 Sep 9
(32) BMC statement (undated and unsolicited)
(33) BMC statement 14 Sep 9
(34) GM1 /GM2 statement 14 Sep 9
(35) BM2 statement 14 Sep 9
(36) SS1 statement 14 Sep 9
(37) SN statement 14 Sep 9
(38) SA statement 14 Sep 9

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KUKUI GROUNDING

MIDWAY ATOLL ENTRANCE CHANNEL

14 JUNE 2000

U.S. Department of Transportation
United States Coast Guard

Fourteenth Coast Guard District
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5830
AUG 19 2000

INFORMAL INVESTIGATION INTO THE FACTS AND CIRCUMSTANCES CONCERNING THE GROUNDING OF USCGC KUKUI (WLB-203) AT THE MIDWAY ATOLL ENTRANCE CHANNEL ON 14 JUNE 2000

ACTION OF THE FINAL REVIEWING AUTHORITY

1. The findings of fact of subject investigation are approved.

2. The primary cause of the grounding of USCGC KUKUI (WLB-203) at the Midway Atoll Entrance Channel on 14 June 2000 was the loss of maneuverability resulting from the computer-commanded Main Propulsion Control and Monitoring System (MPCMS) shutdown of the bow and stern thrusters as the cutter neared completion of a 180 degree turn to port, while casting about in a narrow channel against prevailing northwest winds and strong current setting to the south.

3. This incident highlights a reliability problem in KUKUI's propulsion system that may reflect a design defect in the 225' WLB. Anecdotal evidence uncovered during this investigation suggests that all or most of the JUNIPER class buoy tenders may have experienced similar computer-commanded shutdowns of thrusters at various times. The reliability of the propulsion plant maneuvering mode/thruster operation is critical in the JUNIPER Class vessels in that the loss of ability to counter side forces results in a very poorly maneuverable single screw ship. The inherently hazardous nature of aids to navigation operations, especially with these much larger ships working in tight areas, will inevitably on occasion demand all that the maneuvering and propulsion system can provide, and loss of the thrusters at the wrong time in the wrong situation could prove disastrous.

4. Given the apparently high frequency of maneuvering propulsion system casualties which have occurred in JUNIPER class cutters, I recommend that identification of the cause of the failures and correction of the defect(s) should be given high priority. We would not accept such problems in aircraft, and should not accept them in our ships.

5. Actions taken:

    a. This report of investigation will be forwarded to Commandant (G-OCU), (G-SEN), and (G-AWL) for consideration of the following:

1) A recommendation that Commandant (G-OCU) and (G-SEN) work with PRO Marinette to establish a reporting system to specifically track maneuvering mode/thruster reliability in all five of the JUNIPER Class cutters in service as a means for documenting, analyzing, and resolving the propulsion reliability problem.

2) A recommendation that Commandant (G-OCU) remove shaft RPM as a MPCMS parameter for tripping thrusters off-line.

3) A recommendation that the MPCMS system be revised to allow for a "restricted maneuverability" function that, when activated, would merely warn when operational parameters have been exceeded, but would not automatically trip any component of the propulsion system off-line, thus allowing a command to assess whether potential damage to the propulsion system is out-weighed by the risk of losing propulsion during a critical maneuver.

4) A recommendation that (G-OCU) continue to identify areas where the Electronic Chart Precise Integrated Navigation System (ECPINS) electronic charts have outdated hydrographic information, datum errors, or do not include the best scale charts for the areas in which ATON cutters operate.

5) A recommendation that (G-OCU) consider implementation of data logging of ship's fathometer readings for water depth in the ECPINS software, and a process for ensuring that the MPCMS and ECPINS data time stamps are synchronized.

b. I have directed the commanding officers of both D14 JUNIPER Class buoy tenders to work with PRO Marinette to address the maintenance changes recommended in their report dated 10 July 2000.

c. A copy of this report will be forwarded to the PCO/PXO School for consideration for use in their training curricula.

6. This action is final in accordance with section 1-K-1 of the Administrative Investigations Manual, COMDTINST M5830.1.

J. J. MCCLELLAND, JR.
Rear Admiral, U. S. Coast Guard
Commander, Fourteenth Coast Guard District

Copy: CGC KUKUI

U.S. Department of Transportation
United States Coast Guard

Commander
Fourteenth Coast Guard District

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5830
25 July 2000

From: CDR [redacted]
To: Commander, Fourteenth Coast Guard District

Subj: INVESTIGATION OF THE FACTS AND CIRCUMSTANCES CONCERNING THE GROUNDING OF USCGC KUKUI (WLB-203) AT THE MIDWAY ATOLL ENTRANCE CHANNEL ON 14 JUNE 2000

Ref: (a) CCGDFOURTEEN (dcs) ltr 5830 of 22 Jun 00
(b) Coast Guard Administrative Investigations Manual, COMDTINST M5830.1(series)

Preliminary Statement

1. As directed by reference (a) and in accordance with the procedures in reference (b), I have conducted an informal investigation into the facts and circumstances associated with the grounding of USCGC KUKUI (WLB-203) at the Midway Atoll Entrance Channel on 14 June 2000. No persons were designated parties to this investigation.

2. Prior to commencing this investigation I did not suspect anyone to have violated the UCMJ, and upon advice of the District Legal Officer, I did not preliminarily advise any witnesses of their Article 31(b), UCMJ, rights. However, I was prepared to stop interviews immediately in the event I developed a basis for suspecting the person being interviewed to have potentially violated the UCMJ. During the investigation I did not suspect any witness interviewed to have violated the UCMJ and, therefore, I did not warn any witnesses of their Article 31(b) rights.

3. In conducting this investigation, I complied with the Privacy Act, 5 U.S.C. §552a. To my knowledge, I did not collect protected personal information from any witnesses, and did not disclose protected personal information to third parties during the course of the investigation.

4. No significant difficulties were encountered in conducting this investigation. The Commanding Officer, USCGC KUKUI (WLB-203) and the entire crew cooperated completely throughout the investigation. Significant assistance to this investigation was provided, at my request, by the WLB/WLBR Project Resident Office (PRO) Marinette, Wisconsin. PRO Marinette personnel and contracted technical experts traveled to Honolulu to assess KUKUI's main and auxiliary plant status, operation and maintenance to attempt to identify the cause of the engineering casualty which appeared to be a proximate cause of this mishap. Their assistance was invaluable and a written report of their findings is attached. Also, I rode USCGC WALNUT (WLB-205) while the vessel was servicing ATON in Hilo, HI. This was extremely helpful in the

familiarization of a former BALSAM Class (180' WLB) sailor with the capabilities, operations, and handling characteristics of a JUNIPER Class WLB. All times listed in this report are local times, i.e., Hawaiian Standard Time, except when Zulu time is specifically referred to, and all courses and bearings are in degrees true unless otherwise indicated.

5. Due to the complexity of some of the technical issues involved with the design and operation of the JUNIPER Class WLB's, an additional week was required to complete this investigation and authority from CCGDFOURTEEN (dcs) was obtained to extend the required completion date to 21 July 2000.

Findings of Fact

1. At approximately 0854 14 June 2000, in position 28-12.155N, 177-21.206W, in the entrance channel to Midway Atoll, approximately 35 yards to northeast of the charted position of Midway Channel Buoy 4 (LLNR 29970), CGC KUKUI (WLB-203) ran aground and remained so for less than a minute thereafter, refloating and moving back into the navigational channel prior to 0856. (Enclosure 2)

2. An inspection of the internal hull and machinery by the ship's force subsequent to the grounding revealed a small dish in the hull plating in the stern thruster compartment about one foot above the keel, on the starboard side. No hull penetration was detected and there was no flooding. (Enclosures 2,3)

3. An inspection of the exterior hull by the ship's dive team on 14 June 2000 and follow-up inspections by the ship's dive team on 28 June 2000 and 14 August 2000 revealed the following damage to KUKUI (Enclosures 2, 3, 4 and 55)

a. Minor scratch of paint on the bow, about 6 inches in length, just aft of the forward transducer, on the ship's centerline.

b. Scratches, paint removal and minor hull dishing in six places, no dishing greater than two feet in diameter or more than 2 inches in depth, mostly along the keel and on the starboard side along an approximately 22 foot long section of the hull, damage starts 15 feet, six inches forward of the stern thruster tunnel, and continues aft.

c. Removal of 12 to 16 inches of growth and polishing on the leading edges of the four propeller blades.

4. MLCPAC(v) reviewed the documents and videotapes regarding the damage and indicated that the damage to the hull from the grounding is not considered significant. The cost to touch-up the damage to the underwater body coating system (paint) is estimated at $5K and any decision on whether or not to repair or replace some of the hull steel plating can be readily

deferred until a closer examination is available in the cutter's next regularly scheduled drydocking. (Enclosures 2, 3, 4, and 55)

5. KUKUI operated for over a week completing the remainder of a scheduled ATON deployment to Midway Atoll with no significant engineering problems or other irregularities. (Enclosure 5)

6. No personnel were injured as a result of the grounding. (Enclosure 2)

7. On 06 June 2000, USCGC KUKUI (WLB-203) departed homeport in Honolulu, HI, for a scheduled aids to navigation and law enforcement deployment to Midway Atoll. After stops in the Northwest Hawaiian Islands (Layson and Tern) to deliver supplies to U. S. Fish and Wildlife personnel, and a D14 directed boarding of a Hawaii longline fishing vessel, KUKUI arrived Midway Atoll on 10 June 2000. (Enclosures 2,6)

8. On 11-13 June 2000, KUKUI remained pierside in Midway, using the ship's small boats and assigned dive team to service buoys and complete a project to replace Midway Channel Buoy 1 (LLNR 29945) with a lighted buoy and to install lights on the Midway channel entrance range markers. (Enclosures 6,7)

9. On 14 June 2000, KUKUI was moored starboard side to Pier 1, Midway Atoll in status B-12 under the OPCON and ADCON of CCGD14. Liberty expired on board for all hands at 0645 and sunrise was observed at 0652. At 0655, muster was held with all hands present or accounted for, and at 0700 preparations for getting underway were commenced. A satisfactory test of ship's steering was conducted. Ship's gyro error was determined to be 0°T by triangulation. (Enclosure 8)

10. At 0740, tests of the ship's main diesel engines and bow and stern thrusters were satisfactorily conducted. (Enclosures 8, 9)

11. At 0745, KUKUI's Commanding Officer, [REDACTED NAME] and navigator, [REDACTED NAME], both arrived on the bridge and a navigation brief was held. (Enclosures 8, 10)

12. At 0800, weather as reported by KUKUI at Midway was (Enclosure 11):

Winds from 286°T @ 9.7 knots
Visibility 10NM with broken skies
Barometer 29.92
Air Temp 76.8°F
Sea Water Temp 78.7°F

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13. Tides were posted on the bridge of CGC KUKUI. Tides were computed by using "The Cap'n" (version 4.5) navigational software. The graphical representation from this software indicates a low tide at Midway Islands on 14 June 2000 at approximately 0800 (-0.1 ft.), with following high tide at approximately 1545 (+1.3 ft.). The times and heights of the tides at Midway for14 Jun 2000 as independently determined by myself from the NOAA Tide Tables 2000 are consistent with KUKUI's posted tides. There are no tidal current tables available for Midway Atoll. (Enclosure 12)

14. Material condition YOKE was set throughout the ship and ship's drafts per the log were (Enclosures 8, 11):

Fwd 11'6"
Aft 13'0"
With a list of 1 degree to port.

15. KUKUI's navigational draft is 18 feet (Enclosure 13).

16. There were no main propulsion, auxiliary system or electronics casualties noted. The vessel's liquid load was approximately 52,355 gallons fuel (68.5%) and 4,956 gallons water (61.5%). All small boat checks, engineering master plant light off schedules, OOD and Quartermaster underway checklists were completed with no significant discrepancies noted. (Enclosures 11, 14, 15, 16, 17)

17. A navigation brief was completed on the bridge at 0745, and the Commanding Officer and Navigator signed the brief. Both main diesel engines were on the line, both ship's service generators were on the line and paralleled, the port anchor was designated the ready anchor. A radar range error of minus (-) 30 yards was noted, with 0° gyro error. KUKUI's first operational mission planned for the day was to service Midway Channel Buoy "4" (LLNR 26200). (Enclosures 8, 9, 10)

18. KUKUI completed a standard risk assessment checklist for Midway Island on 14 June 2000 as required prior to getting underway/commencing ATON operations. This unit produced form is used to gauge the risk involved in an evolution by assigning relative risk values to environmental, equipment, leadership, skill, and crew fatigue factors. A risk factor of 13 (maximum of 25) was determined. This indicates medium risk (12-18 range) and to proceed with caution. (Enclosure 18)

19. Bridge assignments for getting underway and transiting out of the turning basin towards the channel entrance at special sea detail were (Enclosures 8, 10, 16, 17):

Officer of the Deck: [REDACTED NAME] (under instruction of [REDACTED NAME])
Conning Officer: [REDACTED NAME] (under instruction of [REDACTED NAME])
NAV Evaluator: [REDACTED NAME]

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Shipping Officer: [REDACTED NAME]
Lookout: [REDACTED NAME]
Helmsman: [REDACTED NAME]
The CO, XO, and Navigator were on the bridge.

20. Special sea detail was set at approximately 0745 and KUKUI got underway at 0757. (Enclosures 8, 9)

21. Prior to setting the aids to navigation bill, the CO decided to proceed out of the entrance channel to the south to pump out the gray water tanks. This evolution was completed without incident. (Enclosures 9, 19).

22. Having pumped the gray water tanks, KUKUI came about, proceeding north into Midway Entrance Channel . At 0825 [REDACTED NAME] assumed the deck and [REDACTED NAME] assumed the conn. At 0828, the aids to navigation bill was set. (Enclosure 8)

The following bridge assignments were in effect (Enclosures 8, 19, 21, 23, 25, 26, 27, 28, 29, 30, 31, 32):

Command: [REDACTED NAME]
Safety: [REDACTED NAME]
Navigator/ATON positioning: [REDACTED NAME]
Officer of the Deck: [REDACTED NAME]
Conning Officer: [REDACTED NAME]
No helmsman is routinely assigned during aids to navigation stations, as the conning officer typically operates the rudder control and other ship control functions while using the Dynamic Positioning System (DPS) in Maneuvering Mode.
QMOW: [REDACTED NAME] (under the instruction of [REDACTED NAME]). The QMOW normally serves as the ship's lookout during aids to navigation operations.

The following personnel were on watch in the engine room:

Engineer Officer of the Watch: [REDACTED NAME]
Fuel Oil & Water King: [REDACTED NAME]
[REDACTED NAME] was the Buoy Deck Safety Supervisor, stationed on the forecastle, and [REDACTED NAME] was assisting [REDACTED NAME].

23. KUKUI proceeded north into Midway Entrance Channel to service Midway Channel Buoy 4 (LLNR 29970). This aid is a 2nd class nun, with 90 feet of 1 ¼ inch mooring chain and a 6,500 pound sinker, in approximately 44 feet. of water. Buoy 4 was scheduled for a regular service, which included a position check and mooring inspection. (Enclosures 8, 35, 36)

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24. [REDACTED NAME, conning officer] observed that the current in the vicinity of Buoy 4 was between 2 – 2 ½ knots moving at 180°T (ebbing) when KUKUI transited out the channel to pump gray water. (Enclosure 25, 26)

25. [REDACTED NAME, CO] estimated the current to be setting 180°T @ 1.5 knots at the time of the grounding (0855). (Enclosures 2, 19)

26. The Electronic Chart Precise Integrated Navigation System (ECPINS) display on KUKUI's bridge indicated a southerly setting current with a speed of 0.7 knots. (Enclosures 11, 21, 23)

27. [REDACTED NAME], KUKUI's Executive Officer, estimated the current speed to be "more like double" the speed indicated by the ECPINS display. (Enclosure 21)

28. The ship's log for 0900 indicated winds from 330°T @ 12 knots with six miles visibility, sea waves 045 at 2 feet and no swell. This is consistent with the conditions reported in the mishap message except seas were listed as 330°T at 1 foot. (Enclosure 11)

29. The Midway entrance channel, as depicted on NIMA Chart 19482, is an approximately 2,400 yards long channel segment from sea and north into the Midway lagoon, leading to a left turn for an inbound vessel into the dredged inner harbor and piers. The entrance channel course is 000 degrees true, the channel is marked with a lighted range, a gated pair of buoys at the entrance (Channel Lighted Buoy 1 and Buoy 2), another gated pair (Channel Buoys 3 and 4) where the channel narrows to approximately 160 yards wide, and three more unlighted buoys (Channel Buoys 5, 7 and 11) on the western side of the channel leading up to the turn. Between the channel entrance and Channel Buoy 7, coral reefs with submerged objects and low lying sandbars lie just outside the improved channel edge on both sides, usually within 40 yards and in some places within 10 yards of the edge of the channel. (Enclosure 37)

30. This was KUKUI's third deployment to Midway since commissioning and the key personnel on the bridge had all made numerous transits in and out of Midway in KUKUI. (Enclosures 20, 22, 24, 26)

31. While maneuvering for ATON stations, KUKUI was being operated in maneuvering mode, and conning control was in the Dynamic Positioning System (DPS) mode, using the joystick at the port (secondary) conning station. This means that both the bow and stern thrusters and the propulsion shaft pitch settings were being controlled from the bridge by the Conning Officer with the joystick. In maneuvering mode, main propulsion shaft speed is maintained at a constant 203 SRPM, corresponding to an engine speed of 720 RPM. (Enclosures 38, 39)

32. KUKUI's buoy deck was set-up to work Buoy 4 port side to, which would necessitate servicing it stern to the ebb current to keep KUKUI on the channel side of the buoy. When underway in WALNUT, I reviewed the draft ROC for the 225' JUNIPER WLB class vessels, which states that the vessel is capable of tending buoys in (Enclosures 19, 21, 23, 25, 26):

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Winds up to 30 knots or 8 foot waves, within 30° of centerline (bow or stern).
Restricted channels 18 feet deep or greater.
Currents up to 3 knots within 6° of centerline (bow or stern).

33. [REDACTED NAME, conning officer] conned KUKUI north of the gate formed by Midway Channel Buoys 3 and 4, and cast the ship 180° to starboard using the joystick in DPS mode and right full rudder. While turning, the ebb current set KUKUI south and the ship was seaward in the channel of the buoy gate; by the time the bow was facing south. [REDACTED NAME, conning officer] then attempted to back up to Buoy 4, using the "Hold Heading" function of the DPS to maintain the ship's head, while thrusting to port to move in for the servicing. (Enclosures 19, 21, 23, 25, 26)

34. [REDACTED NAME, conning officer] and [REDACTED NAME, CO] shared their observations and concerns regarding conditions for working the buoy, and [REDACTED NAME, CO] decided to defer the servicing until conditions improved, and proceed to service Midway Channel Buoy 7 (LLNR 29980), which was further up the entrance channel in a location where the dredged channel was wider and which the current was expected to be less strong. (Enclosures 8, 19, 21, 23, 25, 26)

35. At approximately 0840, at the direction of [REDACTED NAME, CO], [REDACTED NAME, conning officer] backed KUKUI in a northerly direction in the channel to the north of the gate at buoys 3 and 4 while moving the stern towards the green (western) side of the channel. [REDACTED NAME, conning officer] used the DPS heading dial to twist the ship's head to port, applied left full rudder and used the joystick (to apply ahead pitch) to give the ship headway to increase the turning rate. The ship's Navigational Data Sheet indicates "mvcs for buoy ops" at 0842. (Enclosures 11, 19, 21, 23, 25, 26)

36. [REDACTED NAME, conning officer] completed the first (backing) leg of the cast to port at approximately 0849, and the ship was approximately 30 yards to the east of the channel centerline and approximately 140 yards to the north of Midway Channel Buoy 3, with ship's heading of approximately 170°T. (Enclosures 19, 21, 23, 25, 26, 40)

37. [REDACTED NAME, conning officer] then came ahead and crossed the range line moving ahead, by using a strong ahead pitch command from the DPS joystick with the DPS hold heading function set to twist to port and left full rudder. (Enclosures 19, 21, 23, 25, 26, 40)

38. By 0850, the ship had completed about 90° of the 180° turn to port, and the bridge was crossing the channel centerline. (Enclosures 19, 21, 23, 25, 26, 40)

39. Shortly thereafter, [REDACTED NAME, CO] told [REDACTED NAME, conning officer] that "he should watch his speed" and [REDACTED NAME, XO] told [REDACTED NAME, conning officer] that "he should back hard" and a few seconds later [REDACTED NAME,

conning officer] used the joystick to back full (back full is 70% pitch astern). (Enclosures 19, 21, 23, 25, 26)

40. As the ship began to lose headway, at approximately 0852, a Main Propulsion Control and Monitoring System (MPCMS) thruster summary alarm sounded and the Operations Officer, [REDACTED NAME], announced that the ship had lost the thrusters and was no longer in maneuvering mode. (Enclosures 19, 21, 23, 25, 26)

41. [REDACTED NAME, conning officer] estimated the bow of the ship to be approximately 10 yards from the edge of the channel with ship's head approximately 045 at the time that the thrusters were lost. (Enclosure 26)

42. [REDACTED NAME, XO] observed that the ship's head was between 045 and 050 when the thrusters were lost, and that the ship continued to "coast ahead" and shortly thereafter was on the red side of the channel and the stern was moving hard to starboard as the conning officer continued to back. (Enclosure 22)

43. Approximately 10-15 seconds after the MPCMS thruster summary alarm sounded, [REDACTED NAME, conning officer] shifted bridge maneuvering stations from the port DPS station to the center DPS, and then shifted from DPS control to Main Ship Control Console (MSCC) mode. This was necessary to regain maneuvering mode so that the thrusters could be restarted. (Enclosures 19, 21, 23, 25, 26, 40)

44. As [REDACTED NAME, navigator] and [REDACTED NAME, conning officer] worked to regain maneuvering mode and the use of the thrusters, KUKUI continued to move across the channel while the rate of turn to port slowed. KUKUI was also being set to the south towards Buoy 4 by the NW wind and southerly setting current. (Enclosures 19, 21, 23, 25, 26, 40)

45. Shortly thereafter, KUKUI's bow crossed the channel edge on the east side, north of Buoy 4. As the ship continued to move to the southeast and as the pilothouse crossed the channel edge the safety observer on the forecastle notified the bridge that "we were going to go aground up forward" or words to that effect. (Enclosure 19, 21, 23, 25, 26, 29, 30)

46. As [REDACTED NAME, CO] asked the forecastle for more information, [REDACTED NAME, XO] observed a fathometer (Sperry depth sounder) reading of 14.8 feet under the keel. The transducer for this fathometer is located on the bottom of the hull at frame 57 (frames are spaced 18 inches apart on this class vessel). (Enclosures 19, 21, 22)

47. Shortly after this, [REDACTED NAME, navigator] restarted the thrusters, and under direction of [REDACTED NAME, XO], applied maximum thrust to port. [REDACTED NAME, conning officer] continued to back KUKUI with the joystick. (Enclosures 19, 21, 22, 25, 26)

48. At this point, [REDACTED NAME, XO] walked out on the starboard bridge wing, saw sand and coral pieces being "kicked up" in the water forward and noticed that the ship continued to be set to the south and reported the ship's position to be 60 yards north of Buoy 4. [REDACTED NAME, XO] reported that he felt a "slight bump, without any shudder" at this time, and assumed that the ship had grounded. (Enclosures 19, 21, 22)

49. [REDACTED NAME], the EOW in the engine room, reported an MPCMS low cycle alarm for the thruster generator at approximately 0855, and then informed the bridge "that they had lost thrusters." He then directed [REDACTED NAME] to check the thruster generator switchboard. While [REDACTED NAME] was gone, he reported feeling a "bump" and then called the bridge to ask about what he assumed was the ship's grounding. (Enclosure 31)

50. The ship's smooth log for 14 June 2000 indicated that KUKUI lost thruster control at 0853, regained the thrusters at 0854, grounded in position 28-12.155N, 177-21.223W at 0855; starboard side forward on a sand bottom, and stood back into good water at 0856. (Enclosure 8)

51. [REDACTED NAME, conning officer] continued to utilize full thrust to port, and the personnel onboard KUKUI who sensed the grounding did not sense that the grounding had stopped the ship's motion. As the ship began to move to port, back towards the channel, the Commanding Officer ordered left full rudder and handle position 4 ahead on the Main Ship Control Console (MSCC) to move the cutter back into the channel. (Enclosures 19, 21, 23, 25, 26)

52. Between 0855 and 0856, KUKUI moved safely back inside the channel limits and proceeded in a northerly direction to hold station in the channel centerline near Midway Channel Buoy 7, while interior spaces were inspected for damage. No bilge flooding alarms sounded. The hull was not breached and there was no flooding. There were no further machinery casualties and the thrusters continued to operate normally in maneuvering mode. At 0922, soundings of all tanks, bilges, and voids were completed with no discrepancies found. (Enclosures 2, 8, 19, 21, 23, 25, 26)

53. KUKUI proceeded up channel to service Midway Channel Buoy 7 (LLNR 29980) and at 0934, Buoy 7 was on the buoy deck for servicing. (Enclosure 8)

54. A computer printout of KUKUI's MPCMS Alarm/Status Change Log indicates the following sequence of events regarding the loss of the thrusters on 14 June 2000 (Enclosures 41, 42):

08:52:02: Thruster generator frequency fault alarm sounds.
08:52:04: Thruster generator field disengages.
08:52:05: Bow thruster stopped due to thruster generator fault. Thruster generator main breaker opens.
Thruster drive power unavailable.
08:52:11: KUKUI acknowledges thruster generator frequency fault alarm.

08:52:50: KUKUI transfers control back to MSCC to regain maneuvering mode.
08:52:52: KUKUI attempts to regain maneuvering mode. Thruster generator frequency alarm received at 08:52:02 clears.
08:52:53: Thruster generator field status engages (return to normal).
08:53:00: Thruster generator main breaker closes, supplying power to the thruster controllers.
08:53:02: Thruster drive power is available, thrusters can be started.
08:53:11: Stern thruster is started.
08:53:12: Stern thruster faults.
08:53:13: Stern thruster fault clears.
08:53:13: Bow and stern thruster start button pressed.
08:53:14: Bow and stern thrusters on line, KUKUI operating in MSCC maneuvering mode (allowing operation of cutter using engine throttle, shaft, pitch commands, rudder and individual bow and stern thruster controls).
09:08:55: Conning Officer transferred from MSCC mode to DPS mode (allows DPS to control engines/pitch and thrusters).

To summarize, KUKUI was without the use of bow or stern thrusters from 08:52:04 to 08:53:15, a period of one minute, eleven seconds.

55. A review of KUKUI's navigational data from the Electronic Chart Precise Integrated Navigation System (ECPINS) data log file provided by the ship indicates the following navigational parameters of interest (Enclosure 41):

Zulu time/date
Latitude (GPS)
Longitude (GPS)
Ships heading (PGC)
Course made good (from GPS)
Longitudinal speed (knots from doppler)
Translation speed (knots from doppler)
Speed made good (from GPS)
Shaft RPM (from MPCMS)

56. There are no data points for recorded depth (this information is not currently data logged). The ship's GPS position is measured at the antenna, which is located on the starboard side of the mast, approximately 136 feet aft of the stem and 116 feet aft of the forward perpendicular. There is no differential GPS (dGPS) coverage at Midway Atoll or any of the other remote islands in the D14 AOR. (Enclosures 24, 41)

57. ECPINS navigational data was sampled every 15 seconds. As conceptually designed, both the MPCMS and ECPINS time stamps are obtained from GPS timing information and program

software ensures that the internal clocks for the two systems are synchronized over a Local Area Network (LAN). (Enclosures 24, 41, 43)

58. While underway for local operations on 19 July, KUKUI reported to me that the ECPINS internal clock had "drifted" and was lagging the MPCMS internal clock by approximately 30 seconds. KUKUI personnel could not confirm any synchronization error on 14 June 2000, however there is no standard procedure for ship's force to synchronize these clocks on a regular basis. (Enclosures 20, 24, 43)

59. Follow-up laboratory testing at C2CEN confirmed that the ability to confirm synchronization on the two logging systems is difficult to determine, and logging time stamps varied between 10 and 60 seconds, with ECPINS signals generally early. For purposes of this investigation, I have assumed that since the MPCMS time stamp source is the GPS timing signal, time stamps from MPCMS data logging should be accurate in real time. KUKUI provided an ECPINS navigational data file for the period 0840-0900, 14 June 2000. (Enclosures 41, 43)

60. Using the ECPINS data file provided by KUKUI, I attempted to reconstruct KUKUI's navigational track for the period 0840-0900 (the grounding was logged by KUKUI at 0855 and at 0856, a log entry was made that the vessel was "back in good water.") A best estimate plot of KUKUI's navigational track overlaid on the best scale navigational chart for the area is attached. (Enclosures 40, 41)

61. A summary of significant data points from the ECPINS data log follows (Enclosures 40, 41):

Time	(PGC) HDG	(OT) CMG	(KTS) SMG	Relationship to Channel Edge
08:50:03	083.5	134.8	4.7	Approx. 40 yds. east of channel centerline, 110 yds. north of Buoy 3 / 4 gate.
08:51:08	010.5	165.2	3.1	Approx. 20 yds. from eastern edge of channel, 90 yds. north of Buoy 3 / 4 gate.
08:51:59	022.0	141.3	1.4	Approx. 15 yds. from eastern edge of channel, 20 yds. south of Buoy 3 / 4 gate.
08:52:14	013.0	060.2	2.3	Right on channel edge (as charted). Approx. 15 yds south of Buoy "4".
08:53:18	352.9	023.9	1.0	Approx. 25 yds. outside of channel edge, 5 yds. south of Buoy 3 / 4 gate (on 5m depth

				contour).
08:53:38	350.7	-	0.4	Approx. 30 yds. outside of channel edge, 20 yds. north of Buoy 3 / 4 gate (5 yds. inside 5m depth contour; furthest incursion of ship outside the channel).
08:53:53	352.9	-	0.0	Approx. 28 yds. outside of channel edge, just inside 5m depth contour, 20 yds. north of Buoy 3 / 4 gate.
08:54:23	348.9	-	0.1	Approx. 24 yds. outside channel edge, 10 yds. north of Buoy 3 / 4 gate.
08:54:58	335.2	-	0.6	Approx. 20 yds. outside channel edge,10 yds. north of Buoy 3 / 4 gate.
08:55:28	336.7	293.3	1.3	On channel edge, Approx. 20 yds north of Buoy 3 / 4 gate.

62. To summarize the plot (with the assumption that there was not a significant synchronization error between the MPCMS and ECPINS time stamps), at the approximate time that thruster control/maneuvering mode was lost, KUKUI was near the edge of the channel or just inside the channel edge with an orientation of ship's head of between 013-022°T. Just over one minute after loss of thrusters, KUKUI was approximately 20 yards outside the channel edge, slightly NE of the charted position of Channel Buoy 4 with a heading of approximately 353°T. KUKUI regained use of the thrusters at 08:53:14. During the period 08:53:38 – 08:54:08, KUKUI's heading did not change more than 3.5°T with orientation between 351-354°T. There was no calculated course made good, speed made good is between 0.0 and 06 knots, and KUKUI's position plots approximately 30 yards outside the channel edge, on or slightly inside the 5m depth contour. From this data, most probable indication is that KUKUI grounded during the period 08:53:38 – 08:54:08, and was aground for a period of 60 seconds or less. (Enclosures 40, 41)

63. KUKUI logged loss of the thrusters at 0853, regaining the thrusters at 0854, and grounding at 0855 in position 28-12.155N, 177-21.223W. Most probable position of the grounding from the ECPINS data log indicates the ship grounded in position 28-12.155N, 177-21.206W at 08:53:38, this position is approximately 28 yards to the east of the position logged by KUKUI. The ship's log times were based on the bridge clock, which is synchronized with the Trimble GPS unit as part of the standard procedures for getting underway. (Enclosures 8, 40, 41)

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64. Immediately after sensing that KUKUI had touched bottom, the Operations Officer, [REDACTED NAME], used the ship's Electronic Charting System (ECS) to mark the ship's location and track after the grounding on the electronic chart. This chart is the "Cap'n" version of chart 19481 (scale 1:32,500) Midway Islands, is labeled "not for navigational use" and incorrectly indicates Midway Channel Buoy 6 in the approximate position as Midway Channel Buoy 4. (Enclosures 23, 44)

65. From the ECS printout, I plotted the approximate position of the grounding to be 28-12.150N, 177-21.205W, which is consistent with the ECPINS position. KUKUI's location at this point is also consistent with the ship's observed position relative to Buoy 4 (about 60-80 yds NE of the buoy) at the time of grounding. (Enclosure 44)

66. The ECS is used as a backup to ECPINS and is operated using positioning input from the same dGPS/GPS source as ECPINS. It was not being run during the period leading up to the grounding because the software is operated on the same laptop as the ship uses to run the aids to navigation positioning software that was being operated to position check Buoy 4. (Enclosures 24, 44)

67. In Commandant MSG. 241629Z FEB00, the Commandant (G-O) issued updated guidance on standards for the navigation of (WLB-225) JUNIPER class cutters. This message acknowledges the fact that JUNIPER class cutters were the first to enter service purposely designed and crewed for Electronic Chart Precise Integrated Navigation System (ECPINS) navigation. The cutter navigation standards contained in COMDTINST 3530.2 apply to JUNIPER class cutters with the exception that the requirement to use visual LOPS when available on paper charts as the primary means of navigation is waived. JUNIPER class cutters are authorized to use the installed ECPINS as the primary means of navigation. Commanding Officers are tasked to ensure that procedures and practices are developed to augment ECPINS displays with information from other sources, and an independent ECS will serve as a back-up system. Electronic charts must be produced under authority of an official hydrographic office or under contract with a CG approved source, with vector charts preferred over raster. (Enclosure 45)

68. KUKUI's navigation standards specify a current allowance of nautical charts and list a hierarchy of navigation information as follows: (1) dGPS; (2) GPS; (3) Visual; (4) Radar; (5) Celestial. (Enclosure 13)

69. The hierarchy of charts listed in the KUKUI navigation standards are as follows: (1) ECDIS charts; (2) ECS charts; (3) Paper charts. (Enclosure 13)

70. The hierarchy for navigation is listed in the KUKUI's navigation standards as follows: (1) ECDIS (1 minute fix intervals); (2) ECS (1 minute fix intervals); (3) Paper charts (3 minute fix intervals in restricted waters, 10 minutes during buoy operations and more frequently if circumstances dictate). Fixes on paper charts are only required when ECDIS fails or for some other reason the OOD feels the ECDIS or ECS information is inadequate. (Enclosure 13)

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71. DR plots are required for at least two fix intervals ahead, the ECDIS displays this automatically. ECDIS continually updates set and drift. A radar overlay feature is required for use on ECDIS in restricted waters. (Enclosure 13)

72. A standard bearing book is only required when plotting fixes on paper charts is used as the primary navigational method. (Enclosure 13)

73. KUKUI's navigational standards indicate that the navigation detail shall be set at least 15 minutes prior to entering restricted waters, until secured or modified by the Commanding Officer. There is no requirement to set the navigational detail when the ship is at ATON stations. (Enclosure 13)

74. The largest scale chart for Midway Atoll is NIMA chart 19482 (Midway Islands), 8th edition dated May 30, 1998 (correct through NM 22/98). KUKUI's chart (paper) is up to date and corrected through NM 12/00. This chart is 1:10,000 scale with soundings in meters (MLLW), from U. S. Government Surveys to 1941. The Midway Entrance Channel has a note that the channel was dredged to 12.2m at mid-channel in 1972, and a caution note is listed stating that coral heads, in addition to those shown, exist outside of the dredged area. The datum for this chart is WGS 1984, which is equivalent to NAD 83 datum for charting purposes. (Enclosures 24, 37)

75. KUKUI's paper copy of NIMA chart 19482 was on board the ship and being maintained in accordance with the cutter's navigation standards. This paper chart was not used on 14 June 2000 because ECDIS was being used as the primary navigational tool. (Enclosure 24)

76. KUKUI INST 3500 dated 07 Aug 97 lists charts and navigation publications requirements for both the paper and electronic chart portfolio. ECPINS (electronic) NIMA Charts No. 19481 (Midway Islands) and 19482 (Midway Islands) are required, as are the equivalent paper charts. (Enclosure 46)

77. KUKUI did not have the electronic (ECPINS) version of NIMA chart 19482 onboard on 14 June 2000 as required in the ship's chart portfolio, because an electronic version of this chart has not been produced for the Coast Guard yet. Due to funding and contractor workload issues, Coast Guard orders for commercially produced new charts are prioritized and not all of the JUNIPER Class WLB's have received their full portfolio allowance of ECPINS charts yet. Instead, KUKUI was using the electronic version of NIMA chart 19481 in their ECPINS on 14 June 2000. This chart has a scale of 1:32,500 and uses datum WGS-84. (Enclosures 24, 46)

78. [REDACTED NAME], the Operations Officer, indicated that he monitored the ship's GPS position over a 24-hour period, while the ship was moored to the pier in Midway. The ship's position did not vary more than eight yards, but consistently plotted KUKUI approximately 45 yards to the northeast of the pier that the ship was moored to. When entering Midway on the

visual range marking the channel centerline, the ECPINS display consistently showed KUKUI to be approximately 20 yards to the east of track. (Enclosure 23, 24,)

79. Since the datum used by edition 8 of NIMA chart 19482 (paper chart) is WGS-84, GPS positions plotted on this chart from the KUKUI ECPINS should be accurate. Based on KUKUI's observations, it would be expected that the ship's track when plotted on the ECPINS chart (19481) should be shifted approximately 45 yards to the northeast from the track plotted on the paper chart. When the ECPINS track for KUKUI on 14 June 2000 was replayed for me on the bridge electronic chart display, this shift was confirmed. (Enclosures 23, 24, 37)

80. KUKUI currently uses horizontal sextant angles to position buoys at Midway Atoll, as there is no dGPS coverage at Midway Atoll and a prototype portable system is still being tested. As the selective availability degradation was recently turned off for the GPS system, updated Commandant policy on the use of uncorrected GPS for ATON positioning is yet to be promulgated. (Enclosure 23, 24)

81. Midway Atoll Channel Buoy 4 (LLNR 29970) has an assigned position of 28-11-57.000N, 177-21-12.700W. However, this position is based on the Bosun Astro datum of 1941 (field). These positions must be corrected to an average of 11.222" northward and 2.107" westward to agree with the WGS 84 datum for chart 19482. Applying this correction gives an assigned position for the buoy of 28-12-08.222N, 177-21-14.807W (WGS 84). This position when plotted on paper chart 19482 (edition 8) puts the buoy approximately 40 yards to the southwest of its charted position. This position when plotted on the ECPINS version of NIMA chart 19481 did correspond with the charted position. (Enclosures 23, 24, 35)

82. There are no tidal current tables for Midway Atoll. When discussing environmental and navigational conditions at Midway Atoll, the harbormaster and resident pilot at Midway stated that the current in the Midway entrance channel is primarily wind driven and will follow a normal tidal cycle under certain conditions when there is little or no wind pushing water in or across the lagoon. The currents are reported to be unpredictable and in a strong wind, current speeds of up to four knots have been observed. Primarily (with northerly winds) the current ebbs out the channel to the south because the winds push it into the lagoon across the reef to the north. This information is consistent with that in the Coast Pilot. An ebb current would tend to be strongest between the Buoy 3 / 4 gate and Buoy 5, where the dredged channel cut is narrowest. The ebb current sets south in the channel center, but also spills out of the channel on both sides. A NW wind would tend to set a vessel near Buoy 4 to the east, and the spillage would tend to increase this set. (Enclosures 47, 48, 49)

83. The resident pilot isn't sure when the channel was last dredged, but assumes that it hasn't been since 1972, as stated on the chart. A vessel he used to survey the channel with side scanning sonar did find some shoaling near Buoy 4 (27-28 feet minimum depth). However, since the shoaling doesn't protrude into the channel, he is "advertising" a controlling depth of 35 feet (MLLW) for the 400 feet width of the channel at its narrowest. He has not found any

shoaling that would be of concern to a light draft vessel such as KUKUI or that in his opinion would necessitate relocating any of the channel buoys. (Enclosure 49)

84. The range design program for Midway Entrance channel uses a channel navigational width of 400 feet. The channel width as hand measured from chart 19482 (Ed. 8) is approximately 160 yards, or 480 feet. The chart indicates an advertised depth of 12.2m (MLLW) at mid-channel (1972). This chart indicates that the 10m depth curve is on or just outside of the improved channel line at the charted position of Buoy 4. The 5m depth curve is approximately 30 yards outside (to the east of) the improved channel line at this position. (Enclosure 37)

85. Buoy 4 was relocated as part of a channel entrance re-marking project in 1995. (This buoy was previously Midway Channel Buoy 6, it was renamed Channel Buoy 4 and its assigned position was moved approximately 65 yards to the northeast). Since then, the buoy has consistently been found in between 31 and 46 feet (MLLW). No indications of any shoaling in the area were found during routine servicing. (Enclosures 35, 36)

86. On 15 June 2000, KUKUI successfully serviced Midway Atoll Channel Buoy 4, and the buoy was found off-station (the sinker was dragged off-station by the ship before the found fix was determined, and the buoy's position when found was estimated to be 30 yards southwest of the assigned position). (Enclosures 35, 36)

87. On 17 June 2000, KUKUI's dive team completed a bottom survey in the vicinity of Channel Buoy 4 and in the area around the approximate location of the grounding. No evidence of the grounding on the reef outside the channel was detected, and no shoaling or pinnacles were located other than what would be expected from the chart bottom topography for the area outside the edge of the improved channel. (Enclosures 3, 20)

88. There is currently no dGPS coverage for Midway Atoll. On May 2, 2000, the selective availability degradation for GPS was set to zero. The Coast Guard is informally advertising that a basic GPS accuracy of 10-20m or better should now be available with selective availability turned off. Scatter plots in the latest edition of the Radionavigation Bulletin displayed test results of 95% of GPS data points (WGS84) to fall within a radius of 6.3m of a pre-determined position. KUKUI's informal test of their GPS positioning at the pier at Midway held the ship within an approximately 8 yards radius over a 24-hour period. (Enclosure 50)

89. KUKUI's navigational GPS antenna is located on the mast and all positions in ECPINS are referenced to the antenna position. The positions obtained by the ECPINS are referenced to the same datum as those on the 8th edition of chart 19482. Positions from the ECPINS data log can be plotted directly on the chart with no corrections. (Enclosure 24)

90. An estimated navigational track of KUKUI from 0840-0900 has been reconstructed on two X-Y plots. The first plot shows the entire trackline for the period. The second shows the trackline during the period that the ship moved out of the dredged channel. On the second plot,

the primary chart features, including the improved channel edge and the 5m depth contour have been indicated on the plot after hand picking them off of the chart. The second plot includes data points for significant engineering actions with the bow and stern thrusters indicated based on the time stamps from MPCMS. The assumption made in the plot is that the time stamps for the MPCMS and ECPINS data logs were synchronized. Any synchronization errors between the time stamps would shift the plot in time/location accordingly. (Enclosures 52, 53)

91. While operating at aids to navigation stations in Midway Entrance Channel prior to and after the grounding, KUKUI was operating the joystick/dynamic positioning system in maneuvering mode. The modes available in this configuration include (Enclosures 39, 39):

a. Manual mode – propeller pitch ahead/astern and bow and stern thrusters changed per joystick (X-Y) inputs.

b. Hold heading - MPCMS uses thrusters to hold an inputted gyro heading.

c. Hold position – available, but unavailability of dGPS means ship will not hold position to standards advertised. With hold position engaged, the operator has the option of maintaining a desired heading manually or by engaging the hold heading function. The operator also has the option of rotating the ship around an alternate center of rotation if desired

d. Follow track – Uses ECDIS and gyro input to follow a pre-selected trackline.

92. While in joystick/dynamic positioning mode, the joystick can be operated from the main (control) console or from remote joysticks at both the port and starboard conning stations. (Enclosures 38, 39)

93. While in transit mode, the ship will hold course, hold speed, and follow a track based on the ECDIS and Doppler speed log input. The thrusters are not energized during transit mode. (Enclosures 38, 39)

94. Maneuvering mode provides operator control of the main shaft and thrusters. Main shaft rpm (and engine speed) is fixed. Longitudinal forces are provided by varying propeller pitch only, and lateral forces (heading changes and/or lateral motion) are provided by the thrusters. Operator input is made with a joystick and heading knob at any of the pilothouse stations, and the propulsion control computers generate appropriate pitch and thruster commands to develop the desired thrust vector(s). Whenever thrusters are called for, the propulsion control system attempts to run the engines at a constant speed to provide stable 60Hz power by the thruster generator, just as standard ship's service diesel generators do. (Enclosures 38, 39)

95. The machinery plant consists of a single shaft, controllable-pitch 10 foot diameter 4-bladed propeller, with DC motor driven bow and stern thrusters. Prime movers are 2 CATERPILLAR

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Model 3608 turbocharged 8-cylinder Diesels. Each engine is connected by an air-operated clutch to the reduction gear. The thruster generator is a 1000 kW, 60Hz AC generator. Silicon Controlled Rectifiers (SCR) convert the 60 Hz AC power to DC in each thruster space. The after thruster is slightly larger (550 hp) than the forward thruster (450 hp). The thruster generator is driven from a power take-off shaft from the reduction bull gear through a universal joint shaft and a torsional vibration damper. Early operating experience on JUNIPER, determined that due to electric limitations of the system, the thrusters could not be reliably operated simultaneously at 100% of their ratings. After experimenting with the system's capabilities, total thrust was limited to approximately 700hp. This was done by programming the control system to limit the combined speed signal (sum of bow and stern thruster as a percentage of maximum speed) to 150% in any combination (i.e., bow 50%, stern 100%) when in dynamic position mode. Running at loads above this limit results in the thrusters tripping off line due to degraded electric power quality. In addition, each thruster controller has its own limiting systems to prevent damage from overspeed or overheat. (Enclosure 38)

96. The thruster generator can only be energized and provide power to the thruster system within a narrow operating envelope. The SCR systems require 60Hz power to operate properly. The propulsion control system monitors the quality of the power (voltage and frequency) as well as shaft rpm, and if it detects problems, de-energizes the thruster generator and powers down the system. (Enclosure 38)

97. Once the system is powered down, the sequence to reenergize the system and reengage thrusters requires approximately one minute to complete. (Enclosure 38)

98. The shaft rpm setting is not operator adjustable and provides an instantaneous trip command when the values fall outside the allowed range. The thruster generator frequency and voltage signals have operator adjustable time delays. At delivery, these delays were both set at three seconds. Some time after delivery and prior to 14 June 2000, the delay settings on KUKUI were increased to ten seconds. (Enclosure 38)

99. Thruster system "trips" are initiated by an out of tolerance sensor signal to MPCMS. The srpm tolerance window is 192.4 rpm to 214 rpm. In maneuvering mode, engine speed is maintained at 720 rpm and shaft speed is maintained at 203.4 srpm. A momentary transient reading for shaft speed or a spurious signal for shaft speed is enough to cause the MPCMS to de-energize the thruster system. (Enclosure 38)

100. On 27 June 2000, a technical team under the supervision of PRO Marinette visited KUKUI in homeport to assess the engineering (thruster) casualty sustained at Midway on 14 June 2000. This team consisted of [REDACTED NAME] and two other PRO members, as well as senior technical experts from Marinette Marine and FABCO Corporation. The purpose of the visit was to do a limited general assessment of the plant condition while inport, observe the operation of the engineering and propulsion plant while underway, and to assess the data provided by the MPCMS associated with the casualty on 14 June 2000. (Enclosure 38)

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101. During the inspection of the plant while inport, PRO Marinette had the following findings (Enclosure 38):

a. Both main engines were operating properly except that the rack positions required adjustment (not an adjustment that is crew performed).

b. On 15 June 2000, the day following the grounding, KUKUI had submitted a CASREP on the thruster generator shaft line bearing due to cracks in the upper pedestal cap which allowed the outer bearing races to rotate.

c. Although not measured with test equipment, thruster generator vibration levels seemed excessive.

d. A crack was discovered in the thruster generator during inspection. Subsequently, Coast Guard ELC issued class wide guidance to perform one time inspections of the thruster generator to check for similar cracks. USCGC WALNUT's inspection located similar cracks, possibly of worse severity.

e. Both thruster generators were actually running approximately 25 rpm faster than the rpm transducers indicated, resulting in a greater thruster load on the generator than would otherwise be permitted.

f. The thruster generator frequency transducer (measures thruster generator output power frequency) had been modified so that it was powered through a relay. This was done sometime after delivery, but no one present could account for when.

g. The shaft tachometer generator (rpm signal) had been modified by the Engineering Officer, to be similar to the design being implemented on the new "B" class WLBs. This was done using technical data provided by the PRO after repeated failures of KUKUI's shaft tachometer (and similar failures on other "A" class WLBs).

102. Despite the above discrepancies, all of which were considered by the PRO to be minor, there was no evidence noted by the senior member of PRO technical team which would in his opinion constitute neglect or improper maintenance contributing to the casualty on 14 June 2000. (Enclosure 38)

103. The ship was operated pierside in homeport on 29 June 2000, with no load in maneuvering mode. When a signal generator was used to simulate a low shaft rpm, the MPCMS de-energized the thrusters. The alarm and status change log pages produced the same set of entries as those retrieved from the system for the casualty on 14 June 2000. When a generator frequency transducer fault was generated by opening the transducer circuit, the thrusters also tripped as expected. However, the MPCMS log reading included an additional comment which was absent in the 14 June 2000 incident log and the low rpm signal test. (Enclosure 38)

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104. On Friday, 30 June 2000, KUKUI got underway in an attempt to duplicate the casualty in open water, with PRO and technical personnel onboard: (Enclosure 38)

a. When simulating the maneuvers of 14 June 2000, in DP/joystick mode, the thrusters did not shut down, but shaft rpm was recorded dropping to within 1-2 rpm of the MPCMS tripping value, and both engines were observed to be at 100% load with fuel racks at their stops.

105. Following this effort, thrusters were programmed to provide 100% rpm (stern) and 50% rpm (bow) while in local control. The DPS/joystick was used to control propeller pitch while the thrusters were operated locally in the thruster spaces. The attempt to trigger an out of limits rpm signal by loading the plant was unsuccessful, but as the stern thruster was powered down at the conclusion of maneuvers, the thruster generator de-energized (during the unloading sequence). All indications are that this was due to load-sharing imbalances. (Enclosure 38)

106. The senior member of the PRO technical team had the following findings and opinions (Enclosure 38):

a. As currently configured, under extreme loading conditions (i. e., hard backing with maximum thruster loads), the power demand on the engines exceed their maximum capacity by approximately 600hp (4700 hp available, 5300 hp required by full propeller and thruster loading).

b. This overload condition caused a shaft rpm drop, which then triggered the shutdown signal. The most likely cause of the thruster shutdown and subsequent loss of availability to maneuvering mode prior to the grounding of KUKUI on 14 June 2000 is that the maneuvering thruster system de-energized on computer command, due to shaft rpm being out of the acceptable window.

c. Two out of tolerance transducer signals that have no required routine checks or adjustments contributed to the likelihood of a thruster system "trip" by reducing the power available and increasing the power demand by letting the thruster motors operate at a higher rpm than was indicated to MPCMS and that they were rated for.

d. While the two conditions mentioned above regarding the machinery plant contributed to this incident, this is not attributed to any shortcomings, poor operating practice or improper maintenance on the part of ship's personnel.

e. Of the five "A" class 225' WLBs now in service, there are anecdotal reports from three that thruster system shutdowns happen either occasionally or regularly. One other of the new cutters reported having previous problems, but none during the last year.

f. The apparent unauthorized rewiring of the thruster generator frequency transducer wiring at some point after delivery provides another failure mode, but did not cause the thruster system to "trip" on 14 June 2000.

g. Thruster system "trips" are initiated by an out of tolerance sensor signal to the MPCMS. Since adequate monitoring exists in the thruster system to protect it from damage due to overload or unacceptable generator frequency if the values remain out of tolerance for a sufficient period (three seconds at delivery, set subsequently to ten seconds by KUKUI), there is no apparent reason to continually monitor the shaft rpm value and de-energize the thruster system on a momentary transient – shaft rpm value.

h. It was impossible to duplicate the environmental conditions experienced by KUKUI at Midway on 14 June 2000. It is assumed that depth of water, current and winds are all believed to play a significant role in the dynamic load imposed on the machinery plant.

i. The vibration levels experienced in the thruster generator did not contribute to the incident; however, they are indicative of an imbalance and/or misalignment; and this condition is the cause of the crack in the foundation.

j. Although one instance of "governor hunt" was experienced during the underway portion of this inspection of KUKUI by the PRO, it is not a significant contributor this incident.

107. The senior member of the PRO technical team had the following recommendations (Enclosure 38):

a. KUKUI should restore the thruster generator frequency and voltage alarm setpoints (time delays) to the delivered values (three seconds).

b. KUKUI should restore the thruster generator frequency transducer wiring to the delivered condition (remove the relay from the circuit).

c. The MPCMS software should be modified to eliminate shaft rpm as a disengage condition.

d. The pitch/rpm tables should be adjusted for each operating mode to avoid inadvertant plant overloading conditions.

e. An expanded review should be conducted regarding the appropriate frequency of checking and adjusting all control inputs in the propulsion control and maneuvering systems, including the thruster rpm and main diesel engine load sharing systems.

f. If possible, the propulsion control interface should be modified specifically to reduce the time delay for ship's personnel to re-energize thrusters after inadvertant loss.

g. A data logging system should be implemented which records pre-selected parameters and keeps the most recent two hours of data at all times, so that improved casualty analysis can be conducted by technical experts.

108. The Commanding Officer, PRO Marinette, after reviewing the PRO technical team's report, had the following comments, which have been summarized (Enclosure 38):

a. The assessment that the sensor monitoring shaft rpm may not be needed in the circuit as an operational trip is significant. Removing this as a monitoring parameter for an operational trip (it would remain as a permissive for engaging the propulsion control system in the maneuvering mode) could significantly improve reliability. Further assessment is required to ensure that the remaining operational trips (thruster generator frequency and voltage monitors) will provide sufficient protection for the safety of the system.

b. The cause of the rpm monitor assessing speeds outside of the normal range is a complex issue that needs further study. The possibility that an unloading condition actually caused the casualty cannot be completely ruled out and should be considered.

c. There is currently no PMS requirement to periodically groom the propulsion control system and establishing one would mitigate the potential for inadvertant thruster trips.

d. The factors that play into the speed/pitch curves are complex and need significant additional study and testing, and all modes of operation should be reassessed. The most recent study of the WLB-A Class cutters was focused primarily on developing improvements for the off-design condition of single engine maneuvering mode operations. Dual engine modes and single engine transit modes were not the focus of the latest upgrades. This highlights the need for improved feedback, as dual engine operations were thought to be satisfactory due to the lack of feedback from the fleet to the contrary.

e. The technical report notes that there does not appear to be a linkage between the condition of the thruster shaft system and the tripping of the thrusters and the grounding of the ship. It appears that finding higher than normal vibration in the thruster generator drive system, the crack in the thruster generator foundation, and the damage to the thruster generator shaft bearing simultaneous to the thruster generator tripping and the grounding of the ship is too coincidental. Having said that, there is no information that points directly to a linkage.

109. When key personnel aboard the ship were asked about the history of the loss of maneuvering mode/thrusters aboard KUKUI since the ship's delivery, the reports were (Enclosures 20, 21, 22,23,24, 25, 26, 34):

a. Estimates ranged between 6-12 times in two years, [REDACTED NAME, navigator] indicated "numerous times."

b. Approximately a year prior to the grounding, [REDACTED NAME, CO] had to assume the conn to extract the ship from an unsafe situation when maneuvering mode was lost on final approach to the pier at ISC Honolulu.

c. In March 2000, maneuvering mode was lost while working a buoy in the entrance channel at Kaneohe Bay.

d. The unexpected loss of the thrusters usually occurred when the ship was in DPS mode when a large backing bell was applied, and when "thrusting hard."

e. Not all of the losses were in similar circumstances, or were easily explained.

f. On 13 June 2000, the day prior to the grounding, the thrusters were lost due to "tripping of the breakers" for thruster power, but maneuvering mode was not lost and the thrusters were quickly restarted when the breakers were manually reset.

110. When underway in USCGC WALNUT, the Commanding Officer reported to me that the ship had experienced close to "two dozen" incidents of inadvertant loss of maneuvering mode/thrusters since delivery. However, many of these were during the 1999 Kwajalein deployment when problems with the main engine governors were being experienced, and there had been fewer incidents during the period of the last six months. USCGC WALNUT had an outstanding CASREP on the main propulsion shaft tachometers, and was using a "dummy signal" to the MPCMS for shaft rpm. Since this was implemented, there have been no instances of inadvertant thruster loss.

Opinions

1. That the primary cause of the grounding of USCGC KUKUI (WLB - 203) at the Midway Atoll Entrance Channel on 14 June 2000 was the loss of the maneuverability resulting from the computer (MPCMS) commanded shutdown of the bow and stern thrusters as the cutter neared completion of a 180 degree turn to port, while casting about in a narrow channel against prevailing northwest winds and strong current setting to the south. (Findings 1, 31, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 54, 62, 63, 90, 95, 96, 97, 98, 99, 100, 101, 102, 103, 106, 107, 108, 109, 110)

2. That KUKUI grounded at approximately 0854, in position 28-12.155 N, 177-21.206 W, approximately 30 yards outside the charted edge of the improved channel, at both bow and stern, in less than 5 meters of water on a sand and coral bottom. KUKUI remained aground for less than one minute and sustained some scratches on the starboard bow, some scratches and dents near the stern on the starboard side along a 22 foot long section of the hull which includes the stern thruster tunnel, and the ship's propeller tips may have brushed the bottom. (Findings 1, 2, 3, 4, 5, 50, 54, 61, 62, 63, 64, 65, 88, 89,90)

SUBJ: INVESTIGATION OF THE FACTS AND CIRCUMSTANCES CONCERNING THE GROUNDING OF USCGC KUKUI (WLB-203) AT THE MIDWAY ATOLL ENTRANCE CHANNEL ON 14 JUNE 2000

3. The cost to the Coast Guard for the minor damage sustained by KUKUI from this incident is estimated to be approximately $5K to repair the paint damage to the underwater body. There may be some additional minor costs incurred should some repair to the dished steel hull plating be determined necessary the next time that the cutter is scheduled for routine drydocking. This damage is consistent with the minor dings and dents that a seagoing buoy tender would be expected to incur to the hull over its service life. (Findings 1, 2, 4, 5)

4. Had KUKUI not experienced an MPCMS commanded shutdown of the bow and stern thrusters, with subsequent loss of maneuvering mode (KUKUI was without the use of the bow and stern thrusters for a period of approximately 1 minute, 11 seconds), the cutter would have still moved past the edge of the improved channel, but most likely would not have grounded. When the thrusters were lost at 08: 52:04, ship's head was approximately 020 degrees true and still swinging to port, and would have been successfully brought through the wind and current (the predominant force acting on the ship) in approximately 20 more seconds. Also, based on a rough estimate of side speed of 1.25 knots with both thrusters at full capacity to port, I estimate that KUKUI could have moved approximately 50 yards to port in still water during the period that she was without thruster capability. This should have been enough to counteract the set to the east by the wind and current and prevent the ship from moving far enough out of the channel to ground near the 5m depth contour. (Findings 1, 25, 29, 32, 40, 41, 42, 44, 45, 46, 48, 49, 50, 54, 61, 62, 63, 82, 90)

5. The navigational plot I produced which correlates the ship's track from ECPINS data with engineering events from MPCMS data assumes that both systems are keeping the exact same time. As this investigation progressed, and after discussion with C2CEN personnel, the point was raised that with recent software changes there may in fact not be synchronization of the time stamps (clocks). This raises the question of possible timing synchronization error onboard KUKUI on 14 June 2000, making exact correlation of the engineering casualty and ship's navigational track problematic. (Findings 54, 55, 56, 57, 58, 59, 60, 61, 62, 89, 90)

6. Although near the edge of the charted improved channel when the casualty was sustained, there is no evidence to indicate that KUKUI touched the bottom prior to the casualty to the thrusters. Despite some uncertainty over timing, navigational accuracy limitations with no dGPS coverage and scale limitations for the chart and bottom contour near the area; the ECPINS navigational plot, MPCMS history of the casualty and alarm indications and statements by KUKUI personnel are all essentially consistent with the order of events in time and in space. I believe that the thruster casualty occurred, thrusters were restored and the ship grounded shortly thereafter, which is consistent with the order of events reported in the initial mishap message. This is the only scenario that fits when correlating all of the data. (Findings 1, 25, 29, 32, 40, 41, 44, 45, 46, 48, 49, 50, 54, 61, 62, 63, 82, 90)

7. Once the use of the bow and stern thrusters was lost, grounding was inevitable. The predominate external forces acting on the ship, a strong ebb current and a wind from the

northwest both acting on the port bow continued to push the ship to the east and out of the channel. Without the use of the thrusters, a JUNIPER class WLB becomes a poorly handling single screw ship, with a marked stern walk to starboard. KUKUI was essentially "in irons" at this point and with nothing available to provide a side force vector to port, there was no way to extract the ship from the situation. (Findings 1, 25, 29, 32, 50, 51, 54, 61, 63, 82, 90)

8. [REDACTED NAME, CO]'s actions following the loss of the thrusters were timely and appropriate. Ordering the thrusters re-started as soon as possible and minimizing the ship's headway served to reduce potential for serious damage to the ship, which was a strong possibility with the presence of coral heads outside of the channel. An attempt to either drive the ship ahead and back out into the channel or to back the ship back into the channel would both have tended to put the stern and screw in more danger. [REDACTED NAME, CO]'s actions safely extracted the ship with minimal damage and did not make a difficult situation worse. (Findings 1, 2, 3, 4, 5, 29, 54, 62, 63, 82, 83, 84, 86, 87)

9. I'm not sure that letting go the ready anchor immediately after the loss of the thrusters would have prevented the grounding. It may have allowed the stern to swing further out of the channel and/or allowed the ship to drift back over Midway Channel Buoy 4 and its mooring, which was close aboard near the stern. [REDACTED NAME, CO] explained that he did not consider the use of the anchor for those reasons, which seem sound to me. (Findings 1, 29, 43, 48, 49, 54, 61, 62, 86, 90)

10. KUKUI's main propulsion control system has had a history of computer (MPCMS) commanded thruster shutdowns, with subsequent loss of maneuvering mode, since delivery in 1998. The most recent incident while in piloting waters occurred approximately three months prior to this incident while servicing a buoy in Kaneohe Bay. All conning officers interviewed reported unexpected loss of maneuvering mode between six and twelve times during the previous two-year period. CGC WALNUT also provided anecdotal reports of loss of maneuvering mode on a frequent basis. The common factor in the majority of the reports is computer-commanded shutdown of the thrusters when a hard astern bell was applied, most often in DPS/Joystick mode. (Findings 54, 96, 97, 98, 99, 101, 104, 106, 107, 108, 109, 110)

11. The primary cause of the MPCMS commanded thruster shutdown which led to KUKUI's grounding on 14 June 2000 was the conning officer's application of maximum astern pitch to slow the ship after it had gained headway in the narrow channel, with bow and stern thrusters at maximum operating load to turn the ship's head to port, while operating in relatively shallow water and turning into a strong wind and current. The load on the main propulsion shaft and the subsequent load on the engines was enough to bring the shaft speed below the permitted minimum value, resulting in the computer commanded shutdown. (Findings 39, 40, 54, 90, 96, 97, 98, 99 101, 102, 103, 104, 105, 106, 107, 108, 109)

12. KUKUI's ability to get the thrusters restarted and back on line in one minute, eleven seconds was prompt. This process takes several steps and my discussions with personnel from both KUKUI and WALNUT and PRO Marinette personnel suggest that it cannot be completed in less than one minute after maneuvering mode is lost. (Findings 54, 62, 90, 97)

13. KUKUI's recreated track, based on the ECPINS and MPCMS data, has the ship moving just to the south of or moving over the charted position of Midway Channel Buoy 4. I was unable to completely resolve the datum issue for the assigned position of Buoy 4. However, the fact that the buoy was found off-station to the southwest on the day after the grounding and would have been at maximum mooring excursion to the south due to the strong southerly setting current would tend to explain the ship's orientation with relation to the buoy when the ship moved outside the channel. (Findings 32, 42, 44, 45, 48, 61, 64, 65, 80, 81, 85, 86, 87, 90)

14. The lack of dGPS coverage at Midway, as well as the fact that the KUKUI's best scale electronic (ECPINS) chart for Midway is not the best scale chart for the area (and that either due to a datum or scaling problem result in positions that are 45 yards in error, based on KUKUI's observations in Midway) are important issues, that while not urgent safety issues, should be followed up on. The Commandant navigation standards waiver of the requirement to plot LOPs on a paper chart does not specifically address minimum requirements for navigation system coverage or chart adequacy to meet the ECDIS requirements. However, KUKUI's grounding was during a straightforward shiphandling evolution (casting the ship about in a narrow channel), KUKUI had observed the discrepancies and made adjustments for them and had utilized numerous visual references and "seaman's eye", and these discrepancies were not factors in the grounding. (Findings 29, 30, 66, 67, 68, 69, 70, 71, 74, 75, 76, 77, 78, 79)

15. [REDACTED SENTENCE] This maneuver demanded all that the ship's propulsion and maneuvering systems could provide. Some history of inadvertent thruster shutdowns was evident and understood. This would have been a "tight" maneuver without loss of the thrusters, which occurred at the worst possible time and set the stage for the grounding. A safer maneuver would have been to proceed south of the Buoy 3 / 4 gate, where the channel widened, or to slowly turn the ship on the range centerline while using pitch commands to hold it in the center of the channel. The second option would essentially have had the same effect as the first, because of the strong set to the south from the current that the ship would have experienced with a slow turn to port. (Findings 29, 33, 34, 35, 39, 61, 74, 82)

16. [REDACTED SENTENCE] In my opinion, the ship would have completed the maneuver safely had not the casualty occurred. (Findings 29, 33, 34, 35, 39, 61, 74, 82)

17. The use of DPS/Joystick mode while not in the "Hold Position" mode and while maneuvering the ship in a restricted area is in my opinion, fraught with some risk. Many of the conning officers that I interviewed said that they prefer to use the joystick once they become comfortable with it. However, all of the traditional means to help observe and supervise a

conning officer (verbal helm orders, throttle handle position, engine noise levels, verbal bell commands, wind in the face...etc.) are not present when the joystick is used in a series of small deflections. A mistake by the conning officer takes longer to be noticed when this method is used. (Findings 39, 91)

18. The use of the "Hold Position" function while simultaneously using the "Hold Heading" function to twist the ship would not have been a successful method to complete this maneuver. This is not because of the lack of dGPS coverage, but because maximum thruster power would have been required just to hold the ship in position against the elements, leaving none in reserve to turn it. (Findings 1, 91, 95)

19. [REDACTED NAME] is a competent and experienced conning officer who was well qualified to handle KUKUI in the location and conditions faced at Midway on 14 June 1000. Although he was "on the edge of his personal comfort zone," the maneuver would have been a challenge to any conning officer. (Findings 22, 24)

20. That the thruster reliability problem and the grounding are not related to any deficiencies in maintenance or operation of the engineering plant by ship's force or due to any qualification or training deficiencies regarding the personnel on the bridge or on watch in the engine room aboard KUKUI at the time of the grounding on 14 June 2000. (Findings 16, 17, 18, 19, 22, 30, 101, 102, 106, 107, 108, 109, 110)

Recommendations

1. [REDACTED PARAGRAPH]. (Opinions 1, 3, 4, 6, 7, 8, 9, 10)

2. That a copy of this report be forwarded to the Commandant (G-OCU), (G-SEN) and (G-AWL). The maneuvering mode/thruster reliability issue needs prompt follow-up. It has become evident that this problem has been experienced by all or most of the five JUNIPER Class WLBs currently in operation. PRO Marinette has taken prompt and deliberate steps to correct it as known issues become evident, but apparently the reporting of thruster failures has been sporadic, probably because KUKUI's casualty is the first such instance which led to a mishap. The reliability of the propulsion plant maneuvering mode/thruster operation is critical in the JUNIPER Class vessels. These exceptionally capable ships are both designed and crewed to work much more efficiently, in conditions that a Balsam (180') WLB class vessel couldn't safely even attempt, in particular, with the prevailing conditions acting other than directly or nearly directly on the bow. A loss of thruster capability and subsequently the loss of ability to counter side forces results in a very poorly maneuverable single screw ship. The inherently hazardous nature of aids to navigation operations, especially with these much larger ships working in the same tight areas, will inevitably on occasion demand all that the maneuvering and propulsion system can provide, and loss of the thrusters at the wrong time in the wrong situation could prove disastrous. The tremendous maneuvering advantages that the thruster system provides also

means that the impact to the cutter, if the system fails, can be much more immediate and much more negative. An opposite concern would be if cutter commanding officers lost confidence in the reliability of this system, as this could serve to sub-optimize the efficiencies represented by these ships, as more time is spent waiting for better working conditions. (Opinions 1, 2, 10, 11, 12, 20)

3. That a recommendation to Commandant (G-OCU) include the recommendation to remove the shaft rpm as a parameter for thruster tripping by the MPCMS. That a method to shorten the amount of time required to recover the use of the thrusters after inadvertant loss be investigated. That Commandant (G-OCU) and (G-SEN) work with PRO Marinette to establish a reporting system to specifically track maneuvering mode/thruster reliability in all five of the JUNIPER Class cutters since delivery. A better analysis of how urgent and widespread a safety issue the thruster reliability is can only be made with better documentation and reporting of failures and their causes. (Opinions 1, 7, 10, 11)

4. That technical issues regarding the system brought out by PRO Marinette in their extremely thorough analysis of the casualty on KUKUI, although beyond the scope of this investigation, should be further reviewed for possible follow-up action. And that KUKUI work with PRO Marinette to address the maintenance changes recommended in their report. (Opinions 10, 11)

5. That the portable dGPS unit currently being operationally tested in District Fourteen be a priority for support and deployment to WLBs operating outside the D14 dGPS footprint. And that the Commandant (G-OCU) continue to identify areas where the ECPINS electronic charts have outdated hydrographic information, datum errors or do not include the best scale charts for the areas in which ATON cutters operate. Again, I don't consider the above urgent safety issues, but areas for long term improvement. (Opinions 13, 14)

6. That D14(oan) work to resolve the positioning datum issue with Midway Channel Buoy 4 and the other aids to navigation at Midway on the next scheduled WLB deployment to Midway Atoll. (Opinions 13, 14)

7. That Commandant (G-OCU) consider implementation of data logging of the ship's fathometer reading for water depth in the ECPINS software, and that a process be established to insure that the MPCMS and ECPINS data time stamps are synchronized. (Opinion 5)

8. That a copy of this report be forwarded to PCO/PXO School for use in the training curricula. (Opinions 15, 17, 18)

CARGO HOLD FIRE

ONBOARD WLB

9 FEBRUARY 1998

O 091605Z FEB 98
FM USCGC WLB 225
TO ZEN/COMDT COGARD WASHINGTON DC//G-KSE/G-OCU/G-AWL//
BT
UNCLAS FOUO//N05100//
SUBJ: PRELIMINARY MISHAP REPORT
A. COMDTINST M5100.47
1. DISCLOSURE OF INFO IN THIS MSG MUST BE IAW ENCL (2) TO REF (A).
2. THIS INFO IS REPORTED IAW ENCL (6) TO REF (A).
3. GENERAL DATA:
DT: 98FEB09
TME: 0125R
OPFAC: XX-XXXX
ATMI: BRAVO-24
LOC: MOORED STBD SIDE, NETC PIER 2, NEWPORT, RI.
WIND: 152 DEGREES TRUE, 6 KTS
AIR: 34 DEGREES F
WAVE: CALM
SEA: CALM
VIS: 10 NM
LITE: NIGHT
PRECIP: NONE
NAR: 0125R, MK3 QUARTERDECK WATCHSTANDER, RCVD MPCMS HIGH TEMP ALARM IN CARGO HOLD, COMPT 2-30-O-AA, ALSO NOTED A DARK SCREEN ON THE QTRDK COLOR CCTV MONITOR. HE INVESTIGATED, FINDING FLAMES AND HEAVY BLACK SMOKE IN CARGO HOLD. MK3 ENSURED FIRE BOUNDRY AFT WAS SET AND FAKED FIRE HOSE. HE THEN RETURNED TO QTRDK, SOUNDED GENERAL ALARM, PIPED FIRE IN CARGO HOLD AND ALL HANDS MUSTER ON QTRDK. HE ENSURED EOW WAS AWAKE AND CALLED 911. EOW, DONNED SCOTT AIR PACK AND INVESTIGATED. 0131R THE FIRE MAIN SYSTEM WAS LIT OFF AND INSTALLED SPRINKLER SYSTEM WAS ENERGIZED IN THE CARGO HOLD FOR APPROX 40 SECONDS. 0134R NETC FIRE DEPT ARRIVED, ASST CHIEF WAS BRIEFED BY THE EOW AND ESCORTED TO THE CARGO HOLD TO INVESTIGATE. CARGO HOLD ACCESSED VIA THE AFT QAWTH 2-39-3. 0140R FIRE REPORTED OUT. POWER WAS SECURED FROM THE PIER, AND EDG CAME ON LINE. FWD HPU WAS ENERGIZED TO REMOVE CARGO HATCH FOR VENTILATION. 0155R CARGO HATCH WAS REMOVED VENTING THICK GREY/BLACK SMOKE. 0300R, FIRE DEPT DEPARTED SCENE. MAJOR DAMAGE TO HYDRAULIC RUNS, HYD DIRECTION CONTROL VALVE, OVERHEAD CABLE RUNS. MISC FIRE AND SMOKE DAMAGE TO MATERIALS STORED IN HOLD.
CAU: DESIGN. NETC FIRE DEPT INDICATES FIRE APPEARS TO HAVE STARTED AROUND VALAD ELECTRIC HEATING CORP, HEATER, MODEL 20948.0-3NM, 450VAC, 8.0KW, 3 PHASE, MMC PART NO, 0101-512-01-UH9. LOCATED IN COMPT 2-30-0-AA, AT THE FWD BULKHEAD AND CENTERLINE.
ACT: REVIEW. THIS MAY BE A 225/175 CLASS WIDE PROBLEM. BASED ON REVIEW OF VALAD TECH MAN AND VISUAL INSPECTION OF HEATER, SAFE CLEARANCES FOR HEATER SET FORTH IN THE MANUAL WERE NOT ADHERED TO.
TLE: LCDR/0-4 CO.
RDT: 98FEB09.

4. ESTIMATE $100-200K DAMAGE, 3 WEEKS TO REPAIR. MINIMAL OPERATIONAL IMPACT ANTICIPATED IF REPAIRS CAN BE COMPLETED PRIOR TO 01MAR98.
5. DIGITAL PHOTOS TO BE FORWARDED TO MLCLANT(VR) VIA E-MAIL EARLY THIS AFTERNOON. REQUEST MLCLANT(VR), CONVENE CASUALTY ACTION TEAM, 1400 09FEB98, TO FORMULATE A REPAIR PLAN.
BT
NNNN

U.S. Department of Transportation
United States Coast Guard

Commandant
United States Coast Guard

2100 Second Street, SW
Washington, DC 20593-0001
Staff Symbol: G-WKS-4
Phone: (202) 267-1491
FAX: (202) 267-4355

5102

24 DEC 1998

From: Chief of Staff
To: Distribution

Subj: CHIEF OF STAFF'S FINAL DECISION LETTER OF A CLASS "C" MISHAP; FIRE ONBOARD USCGC [redacted] (WLB [redacted]) ON 09 FEBRUARY 1998

1. SYNOPSIS.

a. On Saturday, 7 February 1998, USCGC [redacted] (WLB [redacted]) was moored starboard side to Pier 2 at Naval Education Training Center (NETC) Newport, Rhode Island for a scheduled maintenance period. At 1800, after checking with the ship's electrician, the Engineer of the Watch (EOW) removed the smoke detector from the cargo hold because of a continuous trouble alarm. By doing so, smoke alarm protection for zone six (forward part of ship on the second deck) was inadvertently disabled.

b. On 8 February, the inport duty section consisted of an Officer of the Day (OOD) (HS2), EOW (MK1), two quarterdeck watchstanders (FN and MK3) and a break-in quarterdeck watchstander (SA). Six additional crewmembers were sleeping on board, for a total of 11 people on board.

c. At 2230 on 8 February, the OOD made her final round of the ship before going to bed. She transited the cargo hold and noted normal temperatures in the space and nothing else out of the ordinary.

d. At approximately 0030 on 9 February, the MK3 completed a round of the ship, which included a visit to the cargo hold. He also noted a normal temperature in the space and nothing unusual.

e. At approximately 0109, [redacted] Machinery Plant Control and Monitoring System indicated a high temperature alarm in the ship's forward cargo hold. The MK3 acknowledged the alarm and looked at the ship's quarterdeck closed circuit television monitor, which showed a black screen. Since he could not immediately tell which space the monitor was displaying, and he knew that the high temperature alarm originated in the forward cargo hold, the MK3 went to the forward cargo hold to investigate. He went down through the mess deck and then forward through the second deck passageway, opening both quick acting watertight doors at each end. As soon as he got to the aft door of the forward cargo hold, he could see fire through the glass window in the door. The fire was about three feet in diameter with the base of the flames about six feet off of the deck in the vicinity of the forward cargo hold space heater. The flames were clearly visible at that point. The MK3 immediately closed one of the watertight doors setting the

primary fire boundary, and faked out a hose from a nearby hose station. The MK3 then proceeded directly to the EOW's stateroom to wake him up. He passed seven fire alarm pull-boxes on his way to the MK1's stateroom.

f. After being awakened, the MK1 put on his coveralls and boots, and slipped into a self-contained breathing apparatus, commonly known as a Scott Air Pack, that was mounted on the bulkhead immediately outside his stateroom. He told the MK3 to call the fire department and sound the general emergency alarm. The MK3 proceeded to the quarterdeck to sound the alarm and call 911. The MK1 then energized his Scott Air Pack, proceeded alone to the forward cargo hold following the same route the MK3 had followed earlier. As he transited the mess deck, he energized the firemain system. He checked a non-watertight door with the back of his hand and found it to be cool. He crouched and slowly cracked the door open and all he could see was black smoke. He immediately closed the door, went up to the mess deck, and got a battle lantern from the repair locker there. At this point, he saw the MK3 on the mess deck and asked if he had called the fire department. The MK1 went back down to the same door, cracked it again, and shined the light into the compartment. All he could see was black smoke. He quickly closed the door again and went back up to the mess deck.

g. The MK3 had gone to the quarterdeck, sounded the general emergency alarm and called 911. The emergency operator connected him to the NETC Newport Fire Department. Shortly thereafter, the OOD arrived at the quarterdeck, called the CO, XO and EO and coordinated the evacuation of personnel on board. The MK3 proceeded to the mess deck to offer assistance. The NETC watch logged the MK3's 911 call at 0116.

h. The fire department was immediately dispatched with the first of five fire trucks arriving on scene approximately three minutes later at 0119. The MK1 met the NETC firefighters on the mess deck. The MK1 informed them that he intended to energize the ship's sprinkler system. An NETC firefighter told him to secure power in the cargo hold. It is presumed that the MK1 had either already accomplished this task or then proceeded to the engine room to electrically isolate the cargo hold. He then proceeded forward on the main deck to where the forward cargo hold sprinkler system valve is located, which was about 7' 6 ½" above the deck. The MK1 stood on a portable box fan in order to reach the valve and opened it for about 40 seconds. This apparently extinguished the fire at approximately 0120.

i. Immediately after the MK1 left the mess deck to open the sprinkler valve, other NETC firefighters arrived on the mess deck and told the MK3 to delay using the sprinkler system. Two firefighters were making their way to the forward cargo hold via the second deck passageway. Before the MK3 could notify the MK1, the MK1 had already opened the sprinkler valve. One of the firefighters had proceeded forward to the cargo hold and was standing outside the non-watertight door leading to the fire when the sprinkler was opened and witnessed the sprinkler system operation through the window, describing it to be like "Niagara Falls."

j. By approximately 0122, the NETC Newport Fire Department had effectively assumed control of the fire scene. There was no formal turnover, and there had not been a legitimate report of "fire out." At approximately 0140, the NETC Newport Fire Chief wanted to vent the space, and the MK1 told him that they could lift the cargo hold hatch with the crane. So the MK1 energized the forward Hydraulic Power Unit (HPU) and the MK3 operated the crane. While lifting the hatch, the ship lost electrical power. The ship's emergency diesel generator came on within seconds and the MK1 re-energized the fire main system and the HPU to remove the hatch. Once the hatch was removed, heavy black smoke billowed from the forward cargo hold. At that time, the NETC Newport firefighters entered the space looking for any other fires, but found none. At approximately 0150, they determined that the fire was out.

k. With the cargo hatch removed, de-smoking occurred by natural ventilation, which was supplemented by the use of box fans. The NETC fire department personnel proceeded to overhaul the space. By 0304, the scene appeared to be stable and the NETC personnel departed.

l. The fire resulted in $62,716 worth of damage, four days of lost operations, and no personnel casualties.

2. CLASSIFICATION. This is a Class "C" mishap due to the cost for repairs estimated to be over $62,000.

3. CAUSE. The primary cause of this mishap was an electrical failure of an element of the space heater probably due to either an unexpected shock or vibration or a material defect. Expelled molten material ignited class A materials located in a nearby storage bin. As the fire grew, hydraulic flex couplings located above the bin began to seep hydraulic fluid, which ignited a class B fire, spreading into the overhead.

4. LESSONS LEARNED.

a. The automated sprinkler system worked flawlessly and extinguished the fire nearly instantly, thereby minimizing damage to the cargo hold and preventing the spread of fire to other spaces. This underscores the importance and reliability of this system, especially in minimally-manned vessels.

b. The lack of a smoke detector does not contribute to the outbreak of a fire. However, smoke detectors can certainly reduce the severity and scope of a fire. Therefore, if disabling a smoke detector for whatever reason, be familiar with proper procedures for "jumping" detectors in a system so as not to disable those down the line.

c. Personnel who, on their own, break the integrity of a space known to contain a fire are putting themselves and potentially others at unnecessary risks. Properly donning protective gear to investigate the general scene of a fire to confirm its existence is prudent, but opening a door to

a space which is known to contain a fire without assistance is taking too great a risk of personal injury without anyone nearby to provide assistance.

5. ACTIONS. The analysis of this mishap identified select actions that could reduce the potential for future loss. Action officers shall provide Commandant (G-WKS) a schedule for item completion within 30 days of receipt of this tasking.

a. Commandant (G-OCU) shall:

(1) Develop appropriate watchstanding/damage control doctrine for WLB and WLM class cutters, distribute that policy throughout the fleet and establish procedures to implement it;

(2) Validate Personnel Qualifications Standards (PQS) for WLB and WLM class cutters; and

(3) Review all formal training options (i.e., CART, TSTA) and implement the best option to become a standard for WLM and WLB class cutters.

b. Commandant (G-SEN) shall:

(1) Promulgate more detailed guidance for procedures in jumping smoke detectors/alarms when isolating specific failures in the system without losing protection down the line;

(2) Evaluate and consider formal authorization for shipboard repair parties to use the Self-Contained Breathing Apparatus (SCBA), or "Scott Air Pack" during damage control efforts;

(3) Validate the recommendation to eliminate the two-minute delay (currently built into the WLM/WLB alarm systems) in sounding of the alarm throughout the ship, if not acknowledged on the bridge within that time period. If validated, Commandant (G-SEN) will work through the Configuration Control Board (CCB) process to initiate a class-wide (WLM/WLB) design change; and

(4) Review all installed Closed Circuit Television monitoring systems for potential cost-effective improvements, such as color displays, identifying text displays, scroll features and an

Subj: CHIEF OF STAFF'S FINAL DECISION LETTER OF A CLASS "C' MISHAP; FIRE ONBOARD USCGC [redacted] (WLB[redacted]) ON 09 FEBRUARY 1998

all-spaces view, and a record feature to enable playback when desired. Any permanent changes will be processed through the CCB.

T.W. JOSIAH

Dist: COMDT (G-W)/(G-WK)/(G-WKS) /(G-WT)/(G-WTT)
COMDT (G-O)/(G-OC)/(G-OCU)/(G-OPN)
COMDT (G-S)/(G-SEN)
COMDT (G-A)/(G-AWL)
USCGC [redacted] (WLB[redacted])
CGD ONE (d)/(o)/(oan)
CG MLCLANT (k)
CG MLCPAC (k)
CG Project Resident Office Marinette

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COLLISION OF WLB WITH FREIGHTER IN COLUMBIA RIVER

Commander
Thirteenth Coast Guard District

915 2nd Ave.
Seattle, WA 98174
Phone: (206) 220-

5830
JULY 1997

From: CAPT Investigator, USCG
To: Commander, Thirteenth Coast Guard District

Subj: INVESTIGATION INTO THE COLLISION BETWEEN USCGC STANDON (WLB 180) AND THE M/V BIG SHIP THAT OCCURRED IN THE VICINITY OF TANSY POINT ON THE COLUMBIA RIVER ON MAY 1997.

Ref: a. Your ltr 5830 dtd Mayl997
b. Your ltr 5800 dtd Jun 1997
c. Administrative Investigations Manual, COMDINST M5830. 1

PRELIMINARY STATEMENT

1. This investigation is being conducted and this report is being prepared in contemplation of litigation and to assist attorneys, acting on behalf of the Chief Counsel, representing interests of the United States in this matter.

2. This formal investigation convened as directed by reference (a) to inquire into all the circumstances surrounding the collision between USCGC STANDON (WLB 180) and the M/V BIG SHIP that occurred in the vicinity of Tansy Point on the Columbia River on May 1997. LCDR Helper acted as Recorder to the Board, and ENS Gopher provided administrative assistance. Initial investigative efforts consisting of potential witness interviews and evidence gathering were accomplished between the period of May 1997. A formal hearing was held in June 1997 in accordance with references (a), (b), and (c).

3. LCDR Captain, ENS Deck, and ENS SHIPO were designated as parties to this investigation by reference (a), and all three individuals were advised of their rights as parties in accordance with reference (c). All parties were afforded qualified legal counsel. No other personnel were designated as parties during this investigation.

4. All reasonably available evidence and witness testimony that are considered significant to this investigation have been addressed and are included herein. This Board was not able to arrange an interview with CAPT Driver, the Columbia River Bar pilot aboard the M/V BIG SHIP in May 97,

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although a transcript of his interview with the National Transportation Safety Board (NTSB) was obtained. Several crewmembers aboard the M/V BIG SHIP were briefly interviewed during the initial investigative efforts, but transcripts of their interviews with the NTSB could not be obtained.

5. The conduct of this administrative investigation was complicated by the simultaneous investigations by the Coast Guard Mishap Analysis Board (MAB) and the National Transportation Safety Board (NTSB). The procedures for working with the MAB are reasonably clear in the Administrative Investigations Manual (COMDTINST M5830.1) and the Safety and Environmental Health Manual (COMDT1NST M5 100.47). Clear procedures and protocols do not exist for working with an NTSB investigation. Initial efforts were slowed as all investigative teams developed working arrangements and tried to deconflict interview schedules. This caused delays in accomplishing initial objectives. In addition, although both this team and the MAB shared a great deal of documentary evidence with the NTSB team, it was difficult to obtain materials from them, especially transcripts of interviews with witnesses.

6. LT Lawyer, counsel for LCDR CAPTAIN, offered EXHIBIT 80 subsequent to the formal hearing. All parties' counsels received a copy of the exhibit, and there were no objections to including it in the record.

7. Enclosure (1) is a synthesis of CGC STANDON radar navigation plot position, Trimble DGPS positions recorded in the bearing book, and the Chartviewer plot history. Positions were plotted using GDOC system at CCGD Thirteen command center.

8. All directives of the convening authority have been met.

9. All times in this report are expressed in +7 Tango, Pacific Daylight Time.

FINDINGS OF FACT

1. USCGC STANDON (WLB 180) departed Astoria, OR on the morning of May 1997 for a scheduled ATON deployment. (EXB 31 at 20, 4 at 23, 6 at 20, 7, 8, 13 at 15, *15)*

2. On May, USCGC STANDON conducted ATON operations in the vicinity of Grays Harbor, WA. (EXB3Iat2O,4at23,6at20,7,8, 13 at *15, 15)*

3. After completing ATON operations in Grays Harbor, WA, CGC STANDON transited to the entrance of the Columbia River, where it worked buoy 'CR' (LLNR 690). (EXB 31 at 31,4 at 26, 6 at 24, 7, 8, 13 at 17, 15, 26)

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4. CGC STANDON encountered reduced visibility conditions during the transit and while working "CR". At 1307, STANDON energized navigation lights and began sounding fog signals in accordance with COMDT INST M16672.2C, Navigation Rules. Navigation lights remained energized prior to and after the collision. (EXB 26)

5. At 1913, CGC STANDON completed servicing Buoy 'CR'. (EXB 26)

6. At 1916, ENS Deck relieved QM1 Plotter as Officer-of-the-Deck (OOD), assuming the deck and the conn. (EXB 26)

7. Between 1916 and 1936, CGC STANDON was hove to in the vicinity of Buoy 'CR' as the crew secured from ATON operations. (EXB 31 at 49, 41 at 27, 6 at 28, 7, 8, 13 at 17, 15)

8. During this time, LCDR CAPTAIN discussed the inbound transit with the OOD, ENS DECK, indicating his preference to stay well on the starboard side of the channel. (EXB 31 at 60, 65)

9. During this time, CGC STANDON made a securite broadcast on Ch 13 and Ch 16 VHF-FM announcing its intention to transit inbound the Columbia River en route Tongue Point moorings. (EXB 6 at 28, 39)

10. At 1922, CGC STANDON contacted tug GUARDIAN on Ch 13 VHF-FM to arrange passing. CGC STANDON proposed remaining hove to in the vicinity of Buoy 'CR' while the GUARDIAN cleared the channel. GUARDIAN agreed to this arrangement. (EXB 41 at 27, 6 at 28, 28)

II. At about the same time, CGC STANDON made similar passing arrangements with the tug MASTERCHARGE via VHF-FM radio. (EXB 41 at 27, 6 at 28)

12. At 1931, CGC STANDON set the Special Sea Detail. (EXB 26)

13. Special Sea Detail assignments for this transit were: (EXB 48, 51)

LCDR CAPTAIN	COMMAND
CWO2 BOSN	SAFETY
ENS. DECK	OOD(DECK&CONN)
ENS SHIPO	SHIPPING OFF
QM1 PLOTTER	QMIC and Logs
QM3 ASSISTANT	QMOW-PLOT and EVAL
QM3 TRAINER	NAV RADAR
ET2 SPARKS	BEARING RECORDER
HS3 DOC	1 JV SPP TALKER
SN WHEEL	HELMSMAN
SN GLASSES	LOOKOUT
BMC BOATS	FOCSLE IC ANCHOR DETAIL

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13. (cont.)
Special Sea Detail assignments (cont.):

BM1 ANCHOR	FOCSLE ANCHOR DETAIL
BM3 HAMMER	FOCSLE ANCHOR DETAIL
BM3 CHAIN	FOCSLE ANCHOR DETAIL
FS3 COOKIE	FOCSLE ANCHOR DETAIL
DC1 PIPES	FOCSLE ANCHOR DETAIL
EMC VOLTS	EOW
EM1 BATTERY	ENGINE ROOM
MK3 WRENCH	ENGINE ROOM
FN BILGE	ENGINE ROOM
SK2 BUYIT	AFTER STEERING

14. LCDR CAPTAIN graduated from the U. S. Coast Guard Academy in 1983, earning a degree in Ocean Engineering. He earned a Master of Science in Education (Instructional Technology) from University of Indiana at Bloomington. (EXB 31 at 2-17)

15. From 1991 to 1996, LCDR CAPTAIN was assigned to duty at the U. S. Coast Guard Academy. His primary duty was running the Ship Control and Navigation Training System (SCANTS), providing training to Coast Guard Academy cadets and cutter bridge crews. In addition to the SCANTS ship bridge simulator, LCDR CAPTAIN also provided training on radar simulators, and was in charge of four 65-foot training tugs used for hands-on shiphandling and navigation training. In addition, he taught college level courses in nautical science. (EXB 31 at 2-17)

16. LCDR CAPTAIN served previously as a Deck Watch Officer aboard CGC WHITE BOAT (1983-1985) and as Executive Officer aboard CGC BLACK BOAT (1988-1990). He assumed the duties as Commanding Officer of CGC STANDON on 8 August 1996. (EXB 3I at 2-17)

17. ENS SHIPO graduated from the U. S. Coast Guard Academy in May 1996, and reported aboard the USCGC STANDON after 30 days' graduation leave. ENS SHIPO completed the 5-day Unlimited Radar Observer course at Clatsop Community College on 14 February 1997. ENS SHIPO completed the Deck Watch Officer Personnel Qualification Standard program, passed an oral exam board, and was qualified as an underway Officer-of-the-Deck on 3 April 1997. (EXB 6 at 3, 29)

18. ENS DECK graduated from the U. S. Coast Guard Academy in May 1996, and reported aboard the USCGC STANDON after 30 days' graduation leave. ENS DECK completed the 5-day Unlimited Radar Observer course at Clatsop Community College on 14 February 1997. ENS DECK completed the Deck Watch Officer Personnel Qualification Standard program, passed an oral exam board, and was qualified as an underway Officer of-the-Deck on 17 April 1997. (EXB 4 at 4, 29)

19. All members of the bridge crew on CGC STANDON on May 1997 were qualified in their respective watch station duties, except for HS3 DOC. (EXB 29)

20. HS3 DOC was assigned TAD due to the absence of the CGC STANDON's assigned corpsman. (EXB [illegible])

21. CGC STANDON was obtaining ship navigation fixes using radar ranges and positions obtained from a Differential Global Positioning System (DGPS) set. (EXB 7, 8, 15, 20,57)

22. The maximum radial position error of the DGPS system from 1800 2300 May 1997 was 1.9 meters (2 yards). (EXB *59)*

23. A Chartviewer (Electronic Marine Supply Model CU-100) with an installed DGPS was used by members of the bridge team as a visual check on STANDON's position as reported by the navigation team. (EXB 31 at 82, 4 at 57, 7, 8, 40, 54)

24. CGC STANDON was plotting navigation fixes on Chart 18521 (Columbia River, Pacific Ocean to Harrington Pt.), 63rd Edition dated 28 December 1996, corrected through the latest Notice to Mariners (#16/97). (EXB *45, 53,* 57)

25. The horizontal reference datum of Chart 18521 is North American Datum of 1983 (NAD 83). (EXB 57)

26. The Chartviewer was displaying an electronic version of Chart 18521. (EXB *65)*

27. At 1934, CGC STANDON called the pilot boat COLUMBIA on Ch 13 and Ch 9 VHF-to obtain expected outbound vessel traffic for the transit. (EXB 6 at 28, 8, 28, 39)

28. COLUMBIA reported that 3 deep-draft vessels were outbound and gave estimated times at the Astoria pilot station: (EXB 6 at 28, 8, 28, 39)

    M/V COSMO WAY at 1945
    M/V NEW WESTMINSTER at 2030
    M/V BIG SHIP at 2050.

29. During this conversation, the COLUMBIA also indicated it was outbound in vicinity of Buoy 6. The COLUMBIA proposed a starboard-to-starboard passage, CGC STANDON agreed, and this was accomplished uneventfully. (EXB 31 at *52,* 6 at 30)

30. During the time hove to off Buoy "CR", ENS SHIPO assumed the duty as shipping officer. ENS SHIPO operated the port radar set, which was equipped with a RAYPATH Automated Radar Plotting Aid (ARPA) with a 16-inch scope. (EXB 6 at 30, 51, 67)

31. At 1936, CGC STANDON began to make way at ordered speed of 7 knots, proceeding inbound on the Columbia River enroute Tongue Point moorings. STANDON began sounding fog signals for a vessel underway making way in accordance with Navigation Rules, COMDT INST M16672.2C. (EXB 26)

32. ENS SHIPO was acquiring radar targets on the ARPA, providing contact range and bearing, and CPA range, bearing and time information. (EXB 6 at 43, *65,* 67)

33. ENS SHIPO provided contact and CPA information to the conning officer on the M/V COSMO WAY and M/V NEW WESTMINSTER. (EXB 644, *65,* 67)

34. When the navigation plot obtained a fix and relayed that information to the conning officer, ENS SHIPO would check the recommended course to see if it was clear of shipping contacts and report that to the conning officer. In addition, ENS SHIPO would relay information on distance to buoys as the STANDON approached them. (EXB 4 at 62, 6 at 43, 67)

35. ENS SHIPO was making speed inputs to the ARPA manually, by converting propeller shaft turns displayed to speed. (EXB 6 at 49)

36. On two occasions ET2 SPARKS dialed in the speed changes on the ARPA after noticing it was incorrect after STANDON changed speed. (EXB 11)

37. ENS SHIPO was checking the accuracy of the speed inputs by acquiring buoys, which would show a true motion line if the STANDON speed was wrong. (EXB 67)

38. ENS SHIPO was operating the radar on the 6-mile scale at first, but switched to the 3-mile scale after the transit began. The shift to the lower scale was done to ensure the navigation plot had a good picture for navigating. (EXB 67)

39. CGC STANDON initially computed current for the period as a flood, with a velocity of .*5* knots at approximately 2120 May 1997, using the Clatsop Spit reference point. (EXB *52)*

40. COMCOGARDGRU ASTORIA Duty officer had computed current for the same period as an ebb, with a velocity of 1.1 knots at 2130 May 1997, using the Clatsop Spit reference point. (EXB 16)

41. The Oregon Graduate Institute of Science and Technology current measurement data shows current in the vicinity of Tansy Point to be approximately .9 to 1.1 knots downriver(ebb) between 2100 and 2200 on May 1997. (EXB *35)*

42. CGC STANDON was sounding fog signals in accordance with COMDTINST M16672.2C. (EXB 7, 26)

43. LCDR CAPTAIN recalls making port-to-port passing arrangements with the M/V COSMO WAY via VHF-FM radio. (EXB 31 at 64)

44. At 1946, CGC STANDON increased speed to 8.4 knots. (EXB 26)

45. At 2017, CGC STANDON increased speed to 10.1 knots. (EXB 26)

46. CGC STANDON crossed the COLREG demarcation line between 2025 and 2029. At that time CGC STANDON was subject to the Inland Rules of the Road in accordance with COMDTINST M16672.2. (EXB 57)

47. At approximately 2043, CWO2 BOSN mentioned to LCDR CAPTAIN that the buoy tail on Buoy 12 was indicating an ebb current. LCDR CAPTAIN ordered QM 1 PLOTTER to recalculate tides and currents. QMl PLOTTER's recalculation confirmed a predicted flood current. (EXB 31 at 67, 7 at 26)

48. At 2045, CGC STANDON changed course to 132 degrees True to steady up on the Lower Desdemona Shoal Reach. (EXB 26)

49. At approximately 2047, LCDR CAPTAIN, CWO2 BOSN and QM1 Plotter visually observed passing Buoy 14 and confirmed that the current was flowing in an ebb (downriver) direction at an estimated velocity of approximately 1.5-2 knots.
(EXB 31 at 67-69, 7 at 26, 13 at 20)

50. LCDR CAPTAIN then ordered the navigation team to determine set and drift. Set and drift was determined by the navigation team to be towards 312 degrees true at approximately 1.5 knots. This was consistent with an ebb or down-river current. (EXB 31 at 68-69, 8)

51. When CGC STANDON was on the Lower Desdemona Shoal leg, LCDR CAPTAIN and CWO2 BOSN overheard a VHF-FM Ch 13 radio call from someone aboard M/V BIG SHIP. The voice was female, and was talking to either the Astoria pilot station or pilot boat, indicating the vessel was at Buoy 42 with a draft of 36 feet.
(EXB3Iat6S, 13 at 19)

52. The CGC STANDON was on the Lower Desdemona Shoal leg from approximately 2045 to 2102. (EXB 57)

53. At approximately 2050, CAPT Driver, Columbia Bar pilot, boarded the M/V BIG SHIP in the vicinity of the Astoria pilot station. (EXB SI at 11)

54. MN BIG SHIP's deck log indicates CAPT DRIVER boarded the ship at 2055. (EXB 42)

55. CAPT DRIVER discussed maneuvering characteristics of the M/V BIG SHIP with the disembarking river pilot. (EXB 51 at 11)

56. CAPT DRIVER estimated the river current was about a 1 knot ebb. (EXB 51 at 31)

57. At 2058, CGC STANDON decreased speed to 9.3 knots. (EXB 26)

58. At 2100, CGC STANDON estimated visibility at 1/4 nautical mile. (EXB 26)

59. At 2101, CGC STANDON made port-to-port passing arrangements with the M/V NEW WESTMINSTER via Ch 13 VHF-FM. (EXB 28)

60. At 2102, CAPT DRIVER aboard M/V BIG SHIP ordered speed increased to half ahead. (EXB 51 at 12, 42)

61. Half-ahead on M/V BIG SHIP corresponds to a speed of 12.1 knots under full load conditions. (EXB 42)

62. At 2107, the M/V BIG SHIP passed under the center span of the Astoria-Megler bridge. (EXB 42)

63. CAPT DRIVER estimated visibility under the bridge was from zero to 200 yards. (EXB Slat 13)

64. At that time, CAPT DRIVER made a call on Ch 13 VHV-FM announcing the M/V BIG SHIP was passing under the Astoria bridge outbound with a draft of 36 feet. (EXB 31 at 69-70, 5 at)

65. By this time, CGC STANDON had safely passed the M/V COSMO WAY and the M/V NEW WESTMINSTER with estimated CPAs of 200-300 yards. Both vessels had appeared as shadows in the fog. (EXB 31 at 64, 7, 13 at 21)

66. ENS SHIPO made several attempts to acquire and designate a radar contact she had evaluated as M/V BIG SHIP that was emerging from under the Astoria-Megler bridge, but the ARPA was not acquiring the contact. (EXB 311 at 58, 6 at 47, 67)

67. ENS SHIPO advised LCDR CAPTAIN of the problem, and told him she was starting a manual rapid radar plot on the contact. (EXB 311 at 5 8-60, 6 at 47)

68. A few minutes later, ENS SHIPO acquired the contact on ARPA. ARPA calculated that M/V BIG SHIP was on a course of 266 true at 10 knots. (EXB 6 at 47, 67)

69. The outbound direction of the Tansy Point channel leg is 264 true. (EXB 57)

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70. At 2111, CGC STANDON increased speed to 9.5 knots. (EXB 26)

71. LCDR CAPTAIN and CWO2 BOSN recall that CGC STANDON called M/V BIG SHIP via CH 13 VHV-FM radio in the vicinity of Buoy 22. The pilot on M/V BIG SHIP proposed port-to-port passage, CGC STANDON offered a starboard-to-starboard, but pilot on M/V BIG SHIP did not agree. A port-to-port passage was agreed on. (EXB 31 at 71, EXB 13 at 22)

72. ENS DECK overheard part of the first radio call between CGC STANDON and M/V BIG SHIP. She recalls LCDR CAPTAIN proposing a starboard-to starboard, but the pilot not agreeing, so a port-to-port was arranged. (EXB 41 at 34)

73. CAPT DRIVER recalls that CGC STANDON called on Ch 13 VHF-FM when M/V BIG SHIP was near Buoy 31. He recalls proposing a port-to-port passing, but STANDON offering a starboard-to-starboard, because "there's more water over there for you?" CAPT DRIVER responded that "as a matter of fact, there was less water over there, but there would be enough water for me, and that going port-to-port was customary." (EXB 5 at 15)

74. Approximately 1 mile from Tansy Point, in the vicinity of Buoy 29, CAPT DRIVER aboard the M/V BIG SHIP commenced a right turn by giving a starboard ten rudder command. (EXB SI at 17, 41)

75. At the time he ordered the turn, CAPT DRIVER believed the M/V BIG SHIP's speed was approximately 7 knots. (EXB SI at 14, 41)

76. LCDR CAPTAIN and CWO2 BOSN recall the next communication occurred near Fort Stevens Light 26. M/V BIG SHIP called and said where the STANDON was now caused him more concern than where the two ships would be meeting farther down. LCDR CAPTAIN and CWO2 BOSN discussed what pilot meant by that statement, and concluded he was pointing out the relative nearness of the shallow shoal on the Washington side between Buoys 25 and 27. (EXB 31 at 73, 311 at 7, 13 at 27)

77. ENS DECK recalls the second conversation occurred after CGC STANDON passed Buoy 22. She recalls the pilot making some comment about STANDON having good water to the right and being able to "kiss the bank". (EXB 411 at 149, 66)

78. CAPT DRIVER called the CGC STANDON after he started the starboard turn. He became concerned about where STANDON was on the radar. He recalls telling STANDON that ".... .there was a great deal of water over to your right and you can actually go over there and kiss the shore without getting into trouble." He recalls that STANDON indicated it would come right. He observed STANDON coming right on the radar. (EXB SI at 17)

79. LCDR CAPTAIN and CWO2 BOSN recall a final conversation several minutes before the collision. M/V BIG SHIP called to express the opinion that the STANDON had

water to the right, and the passing would be "close but OK". LCDR CAPTAIN recalls directing ENS DECK to come right 10 degrees. (EXB 31 at *75* 13 at 28)

80. ENS DECK recalls the final conversation was about three minutes before the collision. The pilot indicated that the passing would be "close, but OK". She recalls LCDR CAPTAIN directing her to come right 10 degrees. (EXB 411 at 36)

81. At 2122, CGC STANDON came right to course 142 degrees True and decreased speed to 4 knots. (EXB 26)

82. CAPT DRIVER indicated that during the transit on M/V BIG SHIP, he gave most of his attention to the radar scope. (EXB S at 46)

83. LCDR CAPTAIN glanced at the Chartviewer to verify CGC STANDON's position, then walked out onto the port bridge wing to join ENS DECK. (EXB 31 at 78-80)

84. CGC STANDON's position, as determined on the bridge Chartviewer DGPS receiver from 2122 to 2127:

2122	46-11.97'N	123-55.93'W
2123	46-11.88N	123-55.81'W
2124	46-11.8'N	123-5S.72'W
2125	46-11.73'N	123-55.68'W
2126	46-11.6'N	123-55.59'W
2127	46-11.5'N	123-55.39'W

(EXB 40, *54,* A3)

85. About 2123, MKC Mechanic came to the bridge to answer a cellular phone call. (EXB *58,* 72)

86. CAPT DRIVER aboard M/V BIG SHIP ordered rudder increased to starboard 15. Shortly after that he ordered rudder increased to starboard 20. (EXB SI ati 8)

87. ENS DECK received a call from the focsle watch reporting a fog signal at a relative bearing of approximately 355 Upon receiving that report, she ordered the helmsman to come right five more degrees, to 147 true. (EXB 41 at 36, 66)

88. At 2124, CGC STANDON turned right to course 147 degrees True. (EXB 26)

89. CAPT DRIVER aboard the M/V BIG SHIP indicates he .... .either relaxed the rudder at mid ship or maybe I even said port 10 or something to try and square the ship up with the channel." (EXB 41 at 18)

90. CAPT DRIVER also states that "being concerned about the shallow area on my starboard side and certainly not wanting to go aground, I eased the rudder, put the rudder at mid-ship..." (EXB SI at 19)

91. At this time, CAPT DRIVER observed, on radar, CGC STANDON fine on the starboard bow. (EXB 511 at 36)

92. The radar shadow ahead of the M/V BIG SHIP caused by the height of shipping containers on the ship's deck was 1710 feet (570 yards). (EXB 38)

93. MN BIG SHIP's course recorder indicates the following ship's headings from 2120 to 2130 (0420 UT to 0430 UT):

2120 - 2122	270 T coming right to 295 T
2122 - 2124	Steady on 295 T
2124 - 2125	295 T coming right to 327 T
2125 - 2127	327 T coming left to 305 T
2127-2130	305 T coming right to 315 T (EXB 42)

94. At approximately 2125, MKC MECHANIC, near the back of the bridge on the cellular phone, became aware of increased tension on the bridge, and interrupted his cellular phone call to look around. (EXB 72)

95. ENS SHIPO observed the M/V BIG SHIP's heading flash begin to move to the right, indicating a starboard turn. (EXB 6 at *55,* 67)

96. A short time later, ENS SHIPO observed M/V BIG SHIP's heading flash slow its right drift, then reverse back to the left. The displayed CPA decreased to three-hundredths of a nautical mile (60 yards). (EXB 6 at *56,* 67)

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97. ENS SHIPO called out to the CO and the OOD: "CPA point-zero-three nautical miles in 2 minutes." She recalls making this announcement three times in about 10-12 seconds, but got no response. (EXB 6 at 57, 67)

98. MKC MECHANIC heard a loud fog signal, looked out the port bridge windows and saw the M/V BIG SHIP at a distance of 400-500 feet. He told the caller on the phone that "it looks bad, I gotta go", and hung up the phone. (EXB 58, 72)

99. LCDR CAPTAIN, ENS DECK, and CWO2 BOSN on the bridge, and BMC Boats on the foclse, saw the M/V BIG SHIP loom out of the fog, and observed a starboard bow aspect. (EXB 31 at 76, 4 at 37, 13 at 28, 14 at 10)

100. SN WHEEL heard a loud fog signal, looked up, and saw a red light. She saw the bow of the M/V BIG SHIP just before impact. (EXB 71)

101. ENS DECK called out "Captain, I don't like this aspect!", and put the engine throttle handle in full astern. (EXB 4 at 37 and 86, 66)

102. LCDR CAPTAIN called out, "What am I seeing here?", in a questioning tone at least once. (EXB 4, 66)

103. CWO BOSN ordered QM3 Assist to sound the collision alarm and pipe "BRACE FOR SHOCK" over the 1MC. (EXB 8, 13)

104. QM3 Assist attempted to activate the collision alarm, but it did not work. He piped "BRACE FOR SHOCK" over the lMC. (EXB 8, 13)

105. LCDR CAPTAIN ordered right full rudder. (EXB 31 at 86, 65)

106. SN WHEEL acknowledged the command while complying, and reported the rudder at right full. (EXB 9)

107. CAPT Crunch, master aboard M/V BIG SHIP sighted the CGC STANDON and yelled out "It's right ahead of us!" The ship's master and the pilot ordered hard right rudder at the same time. (EXB SI at 19, 41, 64)

108. LCDR CAPTAIN discovered the STANDON's throttle handle at the full astern position. He remembers thinking this had not been a bad initial move by ENS DECK, but he immediately put the throttle handle to full ahead to increase the STANDON's turn rate. (EXB 31 at 86-87, 65)

109. LCDR CAPTAIN remained on the port bridge wing so he could best determine when to shift the rudder in order to lessen the angle of impact with M/V BIG SHIP. (EXB 31 at 87, 65)

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110. QM3 Trainer received an order from LCDR CAPTAIN to sound 5 short blasts on the ship's whistle, and he did so. (EXB 15)

111. LCDR CAPTAIN ordered either left full rudder or shift your rudder. (EXB 31 at 87, 9)

112. SN WHEEL acknowledged the command while complying. Watching the rudder angle indicator, she recalls the rudder only moved to about amidships before the collision occurred. (EXB 9)

113. CAPT DRIVER aboard the M/V BIG SHIP estimates about 4 seconds passed after the STANDON's danger signal before the two ships collided. (EXB 51 at 19)

114. Between 2125 and 2126, CGC STANDON was struck by the M/V BIG SHIP. (EXB 31, 4, *58)*

115. The M/V BIG SHIP initially struck the port aircastle structure of the CGC STANDON with the flare of its port bow, crushing the awning stanchions, deforming the bridge wing deck and equipment, and causing additional damage to the buoy control booth. (EXB 31 at 88, *56,* 61, 62)

116. LCDR CAPTAIN was thrown to the deck at the moment of impact, suffering a laceration to the tip of the 5TH finger on his right hand, bruises on his forehead and left back, and sore ribs (possibly broken). (EXB 19)

117. As the M/V BIG SHIP traveled aft, its bow contacted CGC STANDON near Frame 126, causing extensive damage to the shell plating, rupturing STANDON's port fuel tank (4-116-2-F), and causing additional damage to the surrounding area. (EXB 56, 61, 62)

118. LCDR CAPTAIN ordered rudder amidships. SN WHEEL acknowledged while complying. (EXB 31 at 88, 71)

119. CAPT DRIVER aboard M/V BIG SHIP ordered hard left rudder shortly after the collision in order to swing the stern away from the STANDON and to keep the BIG SHIP off the shoal outside the north side of the channel. (EXB SI at 19, 41)

120. LCDR CAPTAIN yelled down to the focsle to see if everyone was okay and to check if they were able to drop an anchor. BMC Boats replied that all personnel were all right and that the anchor detail was manned and ready. (EXB 31 at 88, 14)

121. LCDR CAPTAIN ordered right full rudder, with the intention of driving the ship into the beach if necessary to save it from sinking.. SN Wheel acknowledged while complying. (EXB 31 at 89)

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122. Alarms sounded on the bridge panel indicating flooding in the Motor Room (4-126-0-E). (EXB 8)

123. Alarms sounded in the Engine Room indicating flooding in the Motor Room. (EXB 79)

124. LCDR CAPTAIN received reports from the engine room that the flooding was fuel from the port tank and not water from outside. (EXB 31 at 90)

125. LCDR CAPTAIN became aware that engine throttle on the port bridge wing was stuck in the full ahead position under the crushed forward bulwark. (EXB *65)*

126. LCDR CAPTAIN ordered left full rudder to turn the ship away from the beach. The helmsman acknowledged while complying. (EXB *65)*

127. LCDR CAPTAIN ordered that a pipe be made over the 1 MC for the engine room to bring the engines to all stop. (EXB 31 at 90)

128. QM3 ASSIST made at least 2 pipes over the 1MC for the engines to be stopped. (EXB 8)

129. Engines were stopped from main control. (EXB 22)

130. The pipe for all hands to man General Emergency stations was made and the General Emergency Alarm was sounded. (EXB 8, 13, 70)

131. At 2140, CGC STANDON anchored in position 46-11-20 N, 123-55-08 W. (EXB 20, 26)

132. The impact with the M/V BIG SHIP ruptured CGC STANDON's port fuel tank, (4-1 16-2-F) near Frame 126. (EXB *56,* 70, 79)

133. The ruptured fuel tank spilled diesel oil into the river and into the Motor Room (4-126-0-E). (EXB 70, 79)

134. While attempting to remove sheet metal and fuel-soaked insulation, EM1 SPARKS slipped on the bulkhead step outboard of the air conditioning chiller in the Motor Room. (EXB 19)

135. EM1 Sparks injuries from his slip were a laceration to his left hand and a bruise on collar bone and shoulder area. (EXB 19)

136. The sounding for the engine room waste oil tank before the collision indicated 20.5 gallons in the tank. (EXB 22)

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137. Diesel fuel spilled into the Motor Room was pumped into the engine room waste oil tank. (EXB 22, 70)

138. The sounding for the engine room waste oil tank on May 1997 indicated 122.5 gallons in the tank.(EXB 22)

139. The sounding for Diesel Oil Tank 4-116-2-F before the collision indicated 8054 gallons in the tank. (EXB 22, 70)

140. The sounding for Diesel Oil Tank 4-116-2-F after the collision indicated 6814 gallons in the tank. (EXB 22)

141. At 2306, CGC STANDON began pumping diesel fuel from the port fuel tank to the center fuel tank (4-116-0-F) using a small "sandpiper" pump. The time pumping was secured and estimates of how much fuel was transferred is not recorded. (EXB 22)

142. An aids to navigation verification was completed by Aids to Navigation Team Astoria at 1430 May 1997, and all aids in the vicinity of the casualty were determined to be on station and watching properly. (EXB *55)*

143. At 0448 May 1997, LCDR DOCTOR, HS1 BLOOD, HS3 SAMPLER, medical personnel from COGARDGRU ASTORIA, arrived aboard CGC STANDON to take blood and urine samples from the bridge detail for toxicological screening in accordance with Coast Guard Safety and Environmental Health Manual, COMDTINST M5100.47.(EXB 26, 77, 78)

144. Concerning urine specimens taken following a mishap, the Personnel Manual (COMDTINST M1000.6) states "When practicable, urine specimens will be collected using Urinalysis Drug Testing Procedures, COMDTJNST 5355.1 (series)".

145. LCDR DOCTOR prepared for taking blood and urine samples by reviewing the Armed Forces Institute of Pathology protocols. (EXB 77)

146. Blood and urine samples were obtained from all CGC STANDON personnel that were on watch. (EXB 60)

147. The urine collection procedures were not in accordance with Urinalysis Drug Testing Procedures, COMDTINST 5355.1 (series) in several particulars:

* No urinalysis ledger was kept
* No urine specimen labels were used
* Observer handled urine sample bottle in at least 1 case
* No proof of identity check conducted
* No Urine Sample Custody Document maintained

(EXB 3 at 42, 66, 67, 77, 78)

148. At 0745 May 1997, CGC STANDON was under tow by the tug TOWME secured on the port side, enroute Tongue Point mooring. (EXB 26)

149. At 0909, CGC STANDON moored starboard side to Tongue Point facility, Astoria, OR. (EXB 26)

150. Toxicological reports on CGC STANDON were reported as negative on all crew except:

ENS SHIPO Urine positive for opiates (morphine) at .58mg/L (580 nglmL) Blood sample negative for opiates

(EXB 60, 63)

151. ENS SHIPO denies knowingly being exposed to an opiate. (EXB 67)

152. The level at which opiates are reported under the Coast Guard random urinalysis testing program is 4000 ng/mL. This level was set by Department of Defense, and adopted by the Coast Guard, in order to screen out legitimate use of a number of prescription drugs, over-the-counter medications, and foodstuffs that can result in a positive urine result. (EXB *75,* 76 and discussions with Coast Guard program office, G-WPM)

153. Tylenol #3 (with codeine) will result in a morphine positive result in urine. (EXB 76)

154. At the time urine and blood samples were taken, QM1 PLOTTER was on a prescription for Tylenol #3 (with codeine). (EXB 60)

155. A positive urine test is indicative of an exposure to an opiate within 3-4 days prior to the test. (EXB *75)*

156. It is not possible to determine source of exposure, amount exposed to, or the nature of exposure from a positive urine test. (EXB 75, 76)

157. Detection of opiate in blood is a better indicator of impairment. The lack of opiate detected in a blood sample is consistent with no central nervous system impact. If there is no impact on the central nervous system, there was no impairment of performance or impact on behavior due to opiate exposure at the time of sampling. (EXB *75)*

158. Using the waypoints from the bridge Chartviewer DGPS receiver, LCDR CAPTAIN computed the following courses and speeds for CGC STANDON from 2122 to 2127:

TIME	COURSE & SPEED
2122	
	137.2 T at 7 knots
2123	
	142 T at 6 knots
2124	
	158.4 T at 5.4 knots
2125	
	154.3 T at 8.2 knots
2126	
	125.8 T at 10 knots
2127	

OPINIONS

1. Between 1913 and 1936 on May 1997, LCDR CAPTAIN used this transition time to allow STANDON personnel to move from ATON operations to Special Detail in restricted visibility, and conducted an abbreviated navigation brief on the bridge during this transition. This brief was in accordance with Cutter Navigation Standards and Procedures, COMDTINST 3530.2. (Findings 7, 8, 9)

2. In most respects, CGC STANDON was navigating in accordance with Cutter Navigation Standards and Procedures (COMDTINST 3530.2), CGC STANDON Navigation Standards (STANDONINST 3530.1E). Only a few discrepancies were noted, but these were minor and had no bearing on the collision. (Findings 4. 12, 13, 19, 21, 23, 24, 26, 27, 30, 32, 33, 34, 35, 36,37, 38, 39, 42, 50, 51)

3. CGC STANDON actions during the transit were in accordance with Rule 2, Inland Navigation rules. (Findings 4, 12, 13, 19, 21, 23, 24, 26, 27, 30, 32, 33, 34, 35, 36,37, 38, 39, 42, 50, 51, Navigation Rules (COMDTINST M16672.21), and Farewell's Rules of the Road, 7th Edition, 1994)

4. ENS SHIPO was maintaining an accurate shipping radar picture, providing timely updates to the conning officer and the commanding officer on contact location and CPA. (Findings 17, 19, 30, 32, 33, 34, 35,37, 38, 66, 67, 68)

5. During the transit from Buoy "CR", CGC STANDON kept well to her own starboard side of the navigation channel, in accordance with Rule 9 of the Inland Navigation rules. (Finding 8, 84)

6. CGC STANDON's turn to starboard to course 1420 T and reduction in speed to 4 knots at 2122 was appropriate and in accordance with Rule 19 of the Inland rules of the road. (Finding 81, Navigation Rules [COMDTINST M16672.2], and Farewell's Rules of the Road, 7th Edition, 1994)

7. CGC STANDON's turn to starboard to course 147 T at 2124 was appropriate and in accordance with Rule 19 of the Inland rules of the road. (Finding 87, 88, Navigation Rules [COMDTINST M16672.2], and Farewell's Rules of the Road, 7th Edition, 1994)

8. Although CGC STANDON and M/V BIG SHIP talked on 3 different occasions via bridge-to-bridge radio, at no time did CAPT DRIVER clearly state his need to have more room as he rounded the turn at Tansy Point. (Finding 71, 72, 73, 76, 77, 78, 79, 80)

9. The CGC STANDON's speed at the time of the collision was approximately 5 knots. (Finding 41, 81, 84, 158)

10. The M/V BIG SHIP presented a starboard bow aspect to CGC STANDON when it loomed out of the fog just before the collision. Most personnel on STANDON observed this. SN WHEEL, engaged in minding the helm, probably saw the M/V BIG SHIP's port running light just prior to the collision, and after both vessels had been maneuvering to avoid collision. (Finding 99, 100, 101, 102, 106, 107)

11. ENS DECK's action to back full when the M/V BIG SHIP came in sight out of the fog was appropriate and in accordance with Rule 19 of the Inland rules of the road. (Finding 101, Navigation Rules [COMDTINST M16672.2], and Farewell's Rules of the Road, 7th Edition, 1994)

12. LCDR CAPTAIN's action to go ahead full and turn to starboard when the M/V BIG SHIP came in sight out of the fog was appropriate and in accordance with rules of the road. (Finding 105, 106, 108, Navigation Rules [COMDTINST M16672.2] and Farewell's Rules of the Road, 7th Edition, 1994)

13. LCDR CAPTAIN assumed the deck and the conn from the OOD, ENS DECK, when he gave the right full rudder command. (Finding 105, 106)

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14. The failure of CGC STANDON's collision alarm to function had no bearing on the collision or the subsequent action by CGC STANDON personnel. (Finding 103, 104)

15. LCDR CAPTAIN's decision to remain on the port bridge wing in order to be able to take evasive action at the last possible moment was done at great risk to his own personal safety. This act demonstrated his overriding concern for the safety of CGC STANDON and crew. (Finding 109, 114, 115, 116)

16. LCDR CAPTAIN's action to turn to port when he judged collision to be unavoidable reduced the angle of impact and lessened damage inflicted on the STANDON. (Finding 109, 111, 112, 115, 116, 117)

17. The M/V BIG SHIP's speed at the time of the collision was approximately 12 knots. (Finding 41, 60, 61, 62, 114)

18. The M/V BIG SHIP's turn to port to steady up on course 295~ T, ordered by CAPT DRIVER, when CGC STANDON was not in visual sight but was still on the starboard bow by radar observation, was in violation of Rule 19 of the Inland rules of the road. (Finding 89, 90, 91, 92, 93, 95, 96, Navigation Rules [COMDTINST M16672.2], and Farewell's Rules of the Road, 7th Edition, 1994)

19. The speed of the M/V BIG SHIP at the time of the collision was excessive for the conditions of visibility. (Finding 41, 69, 61, 62, 114, Navigation Rules [COMDTINST Ml 6672.2], and Farewell's Rules of the Road, 7th Edition, 1994)

20. The pilot's failure to keep MN BIG SHIP to the starboard side of the navigation channel was in violation of Rule 9 of the Inland rules of the road. (Finding 21, 22, 23, 24, 25, 26, 84, 158, Navigation Rules [COMDTLNST M16672.2], and Farewell's Rules of the Road, 7th Edition, 1994)

21. M/V BIG SHIP struck the CGC STANDON near position 46-11.73" N, 123-55.68" W, approximately 200 yards south of the marked channel and approximately 300 yards north of the shore near TANSY Point. (Finding 21, 22, 23, 24, 25, 26, 84, 114, 158 and Enclosure (1))

22. The collision was caused by the pilot's failure in a number of areas. He thought M/V BIG SHIP was proceeding at 7 knots, when the true speed was approximately 12 knots. He was navigating by seat-of-the-pants, radar estimation, and did not have accurate knowledge of the ship's position. When he commenced the turn to proceed outbound on the Desdemona leg, he did not use sufficient rudder, and was forced to order increasing rudder to negotiate the turn. The ebb current pushed M/V BIG SHIP farther towards the port side of the channel. (cont.)

22. (cont.) Finally, the pilot, not knowing the ship's true position, became concerned that the ship was standing near the Desdemona shoal and ordered port rudder to steady the ship's head. As a result of these miscalculations, M/V BIG SHIP swung outside the marked channel and struck CGC STANDON. (Finding 41, 75, 75, 78, 82, 84, 86, 89, 90, 91, 93, 95, 96)

23. Emergency actions undertaken by the crew of CGC STANDON following the collision were accomplished in a calm and effective manner. Damage was quickly assessed and rapid action was taken to repair and restore ship systems. (Finding 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130)

24. LCDR CAPTAIN's actions to maneuver CGC STANDON following the collision, when the throttle handle was stuck in a full ahead position, prevented the ship from running aground. (Finding 120, 121, 124, 125, 126, 127)

25. Approximately 102 gallons of Diesel fuel was spilled into the Motor Room. (Finding 132, 133, 136, 137, 138)

26. No more than 1138 gallons of diesel fuel was spilled into the Columbia River. The uncertainty about an exact gallon figure is due to not knowing how much fuel was pumped into the center tank by the "sandpiper" pump. (Finding 132, 133, 136, 137, 138, 139, 140, 141)

27. The medical team from COMCOGARDRU ASTORIA were not familiar with the urinalysis program requirements of the Personnel Manual, COMDTINST M1000.6(series) or with the Urinalysis Drug Testing Procedures, COMDTINST 5355.1 (series) before they took urinalysis samples of CGC STANDON bridge crew. The procedures used in COMDTINST 5355.1 are designed to ensure urinalysis collections are conducted in a clear, consistent, and precise manner so that commands can enforce the service drug policy through appropriate administrative or disciplinary means. (Finding 143, 144, 145, 146, 147)

28. It is not possible to determine if urine and blood samples obtained by the medical team were adequately labeled and accounted for since the medical team did not follow normal urinalysis drug testing procedures. The sample attributed to ENS SHIPO may belong to another crewmember. (Finding 146, 147, 150, 153, 154)

29. A positive result in a urine sample is not indicative of impairment to performance or effect on behavior. (Finding 155, 156, 157)

30. No drug incident, and no administrative or disciplinary action, is called for as a result of the positive urine sample allegedly taken from ENS SHIPO. (Finding 150, 151, 152, 153, 154, 155, 156, 157)

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31. The injuries to LCDR CAPTAIN and EM1 BATTERY were in line of duty and not due to their own misconduct. (Finding 13, 116, 134, 135)

RECOMMENDATIONS

1. That COMMANDANT take steps to clarify guidance to mandate use of urinalysis drug testing procedures as set forth in COMDTINST 5355.1 (series) following a marine casualty. This guidance should be included in the Personnel Manual, the Safety and Environmental Health Manual, and the Medical Manual. (Opinion 25, 26)

2. That appropriate civil penalty action be pursued against the shipping company, master and pilot aboard M/V BIG SHIP for violations of the Inland Navigation Rules, including 33 U.S.C. 2005-2009, 2019, and 2072. (Opinion 8, 16, 17, 18, 19, 20, 21)

3. That the crew of CGC STANDON be commended for their actions in connection with this incident. Both during the transit prior to the collision, and in their response to a major shipboard emergency following the collision, they demonstrated courage, calm professionalism and dedication to duty of the highest order. (Opinion 1, 2, 3, 4, 5, 6, 7, 9~ 10, 11,22)

4. That LCDR CAPTAIN be commended for the actions he took after the M/V BIG SHIP loomed into sight out of the fog. Faced with a very large ship close aboard and rapidly closing on a collision course, he took decisive action to avoid collision. When a collision could not be avoided, he courageously chose to remain in harms way so he could continue to take action to minimize damage to CGC STANDON and her crew. His actions following the collision also prevented STANDON from grounding. (Opinion 11, 14, 15, 22, 23)

5. That a copy of this report be provided to the PCO/PXO school at the U.S. Coast Guard Academy for their use as a case study.

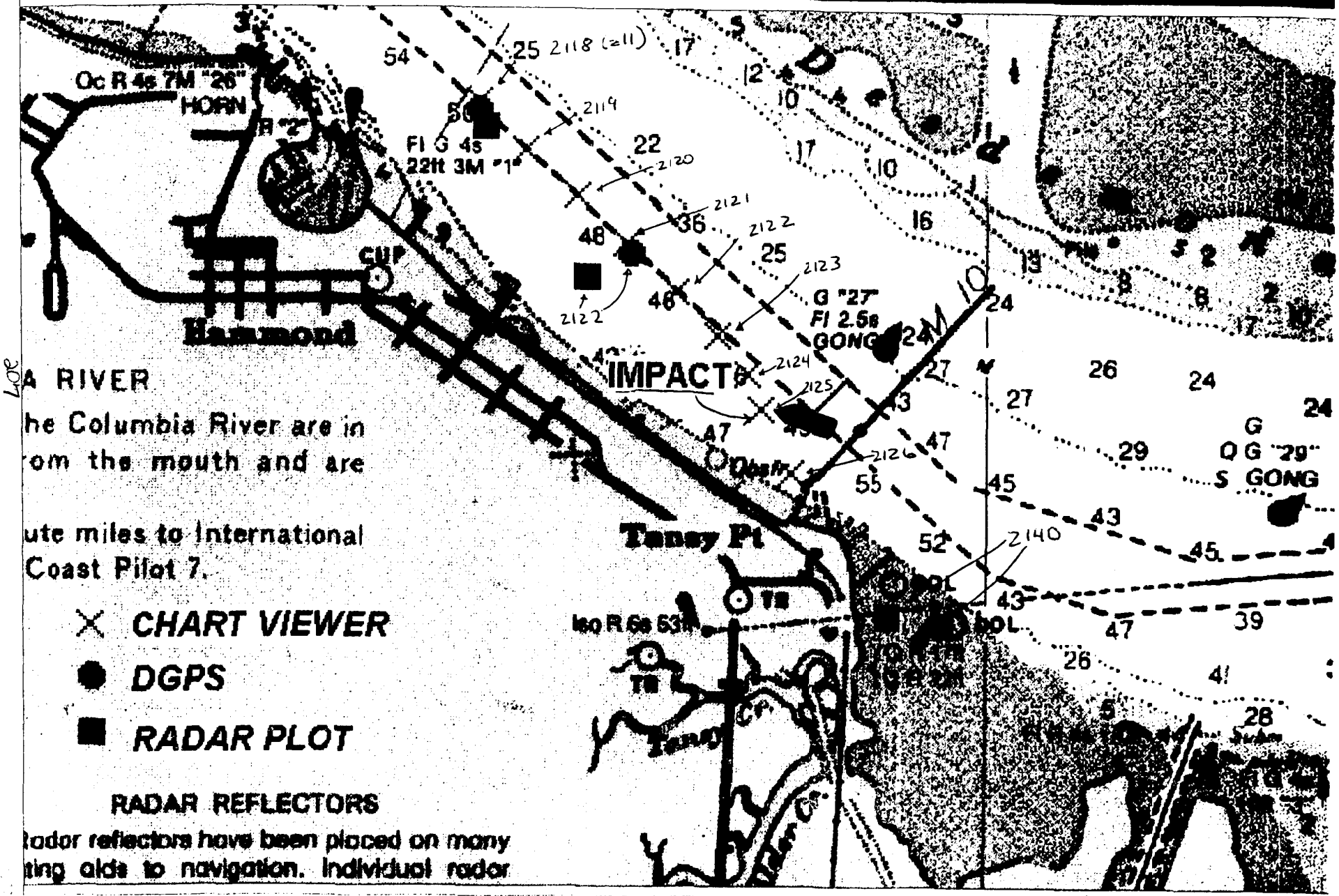
ENCL: (1) Chart 18521

WIDTH 200 yds

M/V [redacted]
757' / 88'

[redacted] (11)

M18521SU COWSLIP.VU



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: February 17, 2000

In reply refer to: M-99-23

Admiral James Loy
Commandant
U.S. Coast Guard
2100 Second Street, S.W.
Washington, D.C. 20591

On May 14, 1997, the U.S. Coast Guard buoy tender *Cowslip* and the Panamanian container ship *Ever Grade* collided in the Columbia River near Astoria, Oregon. One person was injured as a result of the accident. The *Ever Grade* was only slightly damaged in the collision, but the *Cowslip* sustained serious damage to its hull and superstructure. The cost of repairs for both vessels was estimated at more than $1.2 million.

The National Transportation Safety Board determined that the probable cause of the collision between the Panamanian container ship *Ever Grade* and the U.S. Coast Guard buoy tender *Cowslip* was the failure of the pilot of the *Ever Grade* to gauge the turn at Tansy Point properly due to imprecise radar estimations of his vessel's position and late application of rudder, which combined to cause the ship to swing excessively wide in the turn and to strike the *Cowslip.* Contributing to the accident was the joint decision of the pilot of the *Ever Grade* and the commanding officer (CO) of the *Cowslip* to attempt a meeting at a sharp bend in the channel during a period of severely reduced visibility.

Safety Board Vice Chairman Robert T. Francis II issued the following statement regarding the adopted probable cause with his concurrence:

> I believe that the probable cause statement is sufficient as far as it goes, but it does not go far enough. Bridge resource management techniques and effective ship-to-ship communications are enormously important tools to enhance safety in maritime operations. Our failure to note breakdowns in communication on and between the vessels as a contributing factor in the collision does not, in my opinion, enhance either the safety of marine operations or the advancement of these issues in the maritime pilot community.

The two vessels involved in this collision were operating in near zero visibility due to fog. The watchstander on each vessel detected the other vessel on radar, and the vessels communicated while they were still more than 5 miles apart. At that time, the pilot of the *Ever Grade* and the CO of the *Cowslip* agreed to meet port to port; both recognized that the meeting would take place very close to Tansy Point, a sharp turn in the channel.

The Safety Board has pointed out the danger of vessels meeting or overtaking in bends in a number of past reports involving collisions,[1] including the 1978 collision of the U.S. container ship *Sea Land Venture* with the Danish tank ship *Nelly Maersk* near Galveston, Texas; the 1978 collision of the Greek bulk carrier *Irene S. Lemos* with the Panamanian bulk carrier *Maritime Justice* near New Orleans, Louisiana; the 1979 collision of the tank ship *Marine Duval* with the tank ship *Mobil Vigilant* near Beaumont, Texas; the 1980 collision of the U.S. Coast Guard cutter *Blackthorn* with the U.S. tank ship *Capricorn* near Tampa, Florida; the 1985 collision of the U.S. passenger vessel *Mississippi Queen* with the U.S. towboat *Crimson Glory* near Donaldsonville, Louisiana; and the 1986 collision of the British bulk carrier *Palm Pride* with barges in a fleet sited along the Mississippi River near New Orleans, Louisiana. In each of these accidents, the Safety Board found that the attempt to meet or overtake in a bend was a causal factor. As a result of these investigations, the Safety Board issued a series of safety recommendations to the American Pilots' Association, individual pilot associations, and the U.S. Coast Guard, asking these organizations to either urge or require mariners to take action that would prevent deep draft vessels from attempting to pass one another in channel bends. To date, none of these recommendations have been implemented as proposed. The prevailing arguments against banning ships from passing in channel bends appear to be that such a ban would adversely affect the commerce of the port and that a regulatory requirement would be unenforceable.

The Safety Board continues to view the practice of deep draft vessels meeting or overtaking other vessels at channel bends to be highly dangerous. Deep draft vessels are, by their nature, restricted in their maneuverability. When such vessels are maneuvering to turn in a sharp bend in a channel, especially during periods of reduced visibility, the danger is orders of magnitude greater. The slightest miscalculation or momentary lapse in performance on the part of the pilot, or a malfunction of main propulsion or steering gear, can result in a serious collision, which not only endangers the lives of those on board the vessels involved but also the environment and the population centers along the waterway.

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[1] (a) National Transportation Safety Board. 1979. *Collision of American Containership* SS Sea-Land Venture *and Danish Tanker* M/T Nelly Maersk, *Inner Bar Channel, Galveston, Texas, August 27, 1978.* Marine Accident Report NTSB/MAR-79/16. Washington, DC. (b) National Transportation Safety Board. 1980. *Collision of Greek Bulk Carrier* M/V Irene S. Lemos *and Panamanian Bulk Carrier* M/V Maritime Justice, *Lower Mississippi River, Near New Orleans, Louisiana, November 9, 1978.* Marine Accident Report NTSB/MAR-80/4. Washington, DC. (c) National Transportation Safety Board. 1980. *Collision of* S/T Mobil Vigilant *and* S/T Marine Duval *on the Neches River Near Beaumont, Texas, February 25, 1979.* Marine Accident Report NTSB/MAR-80/08. Washington, DC. (d) National Transportation Safety Board. 1980. *Collision of U.S. Coast Guard Cutter* Blackthorn *and U.S. Tankship* Capricorn, *Tampa Bay, Florida, January 28, 1980.* Marine Accident Report NTSB/MAR-80/14. Washington, DC. (e) National Transportation Safety Board. 1986. *Collision Between U.S. Passenger Vessel* Mississippi Queen *and U.S. Towboat* Crimson Glory *in the Mississippi River Near Donaldsonville, Louisiana, December 12, 1985.* Marine Accident Report NTSB/MAR-86/09. Washington, DC. (f) National Transportation Safety Board. 1987. *Collision of British Bulk Carrier* M/V Palm Pride *with the Sioux City and New Orleans Barge Fleet in the Mississippi River Near Luling-Destrehan Bridge, June 23, 1986.* Marine Accident Report NTSB/MAR-87/03. Washington, DC.

In the case of the *Cowslip–Ever Grade* collision, if the *Cowslip* CO had chosen to hold up (or if the pilot of the *Ever Grade* had requested him to hold up) below Tansy Point until the *Ever Grade* completed its turn before attempting to execute the meeting, the collision probably would have been avoided. The *Cowslip* did not have to meet a strict arrival schedule and, in fact, was not in a great hurry to reach its destination.

Under such conditions, delaying for a few minutes while the deep draft vessel completed its turn in the channel before attempting to pass it would have been the prudent action to take. Prudence, however, is often learned too late, as the *Cowslip–Ever Grade* accident illustrates. Based on the circumstances of this accident, the Safety Board concluded that the safety of operations in pilotage waters would be enhanced if Coast Guard COs avoided meeting and overtaking deep draft vessels at sharp bends or turns in channels, especially during periods of reduced visibility.

Therefore, the National Transportation Safety Board recommends that the U.S. Coast Guard:

> Issue instructions to U.S. Coast Guard commanding officers to avoid, whenever operational imperatives permit, meeting deep draft vessels at sharp bends or turns in channels, especially during periods of reduced visibility. (M-99-23)

Also, the Safety Board issued safety recommendations to the Oregon Board of Maritime Pilots.

Please refer to Safety Recommendation M-99-23 in your reply. If you need additional information, you may call (202) 314-6455.

Chairman HALL, Vice Chairman FRANCIS, and Members HAMMERSCHMIDT, GOGLIA, and BLACK concurred in this recommendation.

By: Jim Hall
Chairman

GROUNDING OF WLB

AT NEW CASTLE, NH

ON 17MAY95

U.S. Department of Transportation

United States Coast Guard

Commanding Officer
USCG [redacted]

c/o USCG Station [redacted]
Staff Symbol:
Phone: [redacted]

5830
31 May 1995

From: CDR [redacted] USCG
To: Commander, First Coast Guard District

Subj: INVESTIGATION OF GROUNDING OF USCGC [redacted] (WLB [redacted]) THAT OCCURRED AT NEW CASTLE, NH

Ref: (a) CCGDONE ltr 5830 dtd 19 May 1995
(b) CG Adminstrative Investigations Manual, COMDTINST M5830.1
(c) Cutter Navigation Standards and Procedures, COMDTINST 3530.2

Preliminary Statement

1. As directed by reference (a), and in accordance with the procedures of reference (b), I conducted an informal investigation into the facts and circumstances surrounding the grounding of USCGC [redacted] at New Castle, NH on 17 May 1995. No difficulties were encountered in conducting the investigation. No line of duty/misconduct determinations were required. The Commanding Officer, USCGC [redacted] was advised of his right against self-incrimination and the provisions of article 31, UCMJ. All witnesses, including the Commanding Officer, fully cooperated during the investigation. All times listed in this report are in Eastern Standard Time (+4 Quebec).

Findings of Fact

[redacted]

1. At approximately 0737 on 17 May 1995, USCGC [redacted] (WLB [redacted]) grounded in position 43-04-21N, 070-42-36W, off the end of the Coast Guard pier, Coast Guard Station Portsmouth Harbor, New Castle, NH. (Enclosures 2, 28, 30, 31)

2. Inspections of the inside the ship, and of the hull exterior by Navy divers, revealed the following damage (Enclosures 19, 21, 23, 24, 25, 26):

a. A 16 inch crack in the hull plating 1/4 inch wide, port side, on either side of Engine Bed Transverse Frame 100, approximately 4 feet from the keel.

b. A 40 foot scrape on the hull, port side, between Frame 81 and Frame 114, with a crease in the hull from approximately Frame 85 to Frame 114.

c. Transverse Frames 81 and 85 show buckling (tripped) in the area of the second Longitudinal from the keel, port side. The buckling on Frame 81 appeared old.

Subj: INVESTIGATION OF GROUNDING OF USCGC [redacted] (WLB [redacted] THAT OCCURRED AT NEW CASTLE, NH

d. From Frame 85 to the Bulkhead at Frame 92, port side, the hull plating is creased/buckled and the Longitudinal appears bent.

e. From the Bulkhead at Frame 92 to Transverse Frame 114, port side, approximately 4 feet from the keel, all Transverse and Engine Bed Transverse Frames are buckled (tripped), and the hull plating is creased/buckled.

3. Damage, including the cost of drydocking, is estimated at $130K - $150K. (Enclosure 19)

4. There were no personnel injured as a direct result of the grounding. During the subsequent damage control efforts, one crewmember received a minor cut on his hand while securing a valve. The cut was closed using steri-strips, bandaged, and the crewmember returned to full duty. (Enclosure 4)

5. USCGC [redacted] departed Base South Portland, ME at 0753 on 16 May 1995 for ATON. She worked three buoys during the day and at 1725 moored portside to the outermost berth of the Coast Guard pier, Coast Guard Station Portsmouth Harbor, New Castle, NH, astern of USCGC RELIANCE (WMEC 615). Intentions were to depart Portsmouth the morning of 17 May, perform ATON during the day, and moor back in Portland ME that evening. (Enclosures 2, 4, 5, 6, 7, 27)

6. ENS [redacted] was scheduled for the first underway OOD watch for 17 May 1995, and was the designated CONN (and DECK - this was normal for SPAR) for the departure from New Castle. ENS [redacted] had conned the ship away from the pier at New Castle on at least one previous occasion, with an ebb current of approximately .5 kt. (Enclosures 4, 5)

7. To properly prepare himself for the departure, ENS [redacted] reported to the bridge at approximately 0645. He had previously been on the bridge at 0615 to check meteorological conditions. He reviewed the chart, checked the posted tides and currents and rechecked the actual weather/tide/current conditions. He estimated the visibility at 1 mile, the winds to be off the dock at approximately 7 kts, and the current to be about 2 kts by observing the tail on Buoy #5. The current direction was about 30 degrees off [redacted] starboard bow. (Enclosures 5, 21)

8. The XO arrived on the bridge prior to the CO. After checking the status of the Special Sea Detail, she spoke with ENS [redacted] to ascertain his plan for departure. They specifically discussed the ebb current (she estimated at 1 kt), the shoaling off the end of the pier and the need for a good spring on line 2. (Enclosures 4, 5)

9. The Special Sea Detail was set at 0720 on 17 May 1995 for getting underway. The underway checklist was properly completed.

including a satisfactory test of pilothouse control (both Ahead and Astern). The Special Sea Detail was manned and ready at 0724. (Enclosures 5, 28, 29)

10. Material Condition YOKE was set and verified prior to getting underway on 17 May. (Enclosures 12, 28, 29)

11. Drafts prior to departure on 17 May were 11' 10" forward, and 13' aft. (Enclosure 29)

12. The CO arrived on the bridge at approximately 0725. He checked the posted tides/currents and the tracklines on the chart, then proceeded to the starboard bridgewing to check the current. He estimated the speed of the ebb current at 1-1.5 kts, and felt that was consistent with the posted currents (interpolating between the max ebb of 2.61 kts at 0557 and slack water at 0949). He proceeded to the port bridgewing and spoke with ENS [redacted] concerning his plan for the departure. They discussed the ebb current and the need to spring well out on line 2. They also discussed using the bow thruster to port, if necessary, to counteract the swing of the stern to port when backing. The CO was the designated Coach for the departure. (Enclosures 2, 3, 4, 5)

13. The following personnel were present on the bridge for Special Sea Detail, in the positions indicated (Enclosure 21):

LCDR [redacted] - Commanding Officer
LT [redacted] - Executive Officer/Safety
ENS [redacted] - Officer of the Deck
LTJG [redacted] - Operations Officer/Navigator
LTJG [redacted] - Navigation Radar
QM1 [redacted] - Shipping Plot
QM2 [redacted] - Navigation Plotter
YN2 [redacted] - Bridge 1JV Phonetalker
QM3 [redacted] - Recorder
QM3 [redacted] - Quartermaster of the Watch
SN [redacted] - Lookout
SA [redacted] - Helmsman

14. LT [redacted], LTJG [redacted] LTJG [redacted] and ENS [redacted] were all qualified underway Officers of the Deck (OOD), ENS [redacted] having qualified 1 May 1995. LTJG [redacted] had satisfied all requirements for designation as Navigator and was so designated by the Commanding Officer. SA [redacted] was a qualified helmsman, SN [redacted] a qualified lookout. (Enclosures 5, 6, 21)

15. The bridge had pilothouse control. No engine bell logs were maintained or required. (Enclosure 5, 39)

16. Lines 4, 1 and 3 were taken in, and ENS [redacted] began springing on line 2 using left full rudder and 50-60 shaft rpm's

Ahead. When ENS [redacted] thought he had a good angle to the pier, he brought the throttle back to Stop. The CO advised him he needed to spring out more, and he reapplied approximately 80 turns Ahead until the CO indicated to him the spring was sufficient. Witness' estimates of the extent of the spring range from a 30-50 degree angle to the pier. (Enclosures 2, 3, 4, 5, 8, 10, 15, 17, 21)

17. ENS [redacted] brought the throttle back to Stop and gave the order to take in line 2. After coming to Stop, the CO saw the stern was beginning to set towards the pier and directed ENS [redacted] to start backing and not wait until line 2 was on board. ENS [redacted] brought the throttle Astern to approximately handle position 12 (handle position 15 is max Astern), then eased off to handle position 10, and shifted his rudder to right full. (Note: The CO thought ENS [redacted] had brought the throttle back to about 15, then eased to about 12.) Line 2 was taken in and time underway was logged at 0735. (Enclosures 2, 3, 5, 28)

18. With the backing bell, the stern steadily swung to port and ENS [redacted] engaged the bow thruster fully to thrust the bow to port (the prop wash from the non-directional tunnel bow thruster would be to starboard, moving the bow to port) in an attempt to counteract the swing. As [redacted] continued to back, the bow stayed close, paralleling the pier, and the stern continued swinging steadily to port. The XO, concerned with the bow coming too close to the pier, told ENS [redacted] to take the bow thruster off, and he did. The CO immediately told ENS [redacted] to reapply the bow thruster. ENS [redacted] complied. The CO also reminded the XO that he was coaching. (Enclosure 2, 3, 4, 5, 8)

19. [redacted] bow cleared the end of the pier by inches, with ENS [redacted] still backing at handle position 10 and thrusting the bow to port. The rudder was at right full, and the stern was still swinging to port. At this point [redacted] was nearly parallel with the pier, with the current setting the ship towards shoal water. The CO directed ENS [redacted] to shift his rudder to left full. ENS [redacted] gave the command and the helmsman complied. Before the rudder had a chance to get to left full, the CO assumed the CONN. He gave the throttle a shot Ahead (all the way forward, hold for a few seconds, then bring back to Stop as you hear the engine speed coming up) in an attempt to kick the stern away from shoal water. Within seconds, [redacted] grounded. (Enclosures 2, 3, 4, 5, 8)

20. Several impacts were felt when [redacted] grounded on the port side. The ship heeled to starboard a few degrees upon impact, then leveled. Using the pier as a reference point, [redacted] was nearly parallel to it (slightly bow-out) and the port side was nearly even with the inside face of the pier. (See Enclosure 22.) Witness' accounts vary widely on the distance of the bow

from the end of the pier (30 feet to 300 feet) on grounding. (Enclosures 2, 3, 4, 5, 6, 7, 8, 15, 17, 18)

21. The CO directed that General Quarters be set and the Navigator ordered a round of bearings. The engineroom reported flooding in the vicinity of Frame 98 at nearly the same time. (Enclosures 2, 3, 4, 6, 28)

22. The CO, fearing the strong ebb current would drive the ship further onto the shoal, made the decision immediately to attempt to drive the ship off. No soundings were taken. He does not remember if he made the decision before or after the report of flooding in the engineroom. The helmsman reported that he still had rudder response, and the CO ordered rudder amidships. He gave the throttle a shot ahead, felt the ship move forward, then gave several more shots ahead. The CO estimates the ship scraped bottom for 10-15 yards. The CO continued to drive the ship, nearly straight ahead, back to the pier, and [redacted] remoored portside to at approximately 0740. (Enclosures 2, 3, 17, 21, 28)

23. The following is a summary of the damage control steps taken subsequent to the grounding (Enclosures 2, 3, 4, 12, 13, 14, 16, 18, 21, 24, 26, 28):

a. General Quarters was set almost immediately, and Material Condition ZEBRA ordered by the bridge. Flooding was reported to the bridge by the engineroom phonetalker seconds following the grounding (about the same time GQ was set). Engineering watchstanders identified the area of the flooding as the vicinity of Frame 98, beneath #2 MDE (port side).

b. Within one minute of the report of flooding, the installed bilge eductor system was energized. By the time the ship moored at 0740, USCGC Rescue and Assistance Detail was arriving with their equipment. (Note: R & A team was kept available, but not used.) Two electric submersible pumps were dispatched to the engineroom immediately by Repair Locker members. Flooding boundaries were ordered by the DCA and set by 0746, as was ZEBRA. The P-250 team was directed to rig the pump on the buoy deck with a peri-jet eductor. They accomplished this quickly and properly, and test ran the pump for 5 minutes.

c. The CO went below to DC Central (at the Repair Locker on the messdeck) to get an update from the DCA, then proceeded to the engineroom to view the damage directly. Once there he granted permission to dismantle the salt water pump on #2 MDE so repair personnel could access the damage. In addition, he gave the DCA permission to deballast the 3 aft water tanks, not knowing yet the extent of the flooding. (Only a portion of the port tank was actually deballasted.) The two submersible pumps

were rigged and dewatering efforts commenced by 0759. Flooding was estimated at 300 GPM. (This number was independently verified by a DCA school graduate as being fairly accurate, considering the damage incurred.) The CO requested the R & A team leader obtain a diver and a commercial diver was onscene in 15-20 minutes (at 0815). By 0809, investigators and soundings had verified that damage was confined to the engineroom; no apparent damage in surrounding areas/tanks.

d. The diver entered the water at 0831. The installed bilge eductor system was secured for diving operations and not reenergized. A tarp was obtained from the and was being rigged with lines so it could be positioned over the source of the flooding. (With the diver's quick arrival, it was not used.) During this time the submersible pumps were being used. One of the submersible pumps failed (one of the electrical leads pulled out, and after that was repaired it blew a fuse) and the peri-jet eductor was used very effectively in its place. The diver reported the damage as a crack in the hull plating, vicinity Frame 98. He was able to drive in oakum and wedges to plug the crack by 0900, reducing the flooding rate to 1 GPM. The engineers completed dismantling the salt water pump to access the damage about the same time the diver started driving wedges. The peri-jet was then used to dewater the space.

e. The reports of flooding levels in the engineroom bilges were as follows: 0803 10 inches in the bilges, 0810 10 inches, 0812 11 inches, 0819 4 inches, 0837 5 inches forward and 3 inches aft, 0843 5 inches, 0845 9 inches, 0850 8 inches, 0904 9 inches, 0909 8 inches, 0912 3 inches, 0925 4 inches.

f. With flooding reduced to 1 GPM, the flood watch was set, soundings continued, and all pumps were left at the ready. General Quarters was secured at 1021, and Material Condition YOKE set in unaffected areas. ZEBRA was maintained in the engineroom.

g. Following a discussion of options, the CO decided to request Navy divers from Portsmouth Naval Shipyard to place an additional patch on the outside of the hull. The Navy dive team arrived on the afternoon of 17 May and inspected/video taped the damage. On the morning of 18 May the divers drilled the ends of the crack, cut the wedges as close to the hull as possible, and then placed a steel plate, cushioned with foam, over the area. The plate was held in place by bolts (run through the holes already drilled at the ends of the crack) and secured from inside the hull with two fitted backing plates. On the inside of the hull, two quick drying cement patches were placed over the damaged area. Shoring was used to support the cement patches.

24. The CO believes there is a possibility the backing bell departing the pier did not respond properly on the morning of 17

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May 1995. He bases this belief on the following (Enclosures 2, 3, 4, 5, 13, 14):

a. The actual response of the ship.

b. His estimate of the distance [redacted] moved within the 60-90 seconds he estimates elapsed between the time the command to take in line 2 was given to the time of grounding.

c. The fact that personnel in the engineroom do not remember seeing/hearing/feeling indications of a strong backing bell on the morning of 17 May, as is usual.

25. All machinery and equipment related to the maneuverability of [redacted] appeared to be working normally for departure, ATON work and mooring on 16 May 1995. (Enclosures 4, 5, 6, 7, 12, 13, 14)

26. A satisfactory test of pilothouse control and engine/shaft response, which included a shot Astern and Ahead, was conducted on board [redacted] on 24 May 1995. Normal backing response was observed for the departure of [redacted] from the pier on 26 May 1995. (Enclosure 21)

27. No [redacted] officer or crewmember recalls or can even estimate the actual guage or meter readings (indications of response to the backing bell) that they saw during the time the backing bell was applied upon departure from the pier the morning of 17 May 1995. (Enclosures 2, 3, 4, 5, 12, 13, 14, 21)

28. The liquid load distribution prior to grounding was as shown in Enclosure 38.

29. Draft readings at 1020 on 17 May 1995 were 11' 09" forward, and 12' 05" aft. (Enclosure 28)

30. On scene weather was as follows: Visibility 1 mile in fog, winds ESE 7 kts, temperature 44 degrees, barometer 30.07. (Enclosure 28)

31. The Navigation Detail was using Chart 13283 in preparation for the transit out of Portsmouth Harbor. This is the largest scale chart available for the area. Chart corrections were up to date. (Enclosure 21)

32. A navigation brief was not held prior to [redacted] entering or leaving Portsmouth Harbor on 16 and 17 May 1995. According to reference (c), "For cutters transiting homeport or normal operating areas, especially on a frequent basis such as aids to navigation cutters ... this briefing may be limited to those items subject to change (i.e., weather, tides, currents, etc.)." (Enclosure 6)

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33. According to the Coast Pilot and Fleet Guide, the tidal currents in Portsmouth Harbor are extemely strong, requiring special care. When the CO first reported on board, Portsmouth Harbor was discussed as a potential "tricky place". (Enclosures 4, 34, 35)

34. The CO made the decision on the departure time of 0730 on 17 May 1995; the current was not a consideration in the decision. 0700-0800 is typically the time [redacted] gets underway for a day's ATON work. (Enclosure 21)

35. Tides and currents were posted on the status board on the bridge, as shown in Enclosure (32). The current information was limited to the time/velocity/direction of max current and the time of slack. (Enclosures 6, 11)

36. Neither Commandant's or [redacted]s Navigation Standards specify the manner in which to post tides and currents. (Enclosure 36)

37. The CO, XO, CONN and OPS/NAV had all independently reviewed the tides and currents posted on the bridge prior to departing the pier on 17 May 1995. In addition, all had visually observed the ebb current in the Piscataqua River prior to departure. Visually, the CO estimated the current at 1-1.5 kts, the XO 1 kt, the CONN 2 kts and the Navigator 2.5 kts. The current was flowing along the course of the river. (Enclosures 2, 4, 5, 6)

38. Neither the CO, XO, CONN or OPS/NAV had reviewed the more detailed computer-generated current speed printout to ascertain the predicted current for the time of departure, which was approximately 2 kts by the printout. The printout was available on the clipboard with the ship's log. These printouts are normally used for working buoys, but at times are printed for entering and leaving port. They are not posted, but usually kept in the clipboard with the ship's log. (Enclosures 2, 4, 5, 6, 11)

39. Independent calculations of the Portsmouth Harbor tides and currents for 17 May showed [redacted] posted information not to be the best information available for departing the Coast Guard pier at New Castle. The current information was not corrected from the Portsmouth Harbor Entrance reference station to the Fort Point substation. The tidal information was corrected to the Badger's Island substation (number 895), vice the Fort Point substation (number 889). The differences are as follows (Enclosure 20):

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a. Tidal difference:

[redacted] POSTED TIDES			FORT POINT TIDES	
Low	0752	-1.57	0742	-1.69
High	1414	8.98	1355	9.78

b. Current difference:

[redacted] POSTED CURRENTS			FORT POINT CURRENTS		
Time	Velocity	Direction	Time	Velocity	Direction
0557	2.61	195 Ebb	0602	2.87	130 Ebb
0949	Slack		0954	Slack	

40. Using the computed current for Portsmouth Harbor Entrance, corrected for Fort Point, the predicted current for 0735 on 17 May was a 2.29 knot ebb at 130 degrees true. (Enclosure 20)

41. Using the computed tides for Portland, ME, corrected for Fort Point, the predicted state of tide at 0735 was -1.69 feet, just prior to [redacted] scheduled departure from the pier. (Enclosure 20)

42. The Training Officer's records clearly show that the ship is up to date on required damage control and navigation exercises and schools (with the exception of Navigation Piloting Refresher). [redacted] DCPQS program is established and working. (Enclosures 7, 21)

43. There was no indication of impairment of any officer or crewmember due to fatigue, illness, alcohol/medication/drug use. No blood or urine samples were taken following the grounding. (Enclosures 2, 4, 6)

44. All [redacted] personnel interviewed were forthright, knowledgeable concerning their duties, and professional. (Enclosure 21)

GROUNDING OF WLB

IN ALASKA ON 05NOV93

NARRATIVE HISTORY OF MISHAP

At 0700, 05 November 1993 CGC [redacted] got underway from Juneau, AK enroute Petersburg, AK. During the course of this transit [redacted] was to transit Wrangell Narrows and proceed to the AML pier in Scow Bay to load a 40 foot container. After taking on this cargo they planned to transit back to Petersburg and moor for the evening. A Navigation brief for this transit was conducted by the Senior QM in the [redacted] Wardroom at 0615, 05 November 1993. All OODs, QMOWs, break-in bridge personnel, Nav team members, CO and XO attended this brief. The brief was comprehensive in that it covered the transit from Juneau to the AML pier then the ship's movement to the White Pass fuel pier in Petersburg. Charts, tracklines, tides, currents, hazards to navigation, etc. were reviewed at this brief. In addition information collected from the XPO of CGC ELDERBERRY (homeported in Petersburg) and a former QM1 who had served in CGC [redacted] (WLB who's OPAREA includes Wrangell Narrows) was passed.

The transit from Juneau to the AML pier in Scow Bay was uneventful; two GQ drills were held, one at 1031V and another at 1415V as planned. At 1130 the BMC assumed the OOD and an ENS assumed the Conn as a break-in for the 1200 to 1600 watch. At approximately 1545, after setting the Special Sea Detail for the transit of Wrangell Narrows to Scow Bay, the BMC relieved the Conning Officer. This was done to allow the ENS to observe the transit with the expectation that he would Conn the ship back to the fuel pier in Petersburg from the AML pier. High tide was predicted to occur at 1556V and observed current was negligible during the southbound transit. Radio contact (VHF-FM) was made with the M/V WESTERN MARINER, who was standing off the AML pier with a barge in tow, once [redacted] turned off of the over the shoulder southbound range heading into Scow Bay. The WESTERN MARINER planned to moor her tow at the AML pier once [redacted] had completed the container onload and had cleared the pier enroute Petersburg. During this conversation [redacted] was warned of a sunken barge to the north of the pier and shoaling to the north and south of the pier. They were also warned that the current could be a problem alongside the pier with a strong northerly set during the ebb that was just beginning. At 1640V [redacted] moored portside too the AML pier using two lines from the pier and two of their own mooring lines. At 1650V the XO relieved the BMC of the OOD to allow him to lay below and supervise the onload of the container. While the loading evolution was taking place mooring stations remained set, although the Nav team was allowed to take a short break for the purpose of warming up, getting coffee and making head calls.

At 1714V, following the loading of the container, the SMC returned to the bridge and relieved the XO of the deck, as planned the break-in ENS relieved the Conn for the transit back to Petersburg. The XO and Conning Officer discussed the maneuver to clear the pier given the shoals and expected current. The Conning Officer was also questioned by the CO in a separate conversation regarding his plan of attack for the transit. The CO warned of the shoal to the north (extending off Blunt Point) and advised the Conning Officer to take it slow and easy. A number of individual conversations among the Bridge team, concerning the best method to clear the pier, took place prior to getting underway. No full team brief of the evolution was held immediately prior to movement. It was the general consensus that the [redacted] would proceed out on a course to stand well clear of the shoal to the north and once 400 yds from the pier would commence a turn to starboard to gain the charted standard track. It was extremely dark when [redacted] left the pier at 1726V, sunset had occurred at 1559V and the weather was overcast with patchy fog, intermittent showers; visibility was approximately 2 miles. The Conning Officer spent several minutes jockeying the ship to allow the placement of the pier's mooring lines back on the pilings as a courtesy to the WESTERN MARINER, who was planning use these lines to moor her tow. Once clear of the pier, a course of 240 degrees T was ordered by Conning Officer based on a recommendation from the Nav Evaluator. The Conning Officer adjusted the ship's speed to 80 SRPM, turning for 5.6 knots at approximately 1732V. The Nav Plotter and Evaluator both assumed the ship was proceeding at a speed of 4.0 knots and laid out their DR's based on a SOG of 4.0 kts. No turn bearings, turn ranges or danger ranges were plotted nor was a radar operator assigned to monitor a turn range or danger ranges. The minute 35 DR was plotted approximately 400 yds from the pier and based on advance and transfer of the ship would have put them close to base track with a standard turn at this point. At minute 33 a fix was plotted showing [redacted] well ahead of DR and a turn to 330 degrees T was recommended based on this fix. The exact time of the beginning of this turn is unknown due to the use of different clocks by the Nav Recorder (GPS clock) and the QMOW keeping the Ship's Log (LED clock without seconds shown). In the opinion of the MISHAP Analysis Board (MAB) the highest probability time of turn is a few seconds before minute 35. This conclusion is based on MAB calculations of predicted and expert witness deduced currents, ship's speed and turning characteristics, witness reconstruction of events, log entries, lack of accurate turn bearing/range and the grounding position of SWEETBRIER. At approximately minute 35 the rudder was ordered to right standard by the Conning Officer, after two or three passings were reported by the helmsman he was told to steady up on course 330 degrees T. Immediately after the rudder command

the Helmsman ask for the white light over the chart table to be secured in the hope that he could see the horizon and monitor his rate of turn. This proved impossible due to darkness and interference with visibility from the boom shack lights that had been inadvertently left on after loading. The Helmsman monitored the turn with the next best tool, the helm gyro. At minute 35 a fix was marked by the Nav team. After laying down the first two lines of the fix the Nav Plotter recognized that the ship was almost to the northbound track. The Nav Evaluator recommended a course of 338 degrees T based on this fix. At this time the ship's head was swinging to the right under the influence of the right standard rudder applied earlier.

By way of explaining the actions of the Bridge team during the course of this transit it is helpful to get a picture of where various players were and what actions they were taking during the movement. First, the CO was in the Captain's Chair on the starboard side of the bridge adjacent to the helmsman monitoring radar, ship's head, rudder angle, fathometer, reports by the Nav Team, Conning Officer orders, etc. The OOD and Conning Officer were midships inside the pilot house and the XO was roving the bridge checking input and progress staying mainly on the portside of the pilot house close to the shipping radar and scanning sonar.

Just before beginning the turn at approximately minute 35 the XO observed that the radar picture in the shipping radar (portside of Bridge) showed [redacted] to be further along the 240 degree T track than he expected. Because this didn't agree with his expectations he hesitated 15 - 30 seconds while attempting to sort out this new information in his own mind. He did not call this discrepancy to anyone's attention, rather he thought of grabbing a chart and checking it against the radar picture. Before he could accomplish this his attention was directed to the scanning sonar by the QMOW who saw a large contact ahead on the side scanning sonar. The XO, believing the sonar was out of adjustment and anticipating the ship coming up to speed once on base course of 338 degrees T, secured power to the sonar and housed the transducer. While checking the electronic sensors on the bridge following the minute 35 fix the CO noted that the ship appeared to be well left of track on the radar and the OOD noted that the ship was coming right very slowly. It was at this point that the CO recognized the danger of running aground and instructed the Conning Officer to come to due north: the rudder was increased to right full to comply with this command. Shortly (5-10 seconds) after this command the ship rolled to starboard. The OOD brought the throttle to all stop, moved to the port bridge wing and commenced backing and thrusting to starboard. The CO ordered an immediate fix (minute 37), proceeded to the port bridge wing and instructed the OOD to back full. The fix taken at minute 37 showed the [redacted] 200 yds into shoal water.

At this point structural ZEBRA was ordered set and compartments below the waterline were checked by Engineering watch personnel; no damage was found and actions were begun to lighten ship by off-loading deck cargo, and pumping the peak tank and aft water tanks. Efforts to refloat the ship included: continuing to back full for approximately an hour, dropping both anchors, pumping the peak tank, swinging a 12,500 lb sinker to sally the ship, jettison of the 12,500 lb sinker once the sallying attempt failed, rousting out and setting up the ship's 5 inch double braided nylon towing hawser, off-loading three 8x26 buoys, pumping the port and starboard water tanks forward, calculating stability using Coast Guard standard workstation software, verifying calculations with the Pacific Area Major Incident Response Team (MIRT), contacting the M/V WESTERN MARINER via VHF-FM and requesting assistance, unsuccessfully attempting to bring the WESTERN MARINER's towing wire and bridle onboard using the ships RHIB, hooking the ship's hawser to the WESTERN MARINER and taking a heavy strain which parted this hawser.
Once the hawser had parted the CO resigned himself to waiting until the next high tide to attempt to refloat the ship. Every effort was made to stabilize the ship at this point. A hard backing bell was continued to build a sand berm along the ship's hull, the port and starboard water tank dewatering was secured so as not to shift weight and roll the ship, the off-loaded buoys had been hogged under the ship forward (two to starboard and one to port to act as bilge blocks), the anchors were led aft (using the boom) to allow kedging during the refloating attempt, stability calculations were completed to ascertain critical draft, plans were discussed with M/V WESTERN MARINER to bring the barge she had just moored at the AML pier alongside to help stabilize the ship. By the time critical drafts were calculated and reported to the CO the tide had receded well past the critical draft point. The engines were secured at 1934V to minimize damage from ingesting sand and mud into the sea chests. In addition to these efforts work was begun to roust out the ship's 8 inch double braided nylon towing hawser, in anticipation of passing it to the WESTERN MARINER for the next towing attempt. At 2330V an inspection team went ashore to inspect the hull, low tide off Petersburg was predicted to be 1.2 feet above MLW at 2300V, down from a predicted tide of 12.6 feet at the time the ship ran aground. No apparent damage to the hull was found during this inspection. The hull was unsupported from the stem to frame 68, supported by the beach from frame 68 through 120 and in the water from frame 120 aft; no hogging of the keel was evident. The ship was resting with a 2.5 degree list to starboard and had a 3.5 degree trim by the stern.

At 0340V, 06 November the M/V WESTERN MARINER commenced applying a steady pull using the 8 inch hawser from [redacted]. High tide was predicted to occur off Petersburg at 0422V. At 0433V soundings were such that the CO requested that the WESTERN MARINER pull at full power. The [redacted] refloated after moving approximately 20 feet. At this point the WESTERN MARINER stopped pulling, the anchors were recovered and WESTERN MARINER once again took a strain and towed [redacted] to midchannel were the tow was released and the 8x26 buoys which were tied alongside were brought back on deck. The [redacted] refilled the peak tank for stability purposes and proceeded at a slow bell to the White Pass fuel pier in Petersburg. A diver inspected the hull in Petersburg and found that the only damage sustained to the hull due to grounding was two areas of scrapped paint, one on either side of the hull measuring 3 x 15 feet. The CO reported the divers findings and discussed sea trails with MLCPAC(v). At 1200V, 06 November 1993 [redacted] was underway for sea trials. At 1315V [redacted] moored, once again, at the Petersburg White Pass fuel pier having completed all sea trials satisfactorily.

FACTUAL INFORMATION

Chronological history of significant events preceding the MISHAP:

0615V, 05 November 1993
Navigation brief held in CGC [redacted] Wardroom for transit from Juneau, AK to Petersburg including the planned stop in Scow Bay to onload the 40 foot container. The CO, XO all Nav team personnel, OODs, QMOWs, personnel breaking-in were present.

0700, 05 November 1993
CGC [redacted] departs Juneau, AK enroute Petersburg, AK.

1542, 05 November 1993
BMC [redacted] relieved ENS [redacted] of the Conn for transit into Wrangell Narrows to Scow Bay AML pier. ENS [redacted] directed to standby on Bridge by the XO, [redacted] in anticipation of his conning the ship back to Petersburg from Scow Bay.

1543V-1639V, 05 November 1993
Transit uneventful, no apparent set or drift from current, good fixes obtained, failed to use ranges to check gyro error. M/V WESTERN MARINER passed word warning of hazards to navigation in vicinity of pier and warned [redacted] of strong set to north when current is ebbing, no record of conversion was logged in Bridge-to-Bridge Radiotelephone Log.

1640V, 05 November 1993
CGC [redacted] moored safely at AML pier using 2 lines from the pier and 2 of her own mooring lines. Word passed to crew to stand easy at mooring stations. Nav team personnel given permission to lay below for coffee, to warm up and make head calls.

1650V, 05 November 1993
BMC [redacted] relieved of the Deck and Conn by XO [redacted]. The BMC laid below to supervise the loading of the 40 foot container.

1651V-1713V, 05 November 1993
ENS [redacted] reviews chart and develops plan to depart pier to south of Scow Bay shoal. Numerous individual conversations between members of Nav team take place in effort to coordinate departure. Nav Plotter, QM1 [redacted] and Nav Evaluator, ENS [redacted] agree on course of 240 degrees T for departure course to intersect 338 degree T trackline. Estimate of 400 yds from pier discussed as range to commence turn to starboard. No turn bearing off of light 52 plotted nor was word passed to Radar Operator, ET1 [redacted], concerning a turn range.

1714V, 05 November 1993
BMC [redacted] assumed OOD, ENS [redacted] assumed Conn. ENS [redacted] discusses plan to depart pier with [redacted] XO and is questioned as to intentions by CO.

1726V, 05 November 1993
CGC [redacted] underway after maneuvering to replace pier mooring lines on dolphins as courtesy to M/V WESTERN MARINER.

1731V, 05 November 1993
Mooring stations secured, Special Sea Detail set. First fix after leaving the pier is taken showing ship to be approximately 100 yds from pier. Course of 240 degrees T recommended by Nav Evaluator and ordered by Conning Officer. Nav Plot DR's ship ahead at 4.0 knots while Conning Officer sets speed to 80 SRPM, turning for 5.63 knots. DR shows time to turn to be approximately minute 35; this DR is 400 yds from AML pier.

1733V, 05 November 1993
Fix taken showing ship ahead of DR.

1734V-1736V, 05 November 1993
Nav Plotter recommended turn to 330 degrees T based on the minute 33 fix. Conning Officer orders right standard rudder and then orders Helmsman to steady up on course 330 degrees T. QMOW, QM2 [redacted] logged turn commencing at minute 1735V, based on LED clock. XO [redacted] observed shipping radar and is confused by picture that showed the ship further to the west than he anticipated. Before he can check a chart his attention is directed to the side scanning sonar by the QMOW. A large contact ahead of the ship is shown on sonar. LT [redacted] secures sonar believing it was showing a false return; believing ship would soon be coming up to speed houses transducer. The CO, [redacted] notices that the ship is further to the west than it should be and orders the Conning Officer to come due north. Based on this order the rudder is increased to 30 degrees right (right full rudder). The OOD brings the throttle to stop 5-10 seconds later after ship takes a roll to starboard. Another roll to starboard is felt and the OOD commences backing, CO orders OOD to back full and orders Nav team to get a fix.

1737V, 05 November 1993
Fix is taken showing ship approximately 200 yds inside the 3 fathom curve, in shoal water.

Chronological sequence of events relating to efforts to refloat the ship after grounding:

1740V-1909V, 05 November 1993
Per Ship's Log efforts to refloat ship commenced and continued until 5 inch double braided nylon hawser parted when M/V WESTERN MARINER applied full power in attempt to tow to good water. The following actions were taken during this period:
- continued to back full.
-Lifted 12,500 lb sinker and swung this weight from side to side in attempt to sally ship.
-Contacted M/V WESTERN MARINER and ask for assistance.
-Launched ship's RHIB to transport towing wire from WESTERN MARINER to [redacted].
-Jettisoned 12,500 lb sinker, off-loaded three 8x28 buoys, two to starboard one to port, and hogged in to act as bilge blocks in event of ship starting to roll.
-5 inch hawser broken out and faked down on fantail if needed for towing.
-EO/DCA monitored liquid load removal (pumping water tanks overboard) and made reports to CO. Per Engineer Log: 1748V commenced pumping Peak Tank A-1-W; 1803V commenced pumping Forward Water Tanks A-4-W and A-5-W; 1815V secured pumping Peak Tank A-1-W (tank dry); 1842V commenced pumping C-201-W and C-202-W; 1905 commenced pumping A-3-W.; 1930V secured pumping C-201-W, C-202-W, A-3-W, A-4-W and A-5-W (due to stability concerns).
-RHIB unsuccessful in attempt to deliver wire towing hawser from WESTERN MARINER to [redacted] due to weight of hawsers shackle.
-[redacted] 5 inch hawser passed to WESTERN MARINER; heavy strain taken and hawser parts.

[redacted]

Chronological sequence of events after initial refloating attempts failed until [redacted] was safely moored in Petersburg:

1910V 05 November 1993 - 0612, 06 November 1993
Following the unsuccessful attempt to refloat [redacted] the CO made the decision to abandon further attempts until the next high tide. The following actions were taken to stabilize the situation, prepare for the next attempt and once refloated to moor safely in Petersburg.
-XO departed ship via SWB 1 to make incident report to CGD17 via landline.
-EO/DCA continued to use stability program resident on Coast Guard Standard Workstation to make stability calculations and monitor impact of pumping water tanks overboard. Per Machinery Log at 1930V pumping of water tanks C-201-W, C-202-W, A-3-W, A-4-W and A-5-W was secured. Concern for shifting loads rolling the ship was main concern at this point. Also removing remaining low weight would have lessened GM reducing stability once ship was refloated. PACAREA MIRT was working on same calculations and passed this information to CO via D17 OPCEN; good verification of onboard calculations.
-Anchors walked aft with boom to use for kedging.
-Previously requested use of WESTERN MARINER barge cancelled as ship had settled and was stable. Ship had 2.5 degree list to starboard and was trimmed 3.5 degrees by the stern.
-CGC ANACAPA smallboat transported XO back to [redacted].
-Held meeting with recovery team consisting of XO, OPS, EO/DCA, 1ST LT. Discussed plan of action to prepare to refloat at next high tide. Agreed to: Light off plant but not to use turns during next refloating effort (would use only force of WESTERN MARINER pull with 8 in double braided nylon hawser from [redacted] as towline first); heave aground on both anchors to kedge if needed; use ship's propulsion only as last resort; inspect the hull once low tide was reached.
-Cleaned both Main Diesel Engine and Ship Service Generator sea strainers.
-Approximately one hour before high tide passed towline to WESTERN MARINER who took a light strain.
-0433V WESTERN MARINER directed to take heavy strain and attempt to pull [redacted] from the beach.
-0437V [redacted] refloated.
-0444V [redacted] commenced retrieval of towing hawser, anchors, buoys.
-0455V commenced filling A-1-W with seawater to enhance stability.
-0529 [redacted] underway enroute Petersburg with WESTERN MARINER escorting.
-0612V [redacted] moored Petersburg.

INJURIES TO PERSONNEL

No injuries to personnel [redacted] from this MISHAP.

DAMAGE TO UNIT OR UNIT EQUIPMENT

Abrasion of the anti-fouling coat over a 3 foot by 15 foot area on both the port and starboard sides reported by the commercial diver who conducted an underwater hull inspection in Petersburg at 0937V, 06 November 1993. This damage was not significant enough to warrant an early drydocking to touch up the paint. No dimpling of hull or damage to underwater appendages was noted. Damage to 5 inch nylon double braided hawser was experienced when it parted during first refloating attempt; cost of hawser replacement is $2275.99.

DAMAGE TO OTHER EQUIPMENT

No other equipment was damaged as the result of this MISHAP.

PERSONNEL INFORMATION

See Appendix C

VESSEL INFORMATION

Name: USCGC [redacted] (WLB-[redacted]

Description: 180 foot Ocean Going Buoy Tender [redacted]

Builder: Marine Iron and Shipbuilding Corp., Duluth, Minnesota, 1944

Homeport: [redacted] Alaska

Dimensions:

Length Overall	180'
Length Between Perpendiculars	170'
Breadth molded on waterline (12' draft)	34' 11 3/4"
Extreme Breadth to outside of plating	37' 1 1/2"
Depth, molded to main deck	17' 3 1/2"
Waterline to Aircraft Warning Lights	64' 7"
Full Load Mean Draft	12' 8"

METEOROLOGICAL AND CURRENT INFORMATION

Weather:
Winds - calm
Seas state - calm
Visibility - 2 nm
Barometer - 30.07 and rising over the last 4 hours
Dry bulb temperature - 41 degrees F
Wet bulb temperature - 41 degrees F
Sea water temperature - 43 degrees F
Clouds - 10/10 altostratus, rain

Currents:
Predicted to begin at 1641V, 05 November 1993, setting towards 340 degrees T off of Blunt Point in Wrangell Narrows. This information was obtained by using the Harbormaster Program, developed by NOAA, at MSO Juneau. Based on MSTC [redacted] statement regarding observed cross currents in Wrangell Narrows off Blunt Point in the past, and SOG from 1735V to 1737V of 6.9 kts while turning for 5.6 kts, cross current component was computed to be at least 1.3 kts.

COMMUNICATIONS

Bridge Radiotelephone Log was not kept per Coast Guard Telecommunications Manual, COMDTINST M2000.3B. The QMOW should have had sufficient time to log radiotelephone communications as he was not logging actual course and speed changes on the transit into the AML pier. Because of this deficiency all references to radiotelephone communications are based on Ship's Logs and statements of witnesses. Radiotelephone communications with M/V WESTERN MARINER while coming into the AML pier were clear and navigational information was passed to [redacted] that was used to maneuver for mooring. A warning was also passed to be cautious of strong northerly set due to ebbing tide and accompanying northerly current. There was no indication of interference with normal verbal communications among the Bridge Team. All commands and recommendations for action were passed clearly and repeated back with the exception of the speed (80 SRPM, 5.6 kts) set by the Conning Officer at approximately 1731V. No alarm was sounded once ship was grounded, however word was passed quickly via soundpowered phones and 1MC to check spaces below the waterline and set material condition ZEBRA. The CO made a conscious decision as not sounding GQ enhanced the speed with which other duties were performed in attempt to refloat the ship quickly. Setting GQ would have taken additional time to set ZEBRA and additional time to direct people to various stations throughout the ship where preparations for refloating were taking place.

TESTS AND RESULTS

Following the commercial divers report of no visible damage to the hull (with the exception of two 3x15 foot patches of scrapped anti-fouling paint on the port and starboard sides of the underwater body) sea trials were conducted in Frederick Sound north of Petersburg. These sea trials revealed all systems to be operating properly.

One of the most confusing aspects of this MISHAP was logically deducing exactly how [redacted] ended up in her grounded position if a right standard rudder turn was initiated between 1734V and 1735V, as most of the Bridge Team personnel reasoned. Since there were time discrepancies between the ship's log and testimony the MAB desired to take the known position and work the problem back to see if insight could be gained into outside forces that might have effected the ship enough to set it onto the shoal. In an attempt to ascertain the actual time and location of the ship's right standard rudder turn from 240 degrees T to 330 degrees T MSTC [redacted] stationed at MSO Juneau, volunteered to request that a dynamic shiphandling model program be run. Although promises were received from a shipping company that he routinely works, the analysis has not been forthcoming and further delay in completing this report was deemed counterproductive. A manual, and therefore static and potentially less accurate, analysis was completed by the MAB taking into account ship's speed, turning characteristics and computed cross current speed (based on information gained from examining the distance traveled from 1735V to 1737V). What was found was that the ship's turn most probably began at approximately 1735V. Taking into account the testimony of Bridge Team personnel that the turn began at approximately minute 1734V, or shortly thereafter, it is highly likely that the turn occurred shortly before 1735V. This time of turn puts the ship past the point where a safe turn should have been executed. This analysis emphasizes the importance of adhering to Coast Guard Navigation Standards and Procedures, specifically as they relate to turn ranges/bearings.

UNIT RESPONSE TO MISHAP

Stranding and salvage efforts after the MISHAP were outstanding. The unit's response in attempting to refloat the immediately were well orchestrated and safely carried out. The risk of parting the 5 inch hawser was recognized and the fantail was cleared of personnel prior to taking a strain on the line. Once it was evident that refloating the ship before the next high tide was impossible, well orchestrated efforts were made. The entire crew effectively devoted themselves to stabilizing the situation or to making preparations for the next refloating attempt. Once the ship was refloated the escort by the WESTERN MARINER to the pier in Petersburg was prudent decision. The unit's pre-mishap plan was followed, however, it needs work. Detailed suggestions for enhancing the plan were discussed with XO, [redacted] The MAB requested that all personnel who were on the bridge at the time of the MISHAP complete written statements as soon as possible via the D17 OPCEN. This request was made recognizing that any undue delay would cause degradation and contamination of perceptions of events leading up to the MISHAP. Unfortunately statements were not prepared by all members as requested, nor were some of the statements as complete as they could have been if the importance of these statements would have been stressed to the crew. During the course of interviewing crewmembers it became apparent that because this request was not honored the statements were somewhat degraded and contaminated due to discussions among the crew which led to skewed perceptions of the MISHAP. All physical evidence including charts, logs, and records were saved and collected. A unit MAB was appointed and completed their report on 23 November 1993. Information gained from this report helped greatly in completing this MISHAP Analysis Report.

RECOMMENDATIONS

1) That [redacted] reemphasize adherence to Commandant's Navigational Standards and navigate "by the book" in all situations.

2) That [redacted] designate the Shipping Radar operator as a dedicated resource to monitor traffic and act as a cross check for restricted waters maneuvering situations.

3) That [redacted] radar operator positions be switched to allow the Shipping Radar operator use of ARPA and the Nav Radar operator use of yard range read out on the port radar rather than mile scale on the starboard radar.

4) That [redacted] revise their Pre-Mishap Plan to emphasize the importance of statements by witnesses. Specifically, timely generation of complete statements should be directed to overcome the possibility of memory degradation and contamination of facts from discussions of events with other witnesses.

5) That [redacted] make it a standard operating procedure to have at least a mini-brief after any mooring situation to ensure that vital information is passed to all team members.

6) That [redacted] make it a standard procedure to tune and use the Side Scan Sonar in restricted waters.

7) That [redacted] use one clock for navigation and log keeping purposes.

8) That [redacted] adhere to Commandant standards in maintaining their Bridge-to-Bridge Radiotelephone Log.

9) That [redacted] reconsider the decision to not have a qualified helmsman on station in After Steering during Special Sea Detail. At a minimum a helm qualified SA or SN should be designated as After Steering Helmsman when at Special Sea Detail.

10) That [redacted] request Human Error Accident Reduction Training (HEART).

11) That D17 assertively pursue Human Error Accident Reduction Training (HEART), or similar team safety awareness course, for all district units.

12) That the lessons learned for this MISHAP be made available to the fleet and be used for training purposes as appropriate.

GROUNDING OF WLB,

OFF OF WOODS HOLE, MA

ON 15 NOVEMBER 1990

U.S. Department of Transportation
United States Coast Guard

Commander
First Coast Guard District

Capt John Foster Williams Bldg
408 Atlantic Avenue
Boston MA 02110-3350
Staff Symbol d1
Phone
FTS 223-8500

5890/190INR027

From: Commander, First Coast Guard District
To: Commandant (G-LGL)

Subj: INVESTIGATION OF CIRCUMSTANCES SURROUNDING THE GROUNDING OF THE USCGC ( ) ON 15 NOVEMBER 1990

ACTION OF THE CONVENING AND FINAL REVIEWING AUTHORITY

1. The Findings of Fact as found in subject investigation are approved.

2. I specifically find that no punitive action is appropriate in this case. It is important for all responsible commanding officers to give new officers experience in all phases of cutter evolutions, especially, ship control. At sea, there is no substitute for "doing it" yourself. All the formal training in the seamanship in the world is not enough. A young officer must finally learn by experience. Likewise, letting the new officer do it only in the best of conditions is not how the good commanding officer carries out his duties as a teacher. At the same time, the commanding officer must accept complete and unflinching accountability for his ship. Obviously these competing interest require a thoughtful balancing. I find that requirement to be present in this case. The command and navigation procedures in place in USCGC were professional and adequate for the circumstances. Allowing an unqualified officer under instruction to "conn" a night approach into their homeport was likewise reasonable. The error was in not realizing the current set required an earlier than normal turn or a bolder use of the rudder or engines. The Commanding Officer was on the bridge, attentive to the situation and took control himself as soon as it became apparent the ship was standing into danger. This is not a situation involving negligence or inattention to duty. It is a mistake of seamanship that experience corrects. Consequently, disciplinary action for the Commanding Officer or the conning officer is not required or appropriate in this case.

3. With respect to recommendation 3, the navigational aids for Little Harbor have been reviewed in accordance with a WAMS analysis. As a result, Little Harbor Lighted Buoy 5 has been proposed to better mark the harbor entrance. In addition, buoys 6 and 10 will be lighted in order to enhance night piloting.

5890/190INR027

MAY 09 1991

Subj: INVESTIGATION OF CIRCUMSTANCES SURROUNDING THE GROUNDING OF THE USCGC ( ) ON 15 NOVEMBER 1990

4. The logging of "MVCS" (maneuvering various courses and speed) before entry into Little Harbor is not a good practice. A District Instruction concerning this will soon be issued. Notations in the log like this are not appropriate until approach to a mooring or buoy pick up is actually begun.

5. A copy of this investigation, after the final action is taken, will be sent to the Prospective Commanding Officers course for inclusion as a case study. There are a number of very valuable lessons for other cutter commanders.

6. CDR is commended for his very professional and thoughtful investigation.

US Department of Transportation

United States Coast Guard

223-8454

5830

From: CDR , USCG
To: Commander, First Coast Guard District

Subj: INVESTIGATION OF FACTS AND CIRCUMSTANCES SURROUNDING THE GROUNDING OF THE USCGC ( ) ON 15 NOVEMBER 1990 IN APPROXIMATE POSITION 41-30.572N, 70-40.01W

Ref: (a) CCGDONE ltr 5830 dtd 16 November 1990
(b) Coast Guard Administrative Investigations Manual, COMDTINST M5830.1
(c) Cutter Navigation Standards and Procedures, COMDTINST 3530.2

Preliminary Statement

1. As directed by reference (a) and in accordance with the procedures of reference (b), I have conducted an informal investigation into the facts and circumstances associated with the grounding of USCGC on 15 November 1990. No persons were designated parties to this investigation. All witnesses were advised of their rights against self incrimination and also advised that personal information was protected under the Privacy Act. No difficulties were encountered in conducting this investigation and complete cooperation was provided by Commanding Officer, USCGC and his entire crew. All times listed in this report are local time, i.e. Eastern Standard Time, +5R; and all courses are in degrees true unless otherwise indicated.

Findings of Fact

1. At approximately 2235 15 November 1990, in position 41-30.572N, 70-40.01W, the entrance to Little Harbor, Woods Hole, MA, the USCGC ( ) ran aground and remained so until approximately 0255 16 November 1990. (Enclosures 2, 3)

2. An inspection of the interior hull and machinery by the ships force, subsequent to the grounding, showed several small dishes and buckles in various locations. None of them were considered significant or worth repairing. (Enclosures 15, 32)

3. An inspection of the exterior of the hull by a commercial diver, subsequent to the grounding, showed some scraping of the hull along the keel from about amidships forward for 12 ft, a few

dishes of the hull plating in various locations, a bare spot along the port side of the hull about halfway up from the keel, and the tips of the propeller blades were shiny. None of the damage is considered significant or worth repairing. (Enclosures 16, 32)

4. No personnel were injured as a result of the collision. (Enclosure 32)

5. At 0921 15 November 1990 CGC departed Support Center Boston to work navigation aids in Massachusetts Bay. As a result of a leaking shaft seal discovered about 1300 she secured working buoys and proceeded toward homeport, (Enclosure 2)

6. While proceeding NE in Vineyard Sound about two miles SW of buoy 26, set the Navigation Detail at 2215 15 November 1990, followed shortly by setting of the Special Sea Detail at 2219. (Enclosure 2)

7. Once the cutter passed Nobska 26 buoy at approximately 2226 15 November 1990 she began her port turn onto her 296 track heading toward Little Harbor, Woods Hole, MA. From this point on the exact ordered courses and speeds could not be determined from the logs. The navigation data sheet shows "MVCS" beginning at 2226 15 November 1990, (enclosure 2). The engine was in pilot house control and, therefore, there was no engine room or other log which records speed or engine RPMs (enclosure 22). NOTE: According to the Naval Engineering Manual, COMDTINST M9000.6A, Chapter 9 , Section 5.2, there is no requirement to keep an engine bell book if the engine is in pilot house control.

8. According to the recollection of bridge personnel, the cutters' ordered speed as it rounded Nobska 26 buoy on its 296 track was 12 knots, and when she was approximately abeam buoy 1 (coffin rock) she slowed to 9 knots followed immediately by slowing to 6 knots. (Enclosures 5, 6, 7, 10, 11)

9. An examination of the CGC chart and navigation plot show that the cutter rounded Nobska 26 buoy at approximately 2226 and proceeded on her inbound leg. She was approximately 170 yards right of track at minute 2227, no fix was obtained at minute 2228, she was 100 yards right of track at minute 2229, 10 yards right of track at minute 2230, on track at minute 2231, 40 yards left of track at minute 2232, and 90 yards left of track at minute 2233 and later. (Enclosure 35)

10. Based on distance traveled from fix to fix the following speeds over the ground as calculated by the investigating officer occurred: from minute 27 to minute 29 a speed of 8.6 knots, from minute 29 to minute 30 a speed of 10.2 knots; from minute 30 to 31 a speed of 12.6 knots; from 31 to 32 a speed of 9.9 knots; and from minute 32 to 33 a speed of 7.1 knots. (Enclosure 35)

11. According to ENS who had the CONN, he adjusted his course to 291 after he made the turn around buoy 26 based on a recommendation by the navigator. Once he regained his 296 track, he came back to course 296 and made no other course changes until he commenced his turn to the 349 leg. (Enclosures 8, 32)

12. ENS commenced his turn to the 349 leg when the range to Juniper Point, as passed from the navigator, was 535 yards. He used 20 degrees right rudder. (Enclosure 8)

13. During the turn the Commanding Officer observed heavy set to port and slow response from the effect of the rudder. He therefore ordered the CONN to increase the rudder to right full which the CONN immediately directed and the helmsman did. (Enclosures 5, 8, 14, 32)

14. It was only a matter of seconds from the time the rudder actually reached 20 degrees right and the command to go to right 30 degrees rudder was given by the CONN and responded to by the helmsman. (Enclosures 5, 14, 32)

15. The CO took the CONN just after he ordered right full rudder. (Enclosures 5, 8, 14)

16. The CO attempted to increase the starboard rate of turn by thrusting to starboard, then shifted the rudder to left full and went ahead full on the engine, and then commenced a back and fill maneuver to get the stern to swing to starboard. (Enclosure 5)

17. The CO had the CONN when the cutter grounded sometime shortly after minute 2233. He immediately set General Quarters and Material Condition Zebra and ordered that Group Woods Hole be notified of the grounding. (Enclosures 2, 5, 7)

18. Once aground, the CGC was sitting in a Northeast/Southwest direction and her head was approximately 055 degrees. (Enclosure 5)

19. Once the cutter was aground, the CO made several attempts to get free and minimize any damage. These included; going ahead full immediately after grounding; when that wasn't successful dropping the port anchor to minimize movement; lightening the load by dropping both a 25K and a 12.5K sinker followed by off-loading the small boat and deballasting the 30 thousand gallon fresh water tanks. He also had various patrol boats, small boats, and a commercial tug and a fishing vessel provide assistance by taking soundings or attempt to tow or push him off the bottom. When this was not successful, he then decided to wait until the morning high tide. However, at approximately 0248 after the cutter began to bounce hard from the swell, he attempted to move using the engine and hauling on the anchors. This process was successful and he moored safely to the Group/Station Woods Hole pier at 0331, 16 November 1990. (Enclosures 2, 3, 5)

20. Upon setting of the Special Sea Detail at 2215, the following personnel were on the bridge in the assignments indicated (Enclosure 4):

LCDR	- COMMANDING OFFICER
LT	- XO/SAFETY OFFICER
LTJG	- OPS/NAVIGATOR/NAV RADAR OPERATOR
ENS	- OFFICER OF THE DECK/SHIPPING RADAR
ENS	- NAV PLOT
ENS.	- CONN
QM1	- NAV RECORDER/EVALUATOR
QM3	- QMOW
ET1	- OBSERVER
YN2	- 1JV PHONE TALKER
SN	- HELMSMAN

21. LT , XO/SAFETY OFFICER; LTJG , OPS/NAV/NAV RADAR OPERATOR; and ENS , OOD, were all qualified underway Officers of the Deck. SN was a fully qualified helmsman, and LTJG had satisfied all requirements for designation as Navigator and was so designated by the CO. (Enclosure 27)

22. ENS was not a qualified OOD and had the CONN for training purposes under the direct supervision of the Commanding Officer. It was his first time conning the ship into Little Harbor at night. He had previously conned the ship into Little Harbor during the day. (Enclosure 5)

23. There was complete understanding on the part of all bridge personnel with respect to duties and responsibilities assigned. Everyone knew that ENS had the CONN and was being coached by the Commanding Officer. (Enclosure 32)

24. As best can be determined all major machinery and equipment which would effect the cutters maneuverability, including ships engines, rudder, and electronic equipment, were operating properly and continued to do so throughout the period of 15 and 16 November 1990. (Enclosures 2, 22, 32)

25. The gyro error as determined by triangulation just prior to getting underway from Boston on the morning of 15 November 1990 was one degree East. (Enclosure 2)

26. No one recalls adjusting ordered course to account for gyro error once the Special Sea Detail was set. (Enclosure 32)

27. The bearing error of the radar was zero degrees, and the radar range error was zero yards. The fathometer was operating properly and was set on feet as required. The radar PMS was up to date and the radar was functioning properly. (Enclosures 7, 12, 21, 32)

28. NOAA chart 13235, Woods Hole, 3rd. Edition, June 15/85, scale 1:5000, soundings in feet, as corrected through NM 42/89, was being used to plot the cutters position. (Enclosures 20, 35, 32).

29. The chart in use was the most recent chart of the area on board and was corrected up to date. A new edition of this chart dated September 90 had just been issued by NOAA but the issuance was not published as a local NM and the cutter had not yet received its copy on board. (Enclosures 20, 30, 32, 35)

30. Chart 13235 which was being used for navigation was marked/labeled as follows: A two leg track line from the vicinity of buoy 26 to the middle of Little Harbor showing a true course of 296 degrees until just outside the channel to Little Harbor, then a true course of 349 degrees into Little Harbor; shoal water was marked by blue ink, navigational reference points were marked in either ink or pencil with an ALPHA code and were further highlighted by yellow circles; two of the NAV points were double labeled, i.e. they had both an ink letter and a second and different pencil letter. Five of the NAV points had concentric range circles in 100 yard increments plotted on the chart. (Enclosure 35)

31. Navigational fixes were taken frequently and well within the requirement of the CO's Standing Orders for the Officer of the Deck. They were taken at one minute intervals, plotted on the chart and the results passed to the CONN and compared to the radar picture by both the Navigator and the Officer of the Deck. The NAV plotter used the concentric circles already plotted on the chart for swinging his ranges. He located the closest 100 yard circle and then interpolated the exact range location and in free hand drew a LOP in the appropriate location. Three ranges for each fix were used. The resulting triangle averaged 35 yards on a side and was considered a good fix by the Plotter and Evaluator. The fixes were properly labeled on the chart. A corresponding fathometer reading was taken and recorded with each fix. (Enclosures 35, 7, 9, 10)

32. According to the Evaluator, each fix was considered good, and the quality, location left or right of track , and a course recommendation was passed to the CONN. (Enclosure 32)

33. Only radar ranges were used for fixing the ships position. No visual bearings were used. The bearing book was utilized for the recording of these ranges. The NAV points used were labeled in the bearing book but did not always agree with the labeling of these points on the chart. The bearing book did not contain the specific latitude and longitude of each NAV point used. It did contain the gyro error. (Enclosures 7, 35, 21)

34. According to the navigator, visual bearings for navigation fixes were never used when on chart 13235 because experience showd them to be unreliable, and not enough NAV aids for visual

bearings are capable of being plotted on the chart due to its scale. Therefore, radar navigation has always been the cutters preferred and sole means for fixing the ships position when transiting to/from its homeport of Little Harbor, (Enclosure 7)

35. The following information as required by either reference (c) or the CO's Standing Orders were not plotted/labeled on the chart: magnetic courses on each leg; the turn point for the turn to the 349 track line taking into account the cutters tactical data (advance and transfer); danger bearings or danger ranges; turn bearings or turn ranges; a dead reconning (DR) plot. (Enclosures 31, 32, 35)

36. In accordance with reference (c) a navigation brief prior to leaving or entering port is required. For vessels which transit an area on a frequent basis, such as aids to navigation vessels, a brief need only consist of updating facts which change, such as tides and currents.

37. A formal navigation brief was not conducted prior to the CGC entering Woods Hole on the evening of 15 November 1990 (enclosure 7), however, the CO, XO, OPS/NAV, OOD, CONN, NAV PLOT, EVALUATOR, AND QMOW, have all indicated to the investigating officer that they either were told what the tides and currents were or had looked them up themselves prior to the cutter transiting into Woods Hole. Their understanding of the tides and currents, as told to the investigating officer, were in agreement with those written on the checkoff sheet for entering port. (Enclosures 7, 17, 32)

38. Tides and currents for the Woods Hole area for 15 November 1990 were determined by QM3 from the Tide Tables and QM1 from ELDRIDGE TIDE AND PILOT BOOK, 1990 edition, and were written on the checkoff sheet for entering port as follows: 1844 1.36 0220 .04 E .7 .4 ON. As explained to the investigating officer by the QM3 and QM1 and by the navigator and CO, these numbers translated to: High tide of 1.36 feet at 1844, 15 November and low tide of .04 feet at 0220, 16 November; easterly currents in Vineyard Sound at .7 knots and the currents inside Nobska Point were .4 knots on the rocks (toward Juniper Point). (Enclosure 17, 18, 32)

39. Independent calculations of the tides and currents for the Woods Hole area on 15 November 1990, using Department of Commerce Tide and Current Tables, showed the tides to be exactly the same as those computed by the CGC and the currents to be the following (enclosure 19):

Currents for Vineyard Sound (1NM SE Nobska Pt)

Flood	1938	2.73kts	017
Slack	2247	-	-
Ebb	0137	2.24kts	259

Currents Woods Hole Pass (south end)

Slack	2139	-	-
Ebb	2314	0.84kts	318

40. Predicted currents just west of Little Harbor, that is for Great Harbor, Woods Hole, MA, taken from ELDRIDGE TIDE AND PILOT BOOK for 15 November 1990 were westerly at 1.1 knots. (Enclosure 18).

41. According to the CO and the navigator, ELDRIDGE was used by the CGC to predict currents because based on experience it provided more accurate information than the Department of Commerce Tide and Current Tables. (Enclosures 5, 7)

42. The evaluator recalls laying out a DR and computing set and drift only once, just after making the turn around buoy 26. However, no one recalls being passed any set or drift information during the transit into Little Harbor. There is one line from the fix at minute 2227 which could have been a DR but it is not labeled as such. (Enclosures 32, 35)

43. The cutters draft on 15 November 1990, as taken from the smooth log, was 11ft. 11in. forward and 13ft. aft (Enclosure 2). The charted depth in the vicinity of the grounding varied between 6 and 12 feet. (Enclosure 35)

44. On scene weather was as follows: Darkness, winds SW 6 to 14 knots, visibility 10 miles, clear skies, barometer 30.11 and steady, temperature 55 degrees Fahrenheit, seas calm. (Enclosures 2, 29)

45. An independent plot of the cutters' positions, using the ranges from the cutters' bearing book and plotting these ranges using a plotting compass, shows several cutter positions to be between 20 and 55 yards different than the reconstructed plot positions. (Enclosures 33, 34, 35)

46. According to the ships tactical data sheet, the advance and transfer for 20 degrees rudder at speeds of 6, 9 and 12 knots are as follows (Enclosure 28):

	Advance	Transfer
6kts	300 yards	200 yards
9kts	250 yards	170 yards
12kts	210 yards	140 yards

47. Turn points along the 296 track using the ships tactical data shown above, expressed in distance from Juniper Point are as follows (Enclosure 33):

6kts	535 yards
9kts	510 yards
12kts	480 yards

48. A turn range off Juniper Point of 500 yards has always been used by the cutter to mark the point to turn off the 296 leg to the 349 leg. This range was based on experience gained as a result of hundreds of transits into the harbor over the years, and not based on the ships tactical data. A base turn range of 500 yards was used on 15 November 1990 and was well understood by the CO, XO, CONN, NAVIGATOR, EVALUATOR and NAV PLOT. (Enclosures 5, 7, 8, 9, 10, 11).

49. Buoys 1, 2, 4, 6, 7, 9, and 10 along the cutters track going into Little Harbor were verified to be on station by the ANT Woods Hole on 19/20 Nov 1990. (Enclosures 24, 25)

50. An examination of the cutters' training records shows that navigation team training was conducted frequently and well within the requirements prescribed by the Commandant for a vessel of the WLB class. (Enclosure 32)

51. As best can be determined, no personnel on the bridge during this evolution were using any kind of medication. (Enclosures 23, 10, 8, 7, 32)

52. There was no information obtained which gave any indication of fatigue or illness of any of the bridge personnel. (Enclosure 32)

53. As observed by the investigating officer during interviews of all bridge personnel, without exception, they were forthright, knowledgeable of their responsibilities, had good attitudes, and enjoyed their jobs. (Enclosure 32)

54. The investigating officer, based on discussions with the crew, determined that the CGC comes in and out of its approximately twice per week with about half of these transits conducted in the dark. (Enclosure 32)

55. The Commanding Officer assumed his current duties in July 1989 and has personally taken the cutter into and out of its homeport of on innumerable occasions both day and night in a variety of weather, tide and current conditions. (Enclosure 32)

56. The cutter had previously made some recommendations to the District regarding changes to the type and location of the NAV aids going into Little Harbor. (Enclosures 5, 26)

Opinions

1. Under ideal conditions the transit into Little Harbor is a very tight maneuver requiring skilled and experienced ship handling and accurate navigation. The "gate" (channel between buoys 6 & 7) is only 60 yards wide and a 53 degree starboard

course change is required only 250 yards before the gate. Shoal water stretches all along both sides of the channel from buoy 1 into the harbor, and there is always a cross current on the 349/169 leg. There is little room for error.

2. Darkness and an "on the rocks" or westerly current significantly increases the difficulty of an inbound transit to Little Harbor.

3. Although ENS was not yet a qualified OOD, allowing him to CONN the ship into port with the CO as his coach was a perfectly legitimate procedure.

4. The difference in fix positions between those plotted by the ship and those reconstructed as part of this investigation may be attributed to any or all of the following: Difference in exact points at which radar ranges were taken and then plotted on the chart, errors in plotting LOP's including the possibility of misplotting due to a very busy chart (intersecting range circles), differences in the interpretation of exact fix positions once LOP's were plotted.

5. The cutter's LOP for Nobska PT at minute 2231 was probably misplotted by the NAV PLOT. Instead of the LOP being 570 yards as recorded in the bearing book, it appears to have been plotted at 530 yards. The cutter's fix at minute 2231 shows her to be on track. However, using an LOP of 570 yards puts the fix 40 yards left of track.

6. The cutter commenced its turn to the 349 leg sometime after minute 2231 and closer to minute 2232, and when the range to Juniper Point was 535 yards.

7. Just prior to the turn the current was almost dead astern. Once the turn commenced, the current was on the cutters starboard quarter and pushing it to port. The actual current velocity was probably much greater than the predicted .4 knots - probably closer to 1.0 knots.

8. Since the average SOG between 2231 and 2232 was 9.9 knots, and since the cutter was turning for 6 knots, the actual speed at the time of the turn was probably closer to 8 knots and was decreasing.

9. The effectiveness of the rudder was significantly reduced by the following current.

10. If the cutter was 40 yards left of track (which she probably was) and assuming the SOG was 9 knots, the calculated turn point to meet the 349 leg, using the ships tactical data, was 545 yards. Since the speed was probably less than 9 knots, and since the following current needed to be accounted for, the ideal turn point was something greater than 545 yards.

11. By commencing her turn at 535 yards from Juniper Point, the cutter was slightly late but this was probably not enough by itself to be significant. What was significant was the reduced effect of the rudder which slowed the turn, and the impact of the current as the cutter came right. Both of these allowed increased set to port.

12. The actions of the CO to overcome the port set may have inadvertently contributed to the rate of set, but also softened the impact of the grounding. As he thrusted to starboard and started his back and fill maneuver, he forced his bow to starboard, and reduced his speed over the ground. These actions put the cutter almost perpendicular to the current at a slow speed thus allowing the maximum effect of the current. Because very little forward motion was occurring the grounding was soft.

13. Using maximum rudder (30 degrees) initially and giving the engine a quick shot ahead may have been sufficient to make the turn.

14. The reliance on the historical turn range of 500 yards from Juniper Point may have contributed to a late turn. Everyone knew that a turn earlier than 500 yards was needed to compensate for the current and therefore the actual turn at 535 yards appeared perfectly okay to everyone. However, if the charted turn point had been determined using the ships tactical data, it would have been between 510 and 535 yards; depending on speed, and the actual turn range compensating for the current would then have been greater than 535 yards.

15. Failure of the navigation chart to have the danger and turn ranges and bearings plotted, and the failure to use visual bearings for navigation, while not good navigational practice, did not contribute to the grounding, and if used probably would not have prevented the grounding.

16. Failure to plot a DR and compute set and drift once the cutter came to the ordered 296 course (approximately at minute 2230), may have contributed to the grounding. This information would have clearly shown that the cutter was traveling faster than ordered speed and that the current was stronger than predicted - two more pieces of information for the CONN and CO to consider. (The amount of time available to compute a set and drift was very small and would have required exceptional skill. Nevertheless, it should have been attempted.)

17. Not adjusting ordered course to account for gyro error did not contribute to the grounding and had negligible impact on the movements of the cutter during this period. When the ordered course was 296, the cutter was actually steering 297 and when ordered course was 291, it was actually steering 292.

18. Logging "MVCS" at minute 2226 was too early. Reconstruction of the cutters courses and speeds was only possible based on the

memories of the personnel on the bridge. A more appropriate use of MVCS would be once the cutter was inside the harbor and in the process of mooring. There is currently no Coast Guard policy regarding this issue.

19. The navigational aids in the Little Harbor area can be improved to make the transit safer. An ideal solution is a range on the 349/169 leg, as well as those changes currently being considered by the District (enclosure 26). At a minimum, the lighting of buoy 10, which will provide a "range" with buoy 6, should be considered.

20. The actions of the CO subsequent to the grounding were decisive and professional and responsible for no damage being incurred. I would only question his use of a full ahead bell immediately after grounding. In this case it was not a problem, but in different circumstances could have aggravated the situation. A more cautious approach might have been considered, i.e. take soundings, determine type of bottom, determine amount of movement from the swells, how the hull was sitting, etc. and then proceed with whatever combination of engine and outside assistance may be appropriate.

21. All damage discovered by both the ships force and the commercial diver, except the bare metal scrapes on the keel, and possibly the shiny tips of the propeller blades, resulted from reasons other than this grounding.

Recommendations

1. That no disciplinary action be taken.

2. That CGC navigation practices be improved. All requirements of references (b) and (c) should be complied with, especially those regarding the plotting and use of danger and turn ranges and bearings using the cutter's tactical data, and the use of a DR and computation of set and drift.

3. That in light of this incident, First District (oan) reexamine the navigational aids going into Little Harbor and consider changes suggested by the investigating officer and any recommendations made by the CGC

4. That by separate correspondence Commandant be requested to consider establishing a policy concerning the appropriate use of "MVCS".

E. J. Dennehy

of Transportation
United States
Coast Guard

First Coast Guard District

408 Atlantic Avenue
Boston MA 02110-3350
Phone
FTS 223-8500

5830

NOV 16 1990

From: Commander, First Coast Guard District
To: CDR , USCG

Subj: INVESTIGATION OF FACTS AND CIRCUMSTANCES SURROUNDING THE GROUNDING OF THE USCGC ( ) ON 15 NOVEMBER 1990 IN APPROXIMATE POSITION 41-30.572N, 70-40.01W

Ref: (a) Coast Guard Administrative Investigation Manual, COMDTINST M5830.1

1. You shall conduct a single individual investigation under Chapter 4 of reference (a) into all the facts and circumstances surrounding the grounding of the CGC ( ) in the vicinity of Little Harbor on 15 November 1990. You are not required to conduct a hearing.

2. You shall submit an investigative report following the format of enclosure (5) of reference (a). Should you believe that a modification of this format, or a letter incident report, is appropriate, communicate that fact to me for my decision on the ultimate report format.

3. Your findings of fact should specifically address the navigational practices aboard the In particular, address the adequacy of the watch at the time of the grounding and the method and frequency of establishing their position. Your findings should also address the adequacy of the navigational aids in the waterway to assist in determining if any improvements should be recommended.

4. This investigation should be initiated as soon as practicable and you are to complete this investigation by 7 December 1990. You shall state the reasons to me and include an explanation of any delay in your report.

5. If you have any questions concerning the appropriate approach to take in conducting this administrative investigation or any consequences concerning findings about any potential claims against the United States, you should contact CDR Michael A. Cone of the District Legal Office.

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P. L. COLLOM
CHIEF OF STAFF

Enclosure ( ) :

COLLISION OF WTGB WITH BARGE WHILE ICEBREAKING OFF KELLEY'S ISLAND (WESTERN LAKE ERIE)

U.S. Department of Transportation United States Coast Guard

Commanding Officer

5830
14 FEB

From: Commander, U. S. Coast Guard
To: Commander, Coast Guard Group

Subj: **INVESTIGATION OF THE COLLISION OF THE USCGC OLD BAY (WTGB) WITH BARGE WHILE ICEBREAKING IN VICINITY OF KELLEYS ISLAND ON 13 JAN**

Ref: (a) COMCOGARDGRU ltr 5380 of 18 JAN 1994
(b) CG Administrative Investigations Manual, COMDTINST M5830.1 (series)
(c) CCGDNINE MSG DTG 181603Z JAN 94
(d) Coast Guard Military Justice Manual, COMDTINST 5810.1 (series)

Preliminary Statement

1. In accordance with reference (a) and (b), a single officer informal investigation was convened to investigative the facts and circumstances surrounding the collision of USCGC OLD BAY (WTGB with the barge KELLSTONE I on January 13 while in the vicinity of Kelley's Island (western Lake Erie). No parties were designated for this investigation and a hearing was not conducted, however, all witnesses were accorded their rights in accordance with article 31(b), Uniform Code of Military Justice, per reference (c) before interviews were conducted.

2. This investigation is appointed in contemplation of litigation and to assist attorneys, acting on behalf of the Chief Counsel, and representing the interests of the United States in this matter.

3. No problems were encountered gathering statements from the witnesses. Officers and crew of OLD BAY were helpful and cooperative. The investigation is complete as of 14 February, however, delivery to the appointing official was delayed until approximately 16 February to allow for necessary and cost-effective mail delivery. This delay was agreed to in a phone conversation between the Investigating Officer and the Executive Officer of Coast Guard Group on 11 February.

FINDINGS OF FACT

The Investigating Officer, having thorough inquired into all the facts and circumstances surrounding subject incident, finds relevant the following:

1. That USCGC OLD BAY is a one hundred and forty foot Coast Guard Domestic Icebreaking Tug, under the operational and administrative control of the Commander, Coast Guard Group

2. That LT, USCG was the Commanding Officer of CGC OLD BAY on 13 January and was present on the bridge at the time of the collision, having been aboard approximately 1 year and 6 months.

3. That BMC, USCG was the Officer of the Deck (OOD) at the time of the collision on January 13. He had been aboard OLD BAY approximately 33 months, having been a qualified Deck Watch Officer for approximately 4 months. He was considered the most experienced ice Conning Officer aboard at the time.

4. That QM1, USCG was the Conning Officer under the supervision of the OOD (BMC at the time of the collision on January 13. He had been aboard OLD BAY approximately 5 months. He was not a qualified underway OOD, but had been standing break-in U/W OOD watches for almost the entire 5 months since his arrival. The week of 10 January was the first week he had stood Conning Officer duties while in ice; January 13th was the first time he had worked close aboard another vessel while in ice.

5. That SA, USCG was the helmsman for CGC OLD BAY at the time of the collision on January 13. He had been aboard approximately 4 months and had been a qualified helmsman for approximately 3 months.

6. That on 12 January, CGC OLD BAY was tasked with providing assistance to the tug FRANK PALLADINO, JR. which was scheduled to depart Kelley's Island in western Lake Erie on 13 January pushing the barge KELLSTONE I full of crushed rock to Cleveland, Ohio.

7. That on the night of 12 JAN, CGC OLD BAY moored at the Medusa Cement pier on the Maumee River in Toledo, Ohio and that the inport OOD was QM1. QM1 and BM1 both slept approximately 7 to 8 hours during that evening.

8. That on 13 JAN OLD BAY departed Toledo enroute Kelley's Island intending to assist FRANK PALLADINO, JR. for its transit from the island to Cleveland.

9. That BMC had one U/W watch on 13 January prior to the watch' he had at the time of the collision and that QM1 did not have any watches until the afternoon of 13 January, during which the collision took place.

10. That prior to arrival of OLD BAY at Kelley's Island an USCG helicopter had surveyed the ice conditions around Kelley's Island and had briefed the OLD BAY. A Kellstone, Inc. ice light had also occurred; the results of which were also passed to OLD BAY. They had found what appeared to them to be open water east of Kelley's Island and passable ice conditions on the west and northwest sides of Kelley's Island.

11. That OLD BAY had hoped to rendezvous with the PALLADINO/KELLSTONE I about one mile out from the Kellstone pier to commence the escort/assistance enroute Cleveland. The PALLADINO's master had been informed of this and would attempt to get away from the pier without assistance.

12. That FRANK PALLADINO/KELLSTONE I was unable to break away from the Kellstone pier without assistance.

13. That OLD BAY, once on scene, had determined that ice conditions from about one-half N.M seaward in a NN Westerly direction from the Kellstone pier of Kelley's Island around the north side of the island might allow the FRANK PALLADINO, JR. and barge (heretofore referred to as the tug/barge) to make the transit enroute Cleveland. The ice conditions closer to the location of the tug/barge at the Kellstone pier on the WNW side of the island were tougher, consisting of ref frozen brash ice with thicknesses to about 24 inches. CO. OLD BAY thought that if he could get the tug/barge away from the Kellstone pier and to the easier, flat lake ice approximately one-half Nil from the pier that he could successfully complete the assistance to the tug/barge. (End. 2, 6).

14. That OLD BAY, when approximately in off the Kellstone pier at Kelley's Island, stopped and determined if/how they would approach the pier to work the tug/barge close aboard. The decision was made to approach the pier. Danger bearings were constructed both north and south of the pier to keep OLD BAY from straying into the shoal waters along the shore of Kelley's Island.

15. That OLD BAY arrived on scene at 1345 (local time) within a couple hundred yards of the tug/barge, which was still pier side (and unable to progress). Portside-to at the Kellstone pier bow-out with the barge KELLSTONE I closest to the OLD BAY. The tug FRANK PALLADINO, JR. in the notch at the stern of the barge. The tug/barge had been unable to extricate itself from the mooring, with the exception that it had moved a few dozen feet. Once on scene with the tug/barge, OLD BAY completed discussions over the radio (VHF FM) with the master of the FRANK PALLADINO, JR. that included a description of the emergency stop light which is visible from behind the OLD BAY. The radio communications also included a listing of the depth at the FRANK PALLADINO, JR. as it sat at the mooring location alongside the Kellstone pier. The depth given was 17 FT (total). Communications were on-going throughout the afternoon as the icebreaking assistance was attempted. Most of this communication regarded what the OLD BAY was attempting to do to provide a track or relief from the ice pressure that was keeping the tug/barge from moving unassisted. The radio discussions included when the OLD BAY would be maneuvering close aboard the tug/barge; there was agreement that at these times the tug/barge should not be attempting to move forward into the path of OLD BAY.

16. That the status of the OLD BAY's machinery just prior to and at the time of the collision was as follows: a) both main diesel engines (MDEs) were on-line and operational, b) #1 ship's service generator (SSG) was on-line and operational, c) #1 steering pump was on-line and operational, and d) the bubbler system was energized with all ports open.

17. That OLD BAY attempted various icebreaking maneuvers during the time from 1345 to approximately 1515 in an effort to get the tug/barge away from the pier and headed toward the easier lake ice located approximately one-half NM NNW of the pier. The maneuvers included breaking a relief track on both the port and starboard sides of the barge (couldn't get very far aft on the port side because the pier was in the way). Backing up near the bow of the barge to clear ice away from the bow of the barge with OLD BAY propwash. Also a series of racetrack turns of approximate diameter 400 yards in front of the bow of the barge in attempts to create a wake that would loosen the ice or wash the ice from in front of the bow of the barge. At least 2 or 3 times the vessel stopped and the bridge team discussed their options and agreed to subsequent plans of action, and informed the tug/barge of OLD BAY's intentions before proceeding to carry them out. All of these efforts failed to appreciably move the tug/barge. BM1, USCG was the Conning Officer and the Executive Officer, LTJG, USCG was the Officer of the Deck during these initial maneuvers.

18. That OLD BAY and the master of the FRANK PALLADINO, JR. agreed that all icebreaking attempts described in paragraph 17 (above) were ineffective. That the tug/barge would attempt to move aft by letting the FRANK PALLADINO, JR. decouple from the notch of the KELLSTONE I. Turn around and try to pull the barge back toward where it had come from so that OLD BAY could have room to break through the ice plug created in front of the bow of the KELLSTONE I. Then OLD BAY would further attempt to lead the tug/barge ahead through the pool of water aft of the plug and through the broken plug with momentum enough to keep moving through the brash ice and eventually to the easier lake ice. During the time that FRANK PALLADINO, JR. was attempting this movement aft, OLD BAY began breaking a track through heavy brash ice from its position near the Kellstone pier out to the easier lake ice in preparation for the escort of the tug/barge.

19. That BMC and QM1 relieved the watch as Officer of the Deck and Conning Officer, respectively, during this track preparation phase at 1537 local time.

20. That OLD BAY returned to the vicinity of the Kellstone pier at approximately

1540 (local time) after the FRANK PALLADINO, JR. had reentered the notch of the KELLSTONE I ready to retry forward movement with the assistance of the OLD BAY. The tug/barge had been unable to move aft and the ice plug under the bow of the barge was still intact and impeding any significant movement of the tug/barge.

21. That OLD BAY began doing more 400-yard diameter racetrack turns, this time in a clockwise direction, with BMC in(deck), QM1(conn), SA (helmsman), and the CO & XO on the bridge as observers. That the Commanding Officer directed the Conning Officer, after the 2nd full circle, to repeat the procedure he had just completed at approximately the same distance for the closest point of approach (estimated at 50 to 150 feet). That the OLD BAY was at full throttle ahead through at least the last half of the racetrack turn (before collision) making good approximately 4-10 knots.

22. That the Commanding Officer took a cellular phone call from Group during the last racetrack turn before the collision. The cellular phone was located on the aft portion of the bridge of the OLD BAY. In order to better hear the phone conversation the Commanding Officer partially turned his back and faced somewhat aft. That the Commanding Officer began telling the GRU Controller that he was beginning to think that OLD BAY might not be able to successfully assist the tug/barge through the ice.

23. That the Conning Officer gave a command to steer on the bow of the KELLSTONE I while OLD BAY was at approximately the 3-o'clock" position (reference point is the barge at 6-o'clock, see enclosure 16, page 2 during the last racetrack turn before the collision.

24. That the Conning Officer, QM1 gave the command "left full rudder" when the OLD BAY was at approximately the 4 or 5-o'clock position approaching the bow of the KELLSTONE I which was in the 6-o'clock position.

25. That the helmsman, SA immediately responded to the command by turning the helm to port.

26. That the "left full rudder" command was almost immediately countermanded by the CO, XO, and BMC (with commands of "right full rudder") almost simultaneous with the helmsman's reply of "left full rudder, aye".

27. That the helmsman almost immediately shifted his rudder to right full rudder in response to the new command.

28. That the rudder went at least.to position "left 10 degrees rudder" before beginning to turn back to starboard.

29. That the rudder responds at the rate of 4.5 degrees per second when a single steering-pump is energized. That a single steering pump was energized, as was the standard operating procedure aboard OLD BAY during icebreaking operations, whether involved in close aboard situations or not. That the rudder would therefore have taken at least 2.2 seconds to reach position left-ten once the helm was moved to port. That the movement from position left-ten to right-full would have taken at least 8.9 seconds once the helm position was shifted to the right.

30. That the Commanding Officer gave the command "back full" within seconds of the "left full rudder" command because it appeared that collision could not be avoided without it. The sequence was; (conn) "left full rudder", (CO) "no, right full rudder", short pause, then (CO) "back full". The BMC and QM1 both had their hands on separate throttle controls and ensured that the throttle was placed in position, "back full". That the throttles may already have been placed at back

full by someone on the bridge (BMC, XO, or QM1) even before the command was given.

31. That the OLD BAY was operating at "10 buttons" (ahead full; approx. 305 SRPM when in open water) creating a wake with its movement through the water.

32. That the speed at the time of the collision was estimated to be between 4 and 6 knots.

33. That the time delays for the engines to respond to back full from ahead full is approximately 18 seconds. That the distance covered in 18 seconds is 40 yards (at an average of 4 knots) and 80 yards (at an average of 8 knots). That a WTGB doesn't create a wake through 24 inches of brash ice until attaining a speed of at least 7 knots. Therefore the distance traveled by OLD BAY through the ice before the engines were actually back-full after bringing the throttle control to back-full must have been no greater than in the range of 6 knots X 18 seconds = 60 yards. Because the speed had not been reduced to zero just before the collision and the engines were reported to have responded with back full at just about the time of the collision. (Personal experience/observation regarding wake-producing speed.

34. That OLD BAY collided with the barge KELLSTONE I at 1553 (local time), OLD OLD BAY'S port bow to the port bow of the KELLSTONE I. After initial impact the OLD BAY veered to starboard from the impact and contacted the barge down along the port side of them OLD BAY.

35. That OLD BAY sounded general quarters following the collision and conducted a thorough investigation of the ship, above and below the waterline, and found no apparent holes. OLD BAY subsequently hove to in the ice approximately one-half NM WNW of the Kellstone pier awaiting further Coast Guard assistance through the ice (as a precautionary measure to ensure no undue stresses on OLD OLD BAY's possibly weakened hull).

36. That OLD BAY suffered damages to its portside bow (hull plating, deck, and framing) and minor damage aft from the bow along the portside (stanchions/lifelines). The damage resulted in an unscheduled shipyard (dockside) repair contract before OLD BAY will be allowed back in icebreaking service. No personnel injuries occurred on either them OLD BAY or the tug/barge. Only minor damage was sustained on the KELLSTONE I, and none to the FRANK PALLADINO, JR. according to the master ().$_1$.He estimated the cost of the repairs to KELLSTONE I would be a few hundred dollars. Repairs to the portside of OLD BAY is being conducted at the time of this writing. The estimated cost of the repairs is $37.5K. (Personal phone call between 1.0. and CO, OLD BAY regarding cost estimate).

37. That the barge was spun around by the FRANK PALLADINO, JR. after the collision and remoored at the Kellstone pier. The remooring evolution took approximately 2 and a half hours.

38. That the FRANK PALLADINO, JR. had approximately 2400 H.P. available on January 13th and that KELLSTONE I is approximately 420 FT long. FRANK PALLADINO, JR./KELLSTONE I therefore has a horsepower/length (HP/L) ratio of 5.7:1 considering barge length alone. The tug/barge combined length brings the ratio down to approximately 4.8:1

39. That there are varying opinions about the necessity/efficacy of using high-power, wake-producing passes close aboard beset vessels.

40. That pages 70-71 of Lawson W. Brougham's "A Handbook of Ice Operations for the U.S. Coast Guard's WTGB Class Cutter" includes reference to "circular relief tracks immediately ahead of the barge's bow". As being one of several "more effective methods" for assisting tug-barge combinations which are stopped and have an ice plug in front of them.

41. That the Ninth Coast Guard District icebreaking SOP (D9INST M16150.1B), on page 1-3, warns against using excess speed in the vicinity of vessels.

42. That Commander, Coast Guard Atlantic Area and Commander, Ninth Coast Guard District have as recently as October released messages regarding risk management, referring primarily to search and rescue missions with risk to Coast Guard personnel and property. The LANTAREA message emphasized shoreside, detached/objective/unemotional oversight of case prosecution. The Ninth Coast Guard District E-mail from the District Commander supported the LANTAREA message content, but made it clear that the ultimate go-no go decision properly rests with the on-scene crew.

43. That Ninth Coast Guard District icebreaking SOP, on page 1-7, states that vessels with horsepower/length (HP/L) ratios of less than 6 will be given lower priority for assistance.

44. That Ninth Coast Guard District icebreaking SOP, on pages 3-2 and 3-3, warns against sallying the rudder unless there is sufficient sea-room to stop the ship in case of a rudder casualty. Sallying the rudder involves shifting the rudder from left to right and back repeatedly.

GROUNDING OF WTGB OFF OF FIGHTING ISLAND, DETROIT RIVER

U S. Department
of Transportation

United States
Coast Guard

Commanding Officer
USCGC Acacia (WLB-406)

109 Bridge Park Drive
Charlevoix, MI 420
Phone (616)123-4567

5830
29 Oct

From: Commanding Officer, USCGC ACACIA (WLB 406)
To: Commander, Coast Guard Group Milwaukee, WI

Subj: INVESTIGATION OF USCGC WOLF BAY GROUNDING VICINITY OF FIGHTING ISLAND, DETROIT RIVER ON 07 SEP

Ref: (a) Your ltr 5830 dtd 08 Sep
(b) Administrative Investigations Manual, COMDTINST M5830.1 (series)

PRELIMINARY STATEMENT

1. In accordance with references (a) and (b), I have conducted an informal single officer investigation into the circumstances surrounding USCGC WOLF BAY's grounding in position 42-14.092N 083-08.045W while transiting the Detroit River on 07 September. I initiated my investigation onboard CGC WOLF BAY at 0800Q on 12 September.

2. No problems were encountered in carrying out the provisionoutlined in the convening order, reference (a). I have elected to submit the investigation in the standard report format set forth in reference (b) versus the letter report format specified in the convening order. I believe that the standard report format provides a far superior means to document the numerous facts and circumstances surrounding this incident.

3. The investigation was not completed by 17 October as specified in the convening order. I requested an extENSIGN OPSion to the submission date because my attention was diverted to my responsibilities as commanding officer in USCGC ACACIA (WLB 406). These detracting responsibilities included my Contracting Officer's Representative (COR) duties during ACACIA's recent drydock/dockside availability, fiscal year closeout with my executive officer on leave following the birth of a child, and the unforeseeable early departure of my operations officer to assume executive officer duties onboard an island class WPB. Additionally, I was TAD the week of 20 October.

FINDINGS OF FACT

1. That USCGC WOLF BAY is a 140 FT ice breaking tug, with an assigned 120 FT Aids to Navigation Barge (CGB 12002). The unit is normally under the operational control of Coast Guard Group Milwaukee, WI and is homeported in WI. When the tug is pushing the barge ahead in the notch, the overall length of the rig is 245 FT.

2. That LCDR NEWCO, USCG is WOLF BAY's Commanding Officer, having assumed command on 25 June .

3. That Article 4-2-2 of COMDTINST M5000.3 (CG REGS), states that "The commanding officer of a vessel shall be responsible for the safe navigation of that vessel."

4. That on 25 August, a navigation brief for CGC WOLF BAY's 28 August trip to Milwaukee and 04 September trip to Toledo was held onboard WOLF BAY. Participants included: CO/XO/ENSIGN OPS/QM1/BM1/QM3/EO/BM3s. Specifics covered were tracklines (plotted only on Recreational Chart 14853 for the Detroit River, Lake St. Clair, and the St. Clair River, 10th Edition, Jan 25/92), river speed limits, Sarnia Traffic checkpoints, currents, NTM's/LNMs, U.S. Coast Pilot, chart warnings and plans to conduct all river transits in daylight hours.

5. That QM1 Acting1STLT and QM3 reviewed all tracklines for the transit from WI to Toledo, OH.

6. That CGC WOLF BAY and CGB 12002 departed 0909R on 04 September enroute Toledo, Ohio for training at the Maritime *Administration (MARAD) firefighting school.*

7. That CGC WOLF BAY had three (03) qualified underway OODs onboard for this transit to Toledo, these individuals were: (1) the commanding officer, LCDR NEWCO, (2) the leading quartermaster / assistant operations officer, QM1 Acting1stLT, and (3) the acting 1st lieutenant and acting executive officer, BM1 ActingXO.

8. That LT I. M. BADGUY is WOLF BAYs Executive Officer and also the designated Navigator, and that he did not sail with CGC WOLF BAY on this transit as he was on leave to tend to important family matters.

9. That Article 6-4-3 of COMDTINST M5000.3 (CG REGS), states that "The navigator is charged primarily with the safe navigation and piloting of the vessel in conformance with law, regulation, and orders, and shall make reports in connection with navigating duties directly to both the commanding officer and the operations officer. In other matters within the operations department, the navigator shall be directly responsible to the operations officer."

10. That CGC WOLF BAY's First Lieutenant billet (BMC) is currently vacant due to BMC's departure. BM1 ActingXO is currently covering the duties and responsibilities associated with this billet.

11. That at 1000Q on 07 September, in preparation for getting underway from Windsor, Ontario enroute to Toledo, Ohio, WOLF BAY set and logged material condition YOKE throughout the vessel.

12. That at 1030Q on 07 September, gyro error was determined by triangulation to be zero degrees; this entry was made on the Nav data sheet (CG-4380C Rev. 8-67) but not recorded in the U.S. Navy Std Bearing Book (OPNAV Form 3530/2 (7/74).

13. That at 1049Q on 07 September, in preparation for getting underway, satisfactory shaft and steering tests were conducted and logged.

14. That QM1 ACTING1STLT made the following preparations as OOD prior to WOLF BAY getting underway at 1055Q on 07 September: Arrived on bridge between 1015 and 1030, QMOW (QM3) was working on u/w checklist, verified progress and assisted in completing OOD portions of list. Ordered anchor(s) "ready for letting go', conducted Bow Thruster and Shaft tests. Checked wind/current, reviewed the 14853 chart kit to ENSIGN OPSure he'd use it in right order (chart kit reads from south entrance to Detroit River system on page 1 upbound through the river system to the southern end of Lake Huron Cut on page 50), previewed channel (cursory look). Discussed the following w/ CO prior to getting underway: traffic, VTS SARNIA checkpoints, plan for unmooring

15. That at 1055Q on 07 September, CGC WOLF BAY with CGB 12002 in the notch (being pushed ahead), got underway from Dieppe Park in Windsor, within the province of Ontario, Canada enroute Toledo, Ohio.

16. That there were no engineering or electronics casualties onboard CGC WOLF BAY when WOLF BAY departed Windsor.

17. That at the time of getting underway (1055Q), the anchor detail was set and WOLF BAY's engineering plant was in restricted waters status: two main diesel engines, two ships service generators and the barge's bow thruster on the line.

18. That QM1 ACTING1STLT , USCG had the Deck and the Conn when CGC WOLF BAY departed Windsor.

19. That QM1 ACTING1STLT's Coast Guard experience profile is as follows:

95-present	CGC WOLF BAY
91-95	CGC PT BLUNT
88-91	USCGA Security
85-88	CGC TUG
82-85	VTS Houston
81-82	CGC DUDLEY
	QM "A" school
79-80	CGC TITAN

20. That QM1 ACTING1STLTs underway OOD experience is as follows:
(a) 3.5+ yrs on CGC PT BLUNT
(b) 1 yr on CGC WOLF BAY

21. That QM1 ACTING1STLT had transited the St. Clair/Detroit River systems onboard CGC WOLF BAY from to Cleveland and return in October. He did conn the vessel in the river system during those transits.

22. That QM1 ACTING1STLT is designated in writing as a qualified underway Officer of the Deck (OOD) onboard WOLF BAY, reference WOLF BAY ltr 1500 dtd 30 September.

23. That the following charts were available for use on WOLF BAY's bridge from the time of sailing on 07 September until the time of grounding: (a) NOAA Recreational Chart 14853 for the Detroit River, Lake St. Clair. the St. Clair River, 10th Edition, Jan 25/92, [Scale 1:15,000], (b) Maptech ECS working off chart 14853, and (c) NOAA Chart 14848, 54th Edition, Oct 12/96, [Scale 1:30,000].

24. That WOLF BAY's intended downbound tracklines were laid down on the appropriate pages of NOAA Recreational Chart Kit 14583.

25. That WOLF BAY's intended tracklines were not laid down on NOAA chart 14848. According to QM1 ACTING1STLT, this was a conscious pre-sailing determination. This was how WOLF BAY's October transit through St. Clair/Detroit River system was prepared.

26. That NOAA Chart 14854, "Trenton Channel and River Rouge" (scale 1:15,000), was not used in any capacity.

27. That no waypoints were entered into WOLF BAY's DGPS/GPS units to assist in the safe navigation of the vessel.

28. That in the minutes immediately preceding WOLF BAY getting underway, QM1 ACTING1STLT made a report to the commanding officer that the underway checklist was complete and that all stations were manned and ready to get underway. A brief discussion was also held on the QM1's plans to maneuver away from the dock.

29. That no navigation briefs or update to the brief identified in "finding of fact" #4 was conducted on 07 September.

30. That the commanding officer and the operations officer, ENSIGN OPS, were both on the bridge when WOLF BAY departed Windsor.

31. That ENSIGN OPS,USCG experience profile is as follows:

6/97 present	CGC WOLFBAY OCS
94-96	CGC BLACKHULL (QM3/QM2) QM "A' School
93-94	Sta Paramore Beach

Note: ENSIGN OPS' underway OOD experience is as follows:

(a) Break-in OOD on CGC WOLF BAY
(b) some break-in u/w OOD on MACKINAW, MORRO BAY, and NOAA vessel
(c) 100 ton masters license
(d) 6 u/w trips onboard since arriving

32. That this was ENSIGN OPS's first transit of the St Clair and Detroit River systems.

33. That QM3 was the Quartermaster of the Watch (QMOW) when CGC WOLF BAY departed Windsor.

34. That QM3 does not have a letter designating him as a qualified underway QMOW onboard CGC WOLF BAY.

35. That QM3 was not provided any PQS/JQR/watchstation requirements for underway QMOW upon reporting onboard CGC WOLF BAY in June.

36. That QM3 was well rested on the morning of 07 September.

37. That this trip (6-7 September) was QM3's first transit through the St. Clair and Detroit River systems.

38. That just prior to WOLF BAY getting underway from Windsor, QM3 asked the OOD, QM1 ACTING1STLT, if they were "setting the Nav detail or just driving?" And that the OOD's response was "just driving."

39. That QM3's Coast Guard experience profile is as follows:

Jun-present	CGC WOLF BAY
95	CGC WHITE HULL
	QM "A" School
93-95	CGC RAMBLER

Note: QM3 was a qualified underway OOD for his last mos onboard CGC MUSTANG

40. That SK1 BEANCOUNTER was also on CGC WOLF BAY's bridge when the cutter departed Windsor and he was acting in the capacity as an extra set of eyes/lookout.

41. That at 1055Q, QM3, the QMOW, logged "Underway MVCS" on the Nav Data Sheet.

42. That shortly after getting underway at 1055Q, CGC WOLF BAY checked in with Sarnia Traffic (VHF-FM), entering the vessel traffic system, downbound in the Detroit River.

43. That the commanding officer made the initial radio check-in call to Sarnia Traffic and that he advised QM1 ACTING1STLT that he would work the vessel traffic system check-in calls for the QM1.

44. That at 1100Q, following his check-in to Sarnia Traffic, the commanding officer made VHF-FM radio telephone passing arrangements with the laker "RESERVE," confirming a 2-whistle starboard to starboard passing.

45. That upon completing passing arrangements with "RESERVE," the commanding officer made VHF-FM radio telephone passing arrangements with the laker "SLOAN" confirming a 1-whistle port to port passing.

46. That WOLF BAY passed the M/V's "RESERVE" and "SLOAN" just

south of the Ambassador Bridge, per passing arrangements made by the commanding officer earlier (1100) on VHF-FM.

47. That WOLF BAY's navigation standards, WOLFBAYINST 3530 dtd 28 August, requires the QMOW to log the time passing thru/under all bridges when transiting rivers on the nav data sheet.

48. That WOLF BAY's passage under the Ambassador Bridge was not recorded as required.

49. That WOLF BAY passed a third laker, this one from the "ALGO" fleet, just north of the overhead power cables near the Detroit Edison power plant.

50. That WOLF BAY's Radio Log reflected only two (02) entries on the 08-12 watch on 07 September, these were 1055Q SARNIA VTS Check-in call and the 100Q passing arrangements with "SLOAN" and "RESERVE."

51. That at approximately 1121Q, QM3, the QMOW, departed the bridge to get something to eat. QM3 recalls WOLF BAY's position to have been vicinity of River Rouge. SK1 BEANCOUNTER, already on the bridge, stepped in for him.

52. That SK1 BEANCOUNTER was well rested on 07 Sep.

53. That SK1 BEANCOUNTER does not normally stand QMOW while transiting in the rivers and that he was not comfortable in this situation because he has not been trained for these types of transits. He normally stands "open water" QMOW only.

54. That QM3 recalls that he and SK1 BEANCOUNTER discussed/compared things on the 14853 chart kit, on Maptech, and visually before QM3 laid below. He believes that both he and SK1 BEANCOUNTER knew the cutter's position on the river.

55. That QM3 usually stands the QMOW watch for all special sea and navigation details.

56. That the QMOW watchlist coordinator is SK1 BEANCOUNTER.

57. That no actual watch relief occurred (i.e. taking of a fix, reviewing tracklines, checking logs, reviewing/recording weather, requesting permission from the OOD, etc...) between SK1 BEANCOUNTER and QM3. QM3 recalls announcing to the OOD that he was laying below.

58. That a few minutes later, QM3 returned to the bridge because the noon meal (lunch) wasn't ready yet.

59. That at 1128Q SK1 BEANCOUNTER, standing in for the QMOW, logged a course change to 202T

60. That the operations officer, with the commanding officer's permission, laid below at approximately 1130Q for lunch.

61. That at approximately 1135Q, the noon meal was piped and QM3

laid below to eat.

62. That at 1135Q SK1 BEANCOUNTER, standing in for the QMOW, logged a
course change to 205T. This occurred right after QM3 laid below for lunch.

63. That QM3 and SK1 BEANCOUNTER did not discuss any upcoming course changes/turns/etc... before QM3 departed the bridge to eat lunch.

64. That little, if any, navigational information was exchanged/ passed from the QMOW (either QM3 or SK1 BEANCOUNTER) to the conning officer throughout the transit from Windsor to the point of grounding.

65. That SK1 BEANCOUNTER did not attend the to Toldeo navigation brief on 28 August, nor does he typically attend other nay briefs.

66. That at approximately 1140Q, WOLF BAY passed (port to port) a vessel anchored in the anchorage area abeam (to the west of) the Canada Rock Salt Company Ltd.

67. That shortly after passing the anchored vessel (within minutes), the commanding officer checked the charts, the ship's position and made a quick risk assessment, determining that it was safe for him to lay below for a quick bite to eat.

68. That at approximately 1140Q, SA Newkid relieved SN Toughguy and SA Spike(break-in) on the helm.

69. That SA Newkid is designated in writing as a qualified Helmsman onboard CGC WOLF BAY, reference ltr 1200 dtd 06 May

70. That from the point in time when the commanding officer and operations officer laid below for a quick bite to eat, until when the WOLF BAY grounded at 1150Q, the only persons on the bridge were the OOD (QM1 ACTING1STLT), the stand-in QMOW (SK1), and the helmsman.

71. That at some point after the commanding officer's and operation officer's departure from the bridge, SK1 mentioned to the OOD (QM1 ACTING1STLT) that the direction from which he observed the upbound shipping traffic come from earlier didn't jive with where WOLF BAY was headed.

72. That shortly thereafter, SK1 BEANCOUNTER asked QM1 ACTING1STLT where he was going. At about that same time, QM1 ACTING1STLT had brought the main engine controls to all stop, and responded along the lines "that he was busy, that he didn't have time".

73. That it was apparent somewhere in the vicinity of red buoy "D102" to SK1 that the OOD was not confident as to where he was headed.

74. That in the minutes immediately preceding the grounding, SK1 was positioned aft on the bridge near the chart table, looking ahead and at the Maptech Electronic Chart System (ECS).

75. That at approximately 1150Q, WOLF BAY grounded in position 42-14.092N, 083-08.045W.

76. That WOLF BAY failed to adhere to numerous provisions of the unit's navigation standards in transiting from Windsor to the point of grounding:

- failure to comply with the prescribed 15 minute fix interval: no fixes were taken since sailing at 1055Q.

- failure to plot/utilize turn bearings or turn ranges for every turn, considering advance and transfer: no turn bearings or turn ranges were used between 1055Q sailing time and time of grounding.

- failure to highlight all shoal water on charts being utilized (shoal water is defined as water less than 16 ft deep).

- failure to maintain a DR plot through a minimum of two fix intervals: no DR's were plotted since sailing at 1055Q until time of grounding (1150Q).

- failure to determine the speed of advance after every speed change or every 30 minutes while transiting in rivers: the last/only logged speed of advance was 6.6kts at 1100Q.

- failure to record soundings at every fix: no fixes/no soundings.

- failure to plot speed and distance, in addition to the course, for each track leg.

- failure to log the time of passing under/thru all bridges on the Nav data sheet: passage under the Ambassador bridge was not logged.

77. That WOLF BAY "Standing Orders to the Officer of the Deck (Underway)," WOLFBAYINST 1601.1b dtd 05 Aug 1996, specify the requirement to maintain complete and accurate ship's log, bearing log, DC closure log and radiotelephone log.

78. That WOLF BAY "Standing Orders to the Officer of the Deck (Underway)," WOLFBAYINST 1601.1b dtd 05 Aug 1996, require the OOD to personally take at least one fix an hour and calculate true wind once per watch.

79. That WOLF BAY "Standing Orders to the Officer of the Deck (Underway)," WOLFBAYINST 1601.1b dtd 05 Aug, require the OOD to "Look where you are going before you turn. Shoot bearings, check the radar, and face forward through the entire turn."

80. That WOLF BAY "Standing Orders to the Officer of the Deck (Underway)," WOLFBAYINST 1601.1b dtd 05 Aug, require the OOD to "Follow the navigator's tracklines and adhere to the navigation standards of ref (c) [WOLF BAY NAVSTDS]. Navigate with precision using all methods available. Focus on where you are going."

81. That QM1 ACTING1STLT was unaware that no fixes or DRs had been plotted since WOLF BAY departed Windsor at 1055Q since he was busy conning the vessel and hadn't personally checked.

82. That QM1 ACTING1STLT was aware that WOLF BAY's navigation standards require 15 minute fixes while transiting the river.

83. That QM1 ACTING1STLT, as conning officer, was using the following charting tools at the time of grounding: NOAA Recreational Chart kit 14853, NOAA chart 14848, and the Maptech ECS (running off chart 14853).

84. That QM1 ACTING1STLT was aware that no turn bearings or turn ranges were being used to assist in navigating the cutter.

85. That after departing from Windsor, QM1 ACTING1STLT's key reference points during his downbound transit were the Ambassador Bridge and Zug Island.

86. That once WOLF BAY passed Zug Island, QM1 ACTING1STLT was flipping between page 10 and page 5 of chart kit 14853, looking at 14848, and at Maptech.

87. That somewhere along WOLF BAY's trackline while passing abeam lighted buoy LB "D104" and approaching unlighted buoy "D102," QM1 ACTING1STLT was looking toward the Fighting Island channel. And from his relative position, observed the two privately maintained crib lights, located north of buoy "96" and outside of the eastern edge of the Fighting Island Channel, to appear to him to sit out into the channel. This perception started QM1 ACTING1STLT doubting if the Fighting Island Channel was in fact where he was supposed to be heading.

88. That QM1 ACTING1STLT had convinced himself or assumed that the channel gated by Wyandotte Channel Lighted Buoy (LB) "25" (position 42-14-27.381N, 083-08-01.753W) and the Wyandotte Channel North Junction Buoy (position 42-14-25.431N, 083-07-58.643W) was the intended channel (Wyandotte/Trenton Channel).

89. That when WOLF BAY was abeam or slightly southwest of unlighted buoy "D102," QM1 ACTING1STLT realized he was disoriented and confused as to his intended trackline. He pulled the main diesel engines back to all stop.

90. That upon bringing WOLF BAY's engines back to "all stop," QM1 ACTING1STLT was not employing the use of any beam ranges nor was he tracking GPS/DGPS course and speed over ground data.

91. That the last piece of navigational information (input) that QM1 ACTING1STLT processed before bringing the engines back to "all stop" was a visual scan of the Maptech Electronic Charting

System
(ECS).

92. That unlighted buoy "D102" is approximately 1200yds from the location of WOLF BAY's grounding and that lighted buoy "D104" is approximately 2490 yards from the location of WOLF BAY's grounding.

93. That prior to bringing WOLF BAY's engines to all stop, the cutter was turning for 7.5 buttons (speed over ground was approximately 8-9.5 kts). QM1 ACTING1STLT was using DGPS speed over ground capabilities to monitor the cutter's speed and remain below the river system's speed limit.

94. That the United States Coast Pilot 6, Great Lakes: Lakes Ontario, Erie, Huron, Michigan, and Superior and St Lawrence River, 27th edition, specifies on page 198 that "the currents at Fighting Island Channel North Light range from 1.3 kts at high water flow of 210,000 cubic ft per second (cfs) to 1.2 kts at low water flow of 170,000 cfs". These values are for normal conditions (no wind) and are average values through the entire cross-section of the river (i.e. bank to bank, surface to the bottom). The current encountered at midstream is usually about 1.5 times the average velocity. Midstream currents at Fighting Island, given the existing weather (less than Skts wind) may range from 1.8-1.9kts.

95. That after bringing WOLF BAY's engines to all stop, QM1 ACTING1STLT turned to call the commanding officer but he had just arrived on the bridge having sENSIGN OPSed something was wrong when the engines were brought back.

96. That the QM1 immediately advised the commanding officer that he was confused as to which way to proceed.

97. That the commanding officer observed QM1 ACTING1STLT holding a chart in one hand and his other hand on the throttle when he arrived on the bridge.

98. That the operations officer, ENSIGN OPS, arrived on the bridge immediately after the commanding officer.

99. That to the best of QM1 ACTING1STLT's recall, the commanding officer arrived on the bridge while WOLF BAY was approximately west of Fighting Island North Light on the western edge of the Fighting Island channel.

100. That the WOLF BAY's heading was in the direction of south/southwest (205-215T) when the commanding officer arrived on the bridge and started to assess the situation.

101. That the commanding officer observed two structures almost in line directly ahead of the WOLF BAY and a green buoy off to port.

102. That the commanding officer observed on the Maptech ECS that WOLF BAY was in the "blue water.".

103. That the commanding officer, within seconds (approximately 10-15 seconds) ordered QM1 ACTING1STLT to place the rudder a right full and back down full.

104. That ENSIGN OPS, after quickly studying the chart, advised the commanding officer that the channel (Fighting Island channel) was off the port side to the east of the cutter.

105. That seconds after ENSIGN OPS made this report, WOLF BAY grounded in position 42-14.092N, 083-08.045W with the ship's head being 266T.

106. That WOLF BAY's grounding was not abrupt but instead barely noticeable.

107. That ENSIGN OPS, immediately after WOLF BAY's grounding, locked the ship's position on the GPS receiver.

108. That the commanding officer issued the full backing bell and right full rudder orders knowing that the intended channel, Fighting Island channel, was to port.

109. That the ship had considerable headway when the commanding officer arrived on the bridge.

110. That the WOLF BAY's bow began to swing to starboard in response to the right full rudder command and full backing bell, while the cutter continued heading approximately 190-195T over ground.

111. That approximately 20-30 seconds after the commanding officer ordered the right full rudder and full backing bell, WOLF BAY grounded.

112. That the closest charted bottom type for the shoal area where WOLF BAY grounded is listed as "wds" weeds.

113. That the commanding officer took prompt, assertive and decisive actions immediately after arriving on the bridge and assessing the WOLF BAY's position relative to the channel.

114. That the fathometer reading from the tug's transducer showed zero and that from the barge's transducer showed 5-6 feet of water.

115. That WOLF BAY settled in the muddy/weedy bottom with approximately three-four degrees of port list on the tug.

116. That the General Emergency alarm was sounded immediately after grounding, and the engineer officer commenced maintaining a damage control plot on the bridge. WOLF BAY's crew commenced a rapid internal and external survey for damage as a result of the grounding.

117. That at 1159Q the initial survey of WOLF BAY and CGB 12002 in all spaces below the waterline was completed with no apparent

damage found.

118. That at 1159Q, WOLF BAY notified Group Detroit via VHF-FM of the incident.

119. That at 1200Q, the engineer officer ordered that all tug and barge tanks be sounded.

120. That at 1206, all tanks with the exception of fuel tank 4-40-2 were found to be at correct pre-grounding levels. Fuel tank 4-40-2 appeared to have risen from 4' 1" to 5' 5".

121. That noting this apparent rise in fuel tank 4-40-2, the engineer officer ordered that the tank be tested with water indicating paste. Test revealed no indications of the presence of water in the tank.

122. That at 1206Q, the commanding officer contacted CCGD9 command center via cell phone and briefed them on the grounding.

123. That at 1206Q, WOLF BAY hoisted the dayshape for a vessel aground.

124. That at 1215Q a secondary investigation of the tug and barge was completed with no apparent damage found.

125. That at 1220Q investigations of all tug spaces continued with no apparent damage found.

126. That at 1250Q investigations of all barge spaces continued with no apparent damage found.

127. That at 1259Q the commanding officer assumed the deck and the conn.

128. That at 1303Q WOLF BAY launched their TANB with 3 POB to take soundings around the tug and barge.

129. That at 1304 personnel manned all barge below deck machinery spaces, cargo hold, and sewage space in preparation to back off from grounding.

130. That at 1305Q personnel manned all tug below deck spaces, paint locker strainer space, motor room, engine room, AUX II and after steering in preparation to back off from grounding.

131. That at 1305Q the tug was rocking in grounded position.

132. That at 1310Q soundings astern of WOLF BAY were found to show a least depth of 19 ft.

133. That at 1311Q WOLF BAY commenced attempts to back off grounded position using 100 shaft RPM (SRPM).

134. That at 1312Q SRPM increased to 150.

135. That at 1313Q SRPM increased to 200.

136. That at 1314Q attempts to back off were stopped.

137. That at 1319Q crewmembers commenced deballasting tanks 4-19-1-W and 4-19-2-W.

138. That at 1336Q, aft tug soundings were 12' stbd and 12' port.

139. That at 1336Q, completed and secured from deballasting 4-19-1-W and 4-19-2-W tanks. Commenced efforts to back off, slight movement noticed. Repair 3 on barge ordered to deballast barge void tanks.

140. That at 1354Q crewmembers commenced deballasting barge tanks 2-100-1, 2-100-2, 2-100-4 and commenced using the barge's bow thruster to rock the vessel side to side.

141. That at 1355Q WOLF BAY floated and backed free from being grounded on the shoal; deballasting of barge void tanks was secured.

142. That the TANB reads tug drafts as follows:

Tug:	Port aft - 12'11"	stbd aft - 12'4"
	Fwd - 11'6"	fwd - 11'6"
Barge:	Port aft - 5'	stbd aft - 5'6"
	Fwd - 5'	fwd - 5'6"

143. That at 1435Q General Emergency was secured; barge quartering lines were loosened and the tug came to a 1/2-1 degree port list.

144. That the fuel oil sounding in the 4-40-2-W tank dropped below the 5'5" level recorded shortly after WOLF BAY grounded.

145. That at 1508Q WOLF BAY resumed transit enroute Toledo.

146. That at 1713Q, WOLF BAY engineers reported a main motors high air box temperature alarm; inspection found that mud wasn't the cause but rather an air bound cooler.

147. That at 2108Q 07 September, WOLF BAY and CGB 12002 moored at Toledo, Ohio.

148. That on 08 September, three divers from the Toledo Fire Department inspected WOLF BAY's underwater body from the bow to frame 52.

149. That the divers found no indications of damage to WOLF BAY's underwater body.

150. That all sea strainers were inspected and found to be clean.

151. That the previous day's high fuel tank sounding was attributed to the effects of the tug's 3-4 degree list and the tank in question (4-40-2-W) being at 100% capacity. The tank's sounding, taken while moored in Toledo, was 4'7".

152. That Ant Team Detroit position checked and found the following buoys to be watching properly on station on 09 Sep: Wyandotte Channel North Junction Buoy LB, Wyandotte Channel LB 25, and Fighting Island Channel LB.

153. That a Group "Ready for Operations inspection was not held onboard CGC WOLF BAY. (Investigating officer discussed w/WOLF BAY's commanding officer).

154. That no entries, even initial set-up entries, were recorded in WOLF BAY's Navy Standard Bearing log (OPNAV Form 3530/2). for 07 September for the period commencing with the cutter's 1055Q departure from Windsor until after the vessel was refloated.

155. That BM1 ACTINGXO's Coast Guard experience profile is:

95-present	CGC WOLF BAY
92-95	SUPRTCEN KODIAK MIL POLICE
89-92	break in service
90-91	Reserve Augmentation
87-89	Sta Fort Point
83-87	Sta Yerba Buena Island

Note: Underway OOD experience: qualified as OOD on CGC WOLF BAY in Jan.

156. That BM1 ACTINGXO expressed to the investigating officer that "inconsistencies exist between OODs' expectations from the QMOWs."

157. That on the evening of 06 September, QM1 ACTING1STLT discussed with BM1 ACTINGXO that he wasn't comfortable with the feel or teamwork on the bridge, the QM1 couldn't put his finger on it but he was annoyed.

158. That in separate interviews with the investigating officer, BM1 ACTINGXO, QM1 ACTING1STLT, and SK1 all referenced the previous commanding officer's style on the bridge as overbearing, each making reference to him being either "the puppeteer" or them feeling like a "puppet."

159. That CGC WOLF BAY's training program reflects adherence to published standards.

OPINIONS

1. That a significant contributing factor to USCGC WOLF BAY's grounding in position 42-14.092N 083-08.045W was the failure to follow established navigation procedures as outlined in (a) WOLFBAYINST 3530 dtd 28 Aug 96, "COMMANDING OFFICER'S NAVIGATION STANDARDS AND PROCEDURES," and (b) WOLFBAYINST 1601.1b dtd 05 Aug 96, "STANDING ORDERS TO THE OFFICER OF THE DECK (UNDERWAY)."

Specific shortcomings include the following:

- failure to comply with the prescribed 15 mm fix interval specified for river transits (no fixes taken)

- failure to plot/utilize turn bearings or turn ranges for every turn, considering advance and transfer

- failure to maintain a DR plot through a minimum of two fix intervals (no fixes/no DR's)

- failure to determine speed of advance after every speed change or every 30 minutes while transiting in rivers failure to plot speed and distance, in addition to the course, for each track leg

- failure to maintain a complete and accurate Bearing Log and Radiotelephone Log

- failure to "navigate with precision using all methods available," i.e. not using DGPS/GPS waypoints, any fixes, turn bearings/ranges, etc...

2. That an over reliance was placed on seaman's eye versus sound navigational practices onboard USCGC WOLF BAY's bridge during the 07 Sep transit from Windsor to the position of the cutter's grounding.

3. That a contributing factor to USCGC WOLF BAY's grounding in position 42-14.092N 083-08.045W was the lack of synergy/information flow/coordination between the OOD and the QMOW. This factor was exacerbated by the qualification and experience level of the two QMOWs, SK1 and QM3 , as well as by the inadequate "stepping-in or covering for" versus formal watch relief process that occurred on 07 Sep.

4. That USCGC WOLF BAY failed to optimally use nautical charting information available for the cutter's transit of the Detroit River system: specifically, tracklines were only laid down on the applicable pages of NOAA Recreational Chart 14853 (chart kit). The OOD was using NOAA chart 14848 without tracklines. Tracklines on chart 14848 may have eliminated the confusion QM1 ACTING1STLT experienced when approaching the Fighting Island Channel as he could have been studying the rapidly approaching course change well ahead of the turn point for the channel. Use of the Recreational chart 14583 (chart kit) requires flipping between pages to see well ahead of the vessel. Use of chart 14854, "Trenton Channel and River Rouge," (scale 1:15,000) may have also benefited safe navigation as the cutter approached the Fighting Island Channel.

5. That a navigation brief update should have been held prior to sailing from Windsor on 07 September ; covering intended tracklines, bridge assignments, speeds of advance, etc... The 28 August Nav brief in provided a good foundation but was too distant to the intended transit and also failed to include SK1, who filled a key position on WOLF BAY's bridge on 07 September.

6. That oversight of the QMOW watchstation qualification process and underway QMOW watches onboard WOLF BAY lacks command oversight. The investigating officer failed to find underway QMOW qualification letters for either QM3 or SK1. QM3 was not provided any JQR/PQS/or other watchstation qualification requirements upon arriving to WOLF BAY in June. He has stood solo underway QMOW watches since his arrival.

7. That neither QM3 or SK1 possessed sufficient experience to fulfill their QMOW watchstanding responsibilities during the transit from Windsor to Toledo. SK1 BEANCOUNTER stated to the investigating officer that he does not normally stand QMOW while transiting in the rivers and that he was not comfortable in this situation. QM3 has solid prior experience as a quartermaster of the watch (QMOW); however, this transit was his first real river transit onboard WOLF BAY and the expectations placed upon him were not clear as indicated in his question to the OOD: are we "setting the nav detail or just driving?"

8. That the bridge team onboard USCGC WOLF BAY on 07 September had very limited and/or current local knowledge:

- commanding officer's 1st transit in nearly 10 yrs
- QM3 's first transit
- QM1 ACTING1STLT made transit to Cleveland from Sturgeon Bay and return during October (via Detroit River)
- SK1 limited river experience, made transit one way in October
- ENSIGN OPS (Ops) first trip

9. That key personnel in the ship control and navigation team were not present; specifically, the absence of WOLF BAY's executive officer and navigator, LT I. M. BADGUY. The investigating officer is not inferring that the decision to sail without LT I. M. BADGUY was not well founded. Rather that the ship control and navigation team onboard WOLF BAY may have fallen short in identifying and quantifying the impacts on team performance that the absence of key personnel can cause. The lack of a designated "acting navigator" in LT I. M. BADGUY's absence causes the investigating officer to suspect that the bridge team was not situationally aware of the impact that key members of the team have on the team's overall performance. Furthermore, the team failed to adequately account for the absence of this important team member. The absence of a BMC would appear to be a lesser issue as BMC would not appear to have filled a vital navigation team role in recent months.

10. That the commanding officer, LCDR NEWCO, charged with responsibility for the safe navigation of his vessel (Art. 4-2-2 CG REGS), made an error in judgement when he departed WOLF BAY'S bridge, leaving the safe navigation of the cutter in the hands of a bridge team consisting of QM1 ACTING1STLT (OOD), SK1 BEANCOUNTER (QMOW), and SA NEWGUY (helmsman), as he laid below for a bite to eat. LCDR NEWCO's risk assessment failed to: (a) recognize the watch's failure to comply with established

navigation procedures outlined in WOLF BAY's standing orders and navigation standards, (b) to recognize the experience level (or lack thereof) of the watchsection under the given circumstances, and (c) to recognize the need for a safety observer or similar oversight in the given situation.

11. That the lack of fix information (none), Bearing Book entries (none), Nay Data Sheet entries (two), etc... make it impossible for the investigating officer to accurately reconstruct WOLF BAY's trackline for the transit from Windsor to the point of grounding.

12. That the following factors are not believed to have contributed to WOLF BAY's grounding:

(a) equipment or material failures
(b) weather conditions
(c) fatigue

13. That the commanding officer's full attention to the safe navigation of his vessel may have been distracted by the multiple vessel passing situations encountered between Windsor and the Fighting Island Channel. Also the fact that the commanding officer was working the VHF-FM radio communications with these vessels as well as with SARNIA traffic control.

14. That no one factor solely led to USCGC WOLF BAY's grounding but rather the aforementioned potentially contributing factors combined to create a situation where the cutter subsequently grounded. Had WOLF BAY's position been plotted using established navigation procedures (i.e. fixes, DR's, turn bearings, DGPS/GPS waypoints, etc...), or had more stringent oversight (safety observer(s)) been employed, the grounding mishap could have been avoided.

15. That the commanding officer, upon returning to the bridge and finding QM1 ACTING1STLT (the OOD) disoriented, took immediate and effective action to prevent/minimize any damage to CGC WOLF BAY; i.e. backing full and placing the rudder at right full. Protecting the cutter's underwater appendages was a prudent decision given the highly inevitable outcome of grounding. These actions showed quick judgement, keen analytical skills, and decisiveness. LCDR NEWCO's response was appropriate and commendable.

16. That the post grounding actions of LCDR NEWCO and his crew were thorough and appropriate for the situation at hand; reflecting a sound foundation in Damage Control training as well as onboard leadership.

17. That LCDR NEWCO made all of the appropriate notifications in a timely fashion following the grounding of USCGC WOLF BAY.

18. That the annual Group "Ready for Operations" (RFO) inspections/visits are an important tool to assist operational commanders (both Group Commanders and afloat commanding officers) in gauging unit capabilities, experience, and readiness. WOLF

BAY did not have a RFO. The lack of a RFO cannot be readily identified as a contributing causal factor to this incident but can be considered a missed opportunity to maintain a system of checks and balances regarding the cutter's readiness for operations.

19. That all of the WOLF BAY's personnel interviewed by the investigating officer were forthright, cooperative, and professional.

20. That no indications of damage to WOLF BAY and/or her assigned barge were noted by the Toledo Fire Department divers that inspected the underwater hull on Monday 08 September . Furthermore, WOLF BAY's crew found no indications of apparent damage as a result of the grounding. The investigating officer recommends that WOLF BAY consult with the naval engineering community (NESU Cleveland) regarding any need/desire to further inspect for damage(s) within fuel and water tanks. In the opinion of the investigating officer, the likelihood of internal damage to fuel and/or water tanks is probably minimal given that the grounding occurred on a soft bottom. However, it is beyond the technical expertise of the investigating officer to rule out the need for further discussion regarding internal tank inspections during a forthcoming maintenance availability.

21. That LCDR NEWCO had already implemented aggressive training solutions to many of the aforementioned navigation and watchstanding shortcomings upon the investigating officer's visit to CGC WOLF BAY on 12-13 September .

22. That LCDR NEWCO's leadership, focusing on open communications, participation, and empowerment is a welcome change for WOLF BAY's crew.

RECOMMENDATIONS

1. That LCDR NEWCO be awarded an administrative letter of censure. As commanding officer in USCGC WOLF BAY, LCDR NEWCO is responsible for the safe navigation of his vessel. The circumstances surrounding USCGC WOLF BAY's 07 September grounding in the Detroit River, as depicted in the "Findings of Fact" and "Opinions" sections of this investigation, show that LCDR NEWCO failed to safely navigate USCGC WOLF BAY. However, based on the totality of the circumstances reviewed by the investigating officer, including the following factors, (a) LCDR NEWCO's decisive and prudent actions upon arriving to the bridge and finding his OOD disoriented, (b) the apparent lack of any damage to the vessel (tug and/or barge) and/or injuries to crewmembers, and (c) the presence of potentially systemic problems in WOLF BAY's watchstation qualification and navigation practices, no disciplinary action is recommended.

2. That USCGC WOLF BAY's navigation practices receive the highest level of command attention, including a thorough review for compliance with the commanding officer's standing orders and navigation standards.

3. That USCGC WOLF BAY employ the use of Team Coordination Training (TCT) to focus on reducing the probability of human error(s) through enhanced individual and team effectiveness.

4. That USCGC WOLF BAY thoroughly review the unit's bridge watchstation qualification program (i.e. POS/JOR/qualification boards, etc...) and the administrative oversight of this critical program.

Lieutenant Commander, U.S. Coast Guard
Investigating Officer

Encl: (1) Convening Order, Group Milwaukee ltr 5830 dtd 08 Sep
(2) USCGC WOLF BAY 091027Z SEP MISHAP Report
(3) USCGC WOLF BAY 080427Z SEP SITREP ONE AND FINAL
(4) USCGC WOLF BAY INSTRUCTION 1601.1b, "STANDING ORDERS TO THE OFFICER OF THE DECK (UNDERWAY) dtd 05 Aug 96
(5) USCGC WOLF BAY INSTRUCTION 3530, "COMMANDING OFFICER'S NAVIGATION STANDARDS AND PROCEDURES dtd 28 Aug
(6) Copy of NOAA Recreational Chart 14583 for the Detroit River, Lake St. Clair, and the St. Clair River, 10th edition (Fighting Island Channel area)
(7) Copy of NOAA Chart 14848 for the Detroit River, 54th edition (Fighting Island Channel area)
(8) Statement of LCDR Jerry NEWCO, dtd 12 Sep
(9) Statement of QM1 N. ACTING1STLT, dtd 07 Sep
(10) Summary of Investigating Officer's interview with QM1 ACTING1STLT conducted on 12 Sep
(11) Statement of QM3 Gary P. , dtd 07 Sep
(12) Summary of Investigating Officer's interview with QM3 conducted on 12 Sep
(13) Statement of SK1 BEANCOUNTER, dtd 09 Sep
(14) Summary of Investigating Officer's interview with SK1 BEANCOUNTER conducted on 12 Sep
(15) Statement of ENSIGN OPS
(16) Summary of Investigating Officer's interview with ENSIGN OPS conducted on 12 Sep
(17) Statement of CWO3 and summary of Investigating Officer' s interview with CWO3 on 12 Sep
(18) Timeline of events from time of grounding until post rebating recorded by Engineer Officer
(19) Summary of Investigating Officer's interview with ACTINGXO conducted on 12 Sep
(20) Statement of SA, dtd 07 Sep
(21) Summary of Investigating Officer's interview with SA conducted on 12 Sep
(22) Copies of USCGC WOLF BAY's logs (CG-4380A/B/C) for 07 Sep
(23) Copies of USCGC WOLF BAY's logs (CG-4380A/B/C) for 06 Sep
(24) Copies of USCGC WOLF BAY's logs (CG-4380A/B/C) for 05 Sep
(25) Copies of USCGC WOLF BAY's Machinery Log (CG-2616) and enclosures for 04-07 Sep
(26) Copies of USCGC WOLF BAY's U.S. Navy Standard

Bearing Log (Opnav Form 3530/2 (7/74)) for 04-07Sep

(27) Copies of USCGC WOLF BAY's Radio Log for 04-07Sep

(28) Excerpt from the United States Coast Pilot 6 for the Great Lakes (27th edition)

(29) Excerpts from COMDTINST M5000.3 (CG Regs)

(30) Aid Position Records (APRs) for Wyandotte Channel North Junction LB (LLNR 7925); Wyandotte Channel LB 25 (LLNR 7920); and Fighting Island Channel LB (LLNR 7805)

(31) Copy of "Underway OOD Qualification Letter" for QM1 ACTING1STLT dtd 30 Sep

(32) Copy of "Letter of Qualification and Certification" for PO dtd 30 Jun 95

(33) Copy of "Letter of Qualification and Certification" for SA dtd 06 May

(34) Copy of USCGC WOLF BAY's recent training documentation

P13 ZSEP
FM USCGC WOLF BAY
TO COMCOGARDDRU
CCDNINE CLEVELAND OH//O/OAN//
INFO USCGC I NEED TO KNOW
COMDT COGARD WASHINGTON DC//G-KSE//
COMCOGARD MLCLANT PORTSMOUTH VA//K/I
BT
UNCLAS FOUO//N05100//
SUBJ: SAFETY STANDOWN
A. MY 090000ZSEP, MISHAP REPORT
1. CGC WOLF BAY CONDUCTED A SAFETY STANDOWN AFTER A GROUNDING THAT OCCURRED ON 07SEP
2. THE FOLLOWING DECK EVOLUTION TOPICS WERE COMPLETED:
A. SEA DETAIL, MANNING AND REQUIREMENTS
B. NAVIGATION STANDARDS
C. WATCHSTANDING - MANNIN, ROUTINE
D. CHART REQUIREMENTS: CHARTS/CORRECTIONS, ELECTRONIC CHARTS, FIXES, HIERARCHY OF METHODS, TAKING BEARINGS.
E. LOG ENTRIES
F. NEW STANDING ORDERS TO U/W OOD AND QMOW/BMOW
G. RISK CONTROL EVALUATION TO PREVENT MISHAPS
H. TEAM COORDINATION OF BRIDGE PERSONNEL
3. THE FOLLOWING ENGINEERING TOPICS WERE COMPLETED:
A. REVIEW OF ENGINEERING STANDING ORDERS, INPORT/U/W/ EOW
B. SEA DETAIL, ENGINEERING REQUIREMENTS
C. GENERAL EMERGENCY REQUIREMENTS
D. WATCHSTANDINC ROUTINE
E. LOG ENTRIES
F. REVIEW OF RISK CONTROL
4. THE FOLLOWING ENTIRE CREW TOPICS WERE COMPLETED:
A. PRE-MISHAP EVALUATION
B. AFTER MISHAP CONDUCT OF THE EVOLUTION
C. REVIEW OF LESSONS LEARNED
5. A FULL COMPLETION LIST AND OUTLINE OF TOPICS WILL BE FORWARDED TO GROUP UNDER SEPARATE COVER. NINE HOURS OF TRAINING WERE EXPENDED TO COMPLETE THIS TRAINING.
6. 23 CREW SUCCESSFULLY COMPLETED 40 HOURS MARAD FIREFIGHTING TRAINING, 8-12 SEP.
7. APPRECIATE THE ASSISTANCE, ADVICE AND INSIGHT CO CGC NICEBOAT PROVIDED WHILE HE WAS ONBOARD 12-13SEP.
8. BT

P 00000Z SEP
FM USCGC WOLF BAY
TO COMDT COGARD WASHINGTON DC//G-KSE//
COMCOGARD MLC LANT PORTSMOUTH VA//K//
COMCOGARDGRU MILWAUKEE WI
COGARD NESU CLEVELAND OH
CCGDNINE CLEVELAND OH //O//OAN//
UNCLAS FOU //N05100//
SUBJ: MISHAP REPORT
A. COMDTINST M5100.47
1. DISCLOSURE OF INFO IN THIS MSG MUST BE IAW ENCL (2) TO REF
2. THIS INFO IS REPORTED IAW ENCL (6) TO REF A.
3. GENERAL DATA
DT: 09/07
TME: 1150q
OPFAC: 17503
ATMI: TRG
LOC: VIC FIGHTING IS, DETROIT RIVER, 42-14.092N 083.045W
WIND: 096/02
AIR: 74
WAVE: CALM
SEA: NA
VIS: 08
LITE: DAY
PRECIP: NONE
NAR: AT 0000Q SEP CGC WOLF BAY PUSHING CGB12002, DEPARTED WINSOR CANADA DOWNBOUND IN THE DETROIT RIVER BRIDGE WATCH WAS SET IAW STANDING ORDERS, ANCHOR DETAIL SET, ENGINEERING PLANT IN RESTRICTED STATUS 2 MDE(S), 2 SSG(S) ANP BOWTHRUSTER ONLINE. AT 1100Q WOLF BAY ENTERED THE VESSEL TRAFFIC SYSTEM BY CONTACTING SARINA TRAFFIC CONTROL AND MADE PASSING ARRANGEMENTS WITH TWO LAKE CARRIER VESSELS. AT 1115Q A THIR VSL PASSING WAS ARRANGED. AT APPROX 1140Q WOLF BAY PASSES PORT TO PORT WITH AN ANCHORED VSL IN THE ANCHORAGE ARE NEAR THE CANADIAN ROCK SALT CO. MINUTES LATER THE COMMANDING OFFICER DEPARTED THE BRIDGE. RISK FACTOR GREEN FOR THE FOLLOWING REASONS: VESSEL IN A TRAFFIC SYSTEM, NO UPBOUND COMMERCIAL TRAFFIC, RECREATIONAL TRAFFIC 10-12 BOATS WITHIN 1 NM, 28FT DEEP CHANNEL 450 YDS WIDE FUNNELING INTO A 250 YD WIDE CHANNEL AT FIGHTING ISLAND NORTH LT, EXPERIENCED U/W OOD WHO HAD PREVIOUSLY CONNED THROUGH DETROIT/ST. CLAIR RIVER SYSTEM APPROX 9 MONTHS PRIOR TO THIS MISHAP. JUST ABOVE FIGHTING ISLAND NORTH LIGHT ON CRS 205 TRUE, SOG 9KTS (7.5KTS ENGINE SPEED WITH 2KT CURRENT ON THE STERN), THE OOD OBSERVED THE FOLLOWING: FIGHTING ISLAND CHANNEL, THE TWO SMALL BOAT CHANNELS TO THE RIGHT OF WOLF BAY, THE CRIB LIGHTS TO THE EAST OF GRASSY ISLAND, NO SMALL RECREATIONAL BOATS IN THE CHANNEL JUST NORTH OF MARINA CLUB OF MICHIGAN, ECORSE, MI. THE OOD BECAME CONFUSED AS TO WHICH CHANNEL TO TAKE. HE DISCUSSED THE SITUATION WITH THE QMOW, BUT WAS UNABLE TO ELIMINIATE HIS CONFUSION. HE STOPPED THE SHIP'S PROPULSION. UPON HEARING THE CHANGE IN SHAFT RPM THE CO RAN FOR THE BRIDGE ARRIVING APPROX 4 SEC LATER. AS THE CO ENTERED THE BRIDGE, THE OOD STATED HE WAS DISORIENTED. THE CO MADE A QUICK SCAN OF THE AREA AND LOOKED AT THE MAPTECH COMPUTER CHART DISPLAYED OVER THE CAPTAIN'S CHAIR. HE OBSERVED THAT THE VESSEL SHOULD HAVE BEEN AGROUND ACCORDING TO THE POSITION DISPLAYED ON THE ELECTRONIC CHART, BUT THE SPEED OVER GROUND WAS STILL ABOUT 4-5 KTS. THE CO DIRECTED THE OOD TO COME RIGHT FULL RUDDER AND BACK THE ENGINES FULL. APPROX 1 MINUTE LATER WOLF BAY GROUNDED IN SOFT MUD IN POSITION 42-12.092N 083-08.045W.
CAU: (1) RISK ASSESMENTBY CO WAS TOO LOW.

(2) DISORIENTATION AND CONFUSION OF OOD. LOSS OF SITUATIONAL AWARENESS.
(3) QMOW DID NOT PLOT FIXES IAW STANDING ORDER.
ACT: (1) CONDUCT SAFETY STANDOWN PRIOR TO DEPARTING FOR TRIP BACK TO WISCONSIN.
(4) CORRECT STANDING ORDERS ADDING A SAFETY SUPERVISOR ON THE BRIDGE AT ALL TIMES DURING RESTRICTED TRANSITS.
(5) CONDUCT DIRECTED TRAINING ON NAVIGATION WATCH STANDING.
RBY: NEWCO
TLE: LCDR/O4 COMMANDING OFFICER
RDT: 09/09
(6) INVOLVED PROPERTY DATA:
GOV: WTGB, 140' LOA PUSHING CGB, 120' LOA ON THE BOW. PUSHING THE BARGE.
ADPRO: 0
CGOV: 0
CADD: 0
OPDL: 0
(5) INVOLVED PERSONNEL
PNO: NEWCO
SSN:
AGE: 35
SEX:
PAY GRADE: 04
RATE:
STATUS: ON DUTY/CG
POS: BRIDGE
JOB: CO
ETYP: 00
PRO: NONE
PNO: ACTING1STLT
SSN:
AGE: 37
SEX:
PAY GRADE: E6
RATE: QM1
STATUS: ON DUTY/CG
POS: BRIDGE
JOB: DECK/CONNING OFFICER
ETYP: 03
PRO: NONE
PNO:
SSN:
AGE: 35
SEX:
PAY GRADE: E6
RATE: SK1
STATUS: ON DUTY/CG
POS: BRIDGE
JOB: QMOW
ETYP: 01
PRO: NONE
PNO: NEWGUY
SSN
AGE 28
SEX:
PAY GRADE: E2
RATE: SA
STATUS: ON DUTY/CG
POS: BRIDGE
JOB: HELMSMAN
ETYP: 01
PRO: NONE
(6) NO INJURY OR ILLNESS
(7) CAUSAL ANALYSIS AND REVIEW:
COM1: FOLLOW NAVIGATION PRACTICES OUTLINED IN STANDING ORDERS. ENSURE A SAFETY OBSERVER IS ALWAYS PRESENT DURING RESTRICTED TRANSITS.

CAU1: (1) JUDGEMENT: LOSS OF SITUATIONAL AWARENESS BY OOD.
(2) JUDGEMENT: RISK ASSESMENT WAS TO LOW.
ACT1: (1) STANDARD - SCHEDULE A SAFETY OBSERVER (CO OR EXPERIENCED U/W OOD) TO BE ON WATCH WITH THE OOD ON WATCH DURING ALL EVOLUTIONS OTHER THAN OPEN WATER TRANSITS. REQUIREMENT TO AUGMENT THE BRIDGE IN THEIS FASHION WILL BE ADDED TO THE STANDING ORDERS.
(2) STANDARD - ENSURE THAT THE NAVIGATION STANDARDS PROMULAGTED ARE FOLLOWED.
CL: C
RBY: NEWCO
TLE1: LCDR/O4 CO
RDT1: 09/09
BT

P12345Z SEP
FM USCGC WOLF BAY
TO CCGDININE CLEVELAND OH//O//OAN/CC//
INFO COMCOGARDGRU MILWAUKEE WI
COMCOGARDGRU DETROIT MI
BT
UNCLAS//N16130//
SUBJ: SITREP ONE AND FINAL GROUNDING OF CGC WOLF BAY VIC FIGHTING ISLAND, DETROIT RIVER

1. SITUATION:
   A. USCGC WOLF BAY GROUNDED IN POSITION 42-14.092N 083-08.045W WHILE TRANSITING THE DETROIT RIVER SYSTEM ENROUTE TOLEDO OH.
   B. 25 CREW ONBOARD, XO ON LEAVE.
   C. DESC: WTGB W/BARGE PUSHING AHEAD.
   D. WX: WINDS 096/02KTS, SEA CALM, CURRENT 213/2KTS, VIS 8NM OVC, AT 74.
   E. RISK ASSESSMENT: PRIOR TO GROUNDING - GREEN
2. ACTION TAKEN:
   A. 001055Q SEP U/W FROM WINSOR CANADA
   B. 1100Q CONTACTED SARNIA TRAFFIC - ENTERED DETROIT RIVER SYSTEM.
   C. 1150Q GROUNDED INPOSITION 42-14.092N, 083-08.045W, SET GENERAL EMERGENCY, COMMENCED RAPID INTERNAL AND EXTERNAL SURVEY.
   D. 1159Q REPORTED GROUNDING TO GRU DETROIT.
   E. 1206Q REPORTED GROUNDING TO D9 (CC).
   F. 1211Q COMPLETED RAPID INTERNAL AND EXTERNAL SURVEY - NO APPARENT DAMAGE.
   G. 1232Q COMPLETED EXTENSIVE INTERNAL AND EXTERNAL SURVEY - NO APPARENT DAMAGE.
   H. 1250Q COMPLETED VERBAL REPORTS TO GRU DETROIT, D9 (CC) AND GRU MILWAUKEE
   I. 1304Q WOLF BAY'S TANB 21537 U/W TO CONDUCT SOUNDINGS ASTERN OF VESSEL.
   J. 1305Q NOTED WOLF BAY'S ROCKING AFTER A SMALL BOAT PASSED ASTERN GIVING OFF A MEDIUM WAKE.
   K. 1310Q COMPLETED SOUNDINGS ASTERN, MINIMUM DEPTH NOTED 19FT.
   L. 1311O COMMENCED BACKING OFF AT 100 SRPM.
   M. 1312Q INCREASED TO 150 SRPM.
   N. 1313Q INCREASED TO 200 SRPM.
   O. 1314Q CEASED BACKING.
   P. 1319Q COMMENCED DEBALLASTING BALLAST TANKS.
   Q. 1335Q SECURED DEBALLASTING.
   R. 1336Q COMMENCED BACKING OFF AT 100 SRPM.
   S. 1348Q INCREASED TO 150 SRPM.
   T. 1349Q COMENCED THRUSTING TO PORT AND STARBOARD TO BREAK SUCTION OF MUD BOTTOM.
   U. 1354Q INCREASED TO 200 SRPM.
   V. 1355Q UNDERWAY.
   W. 1356Q ALL SPACES REPORT NO APPARENT DAMAGE, EXTENSIVE SURVEY ORDERED.
   X. 1405Q NO APPARENT DAMAGE REPORTED.
   Y. 1423q RETRIEVED TANB.
   Z. 1440Q SET DECOUPLING BILL.
   AA. 1508Q COMPLETED ADJUSTMENT OF BARGE QUARTERING LINES, COMMENCED TRANSIT TO TOLEDO OH.
   AB. 2108Q MOORED TOLEDO OH.
3. FUTURE PLANS AND RECOMMENDATIONS:
   A. POTENTIAL EXISTS THAT THE 4-40-2 FUEL TANK MAY HAVE SOME EXTERNAL DAMAGE, SOUNDINGS OF THE TANK SHOW A RISE OF FUEL IN SOUNDING TUBE. THE TANK WAS TESTED WITH WATER INDICATING PASTE WITH NEG RESULTS. A SAMPLE OF DIESEL FUEL WAS TAKEN FROM NEAR THE BOTTOM OF THE TANK AND ALSO TESTED WITH WATER INDICATING PASTE, AGAIN WITH NEG RESULTS. TANK IS BELOW WATERLINE AND HAS SHOWN NO INCREASE IN VOLUME SINCE INITIAL ASSESMENT. EO IS ARRANGING FOR DIVERS TO

CONDUCT AN UNDERWATER HULL INSPECTION.
A. CONDUCT A SAFETY STANDOWN WITH ENTIRE CREW COMPLETION OF THE UNDERWATER HULL INSPECTION.
B. CONSIDER THE CASE CLOSED FOR SAR, CASE SHOULD REMAIN ACTIVE UNTIL ALL MISHAP REPORTS, UNDERWATER HULL INSPECTION, AND FOLLOW-UP INVESTIGATIONS HAVE BEEN COMPLETED.
C. D. CREW PERFORMANCE OUTSTANDING. MORALE STILL HIGH, WILL COMMENCE FIREFIGHTING TRAINING 08 SEP AS SCHEDULED.
BT
NNNN

U.S. Department of Transportation

United States Coast Guard

Commander
U. S. Coast Guard
Group

5830
26 NOV

INFORMAL INVESTIGATION OF USCGC WOLF BAY GROUNDING IN THE VICINITY OF FIGHTING ISLAND, DETROIT RIVER ON 07 SEPT ACTION OF THE CONVENING AND FINAL REVIEWING AUTHORITY

The findings of fact, opinions, and recommendations of the subject investigation are approved subject to the following comments:

With regard to recommendation 1, LCDR NEWCO has been issued an Administrative Letter of Censure for exercising poor judgement on 07 September. Although there are mitigating factors which led to the subject grounding, as Commanding Officer of WOLF BAY, LCDR NEWCO is ultimately responsible for the safe navigation of the vessel. This incident would likely not have occurred if LCDR NEWCO had not left WOLF BAY's bridge shortly before entering the Fighting Island Channel, or if key personnel in the ship's control and navigation team had been on board WOLF BAY during this transit.

LCDR NEWCO assumed command of WOLF BAY approximately six weeks prior to this incident. At the time of the subject grounding, LCDR NEWCO had limited underway time on WOLF BAY and had not fully assessed the qualifications of his crew and bridge team. As indicated in the subject investigation, a significant contributing factor to WOLF BAY's grounding was the failure to follow established navigation procedures and a perceived lack of synergy and information flow between the OOD and OMOW on the bridge. While LCDR NEWCO, as Commanding Officer, is responsible to ensure proper procedures were followed, these shortcomings which contributed to the grounding appear to have been longstanding. Since WOLF BAY's grounding, LCDR NEWCO has undertaken a major overhaul of bridge and navigation procedures as explained further below. In addition, since WOLF BAY's grounding on 7 SEP, there have been two other groundings in the general vicinity of WOLF BAY's incident. One by a hydrofoil north of the grounded position, and the other by the M/V MELISSA DESGAGNES which grounded within 100 yds of WOLF BAY's position. Although these subsequent groundings do not excuse the shortcomings which led to WOLF BAY's grounding, they may be indicative of a larger navigational problem in this immediate area.

Recommendations 2, 3, and 4 have received the highest level of command attention. Prior to departing Toledo, OH the Commanding Officer's Navigational Standards and Orders to the Officer of the Deck were modified. These modifications include corrections to ensure compliance with Atlantic Area policies and other modifications to ensure safe navigation principles are followed. In addition a safety stand down was conducted on WOLF DAY prior to departing Toledo to review new standing orders and to discuss risk control evaluation and team coordination issues. A copy of WOLF BAY'S safety stand down message is contained as enclosure (1). Additional actions taken by WOLF BAY after the grounding are detailed in LCDR NEWCO's letter attached as enclosure (2).

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In early October, a previously scheduled three day Ready For Operations evaluation was conducted on WOLF BAY which included two full days of underway drills. This evaluation enabled me to witness first hand many of the practices which were put into place after the September grounding. In three short weeks it was evident that bridge practices had been significantly altered from the conditions described in the subject investigation. Standing orders were followed to the letter and each evolution was preceded with a thorough brief which included all hands involved in a particular evolution. A copy of Group Ready For Operations evaluation is attached as enclosure (3).

As indicated above, a significant contributing factor in WOLF BAY's grounding was the absence of critical members of the ship's control and navigation team. In this case the ship sailed without the Executive Officer or the BMC. I cannot help but conclude that this incident would likely not have occurred had the Executive Officer been on board. Since this was LCDR NEWCO's first transit through this area as Commanding Officer his decision to sail without his Executive Officer was not prudent. I cannot stress enough the importance of WOLF BAY always sailing with a full complement of key personnel. In the future, the Executive Officer should only be left ashore in the most unusual of circumstances.

In closing, I have full confidence in LCDR NEWCO's abilities as WOLF BAY's Commanding Officer. The subject investigation clearly indicates that mistakes were made, however, not to be overlooked are the steps taken by LCDR NEWCO immediately preceding the grounding and thereafter. LCDR NEWCO's quick action on the bridge to mitigate the impending grounding is likely responsible for the lack of any damage to WOLF BAY and ensured the incident was no more than a Class D Mishap. Additionally, LCDR NEWCO's full cooperation with the Investigating Officer contributed significantly to the IO's ability to accurately determine what took place. Since WOLF BAY's grounding I have discussed the issues surrounding this incident with LCDR NEWCO at length. LCDR NEWCO is fully aware of the mistakes he made which led to this incident. In addition, I have witnessed first hand the changes that LCDR NEWCO has implemented to correct deficiencies and I am fully confident that the deficiencies which existed have been corrected. LCDR NEWCO and the entire crew of WOLF BAY learned a valuable lesson which I believe has made them stronger and better equipped to carry out WOLF BAY's mission. I have every indication that the remainder of LCDR NEWCO tour will be successful and I am confident that WOLF BAY is in good hands.

Investigating Officer

Encl: (1) CGC WOLF BAY 131451Z SEP
(2) CGC WOLF BAY's ltr 5830 of 18 NOV
(3) Group ltr 3501 of 28 OCT

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U.S. Department of Transportation

United States Coast Guard

Commanding Officer
U. S. Coast Guard
Cutter

5830
18 NOV

From: Commanding Officer, USCGC WOLF BAY
To: Commander, Coast Guard Group

Subj: INVESTIGATION OF USCGC WOLF BAY's GROUNDING

Ref: (a) USCGC WOLF ltr 5830 of 29 October

1. Per your request I have reviewed reference (a) and provide you with the following information concerning the facts of the investigation.

a. "Findings of Fact" #2 should read; assumed command on 25 July vice 25 June.

b. It was indicated that all aids in the general vicinity were found to be on-station and watching properly, but there was no comment on the aids marking pattern. The following information leads me to believe there may be some mitigating information that may eliminate one of the errors the ship's personnel had control over.

(1) Wyandotte Channel North Junction Lighted Buoy 28, see enclosure (6) of reference (a), is a RG or "Red over Green" which indicates that the primary channel is to the right of this aid when a vessel is proceeding southbound. In reality the main channel, Fighting Island Channel, is to the left of this buoy. This describes why the Deck Watch Officer visually became confused as to which channel was the correct one to proceed down. See facts 87 and 88 of reference (a).

(2) There have been two groundings in this area since WOLF BAY's grounding. One by a hydrofoil north of our grounded position and the other by the M/V MELISSA DESGAGNES which grounded within 100 yds of the position WOLF BAY grounded. This indicates a bigger problem than just WOLF BAY' Deck Watch Officer becoming confused in this area.

2. The following is provided for your information concerning the recommendations contained in reference (a).

a. Both the Deck Watch Officer and the Quartermaster of the Watch have been counseled concerning this incident and directed navigation and standing order training in the areas they failed has been completed.

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b. Prior to departing Toledo, OH after the accident, Commanding Officer's Navigational Standards and Orders to the Officer of the Deck were modified. They now incorporate the lessons learned from this accident, corrected the navigation policies to comply with Atlantic Area Policies, and have added necessary requirements to ensure the vessel sails safely.

c. Prior to departing Toledo, OH, a Safety Stand down was conducted. The focus was on the accident, the new standing orders, risk control evaluation and team coordination training. A copy of WOLF BAY's safety stand down message is included as enclosure (1).

d. A critical review of the training and qualification program has been completed by the Commanding Officer and Executive Officer. Corrective action has been taken on a number of PQS letters that were never issued and PQS completion requirements prior to being assigned as the qualified watchstander.

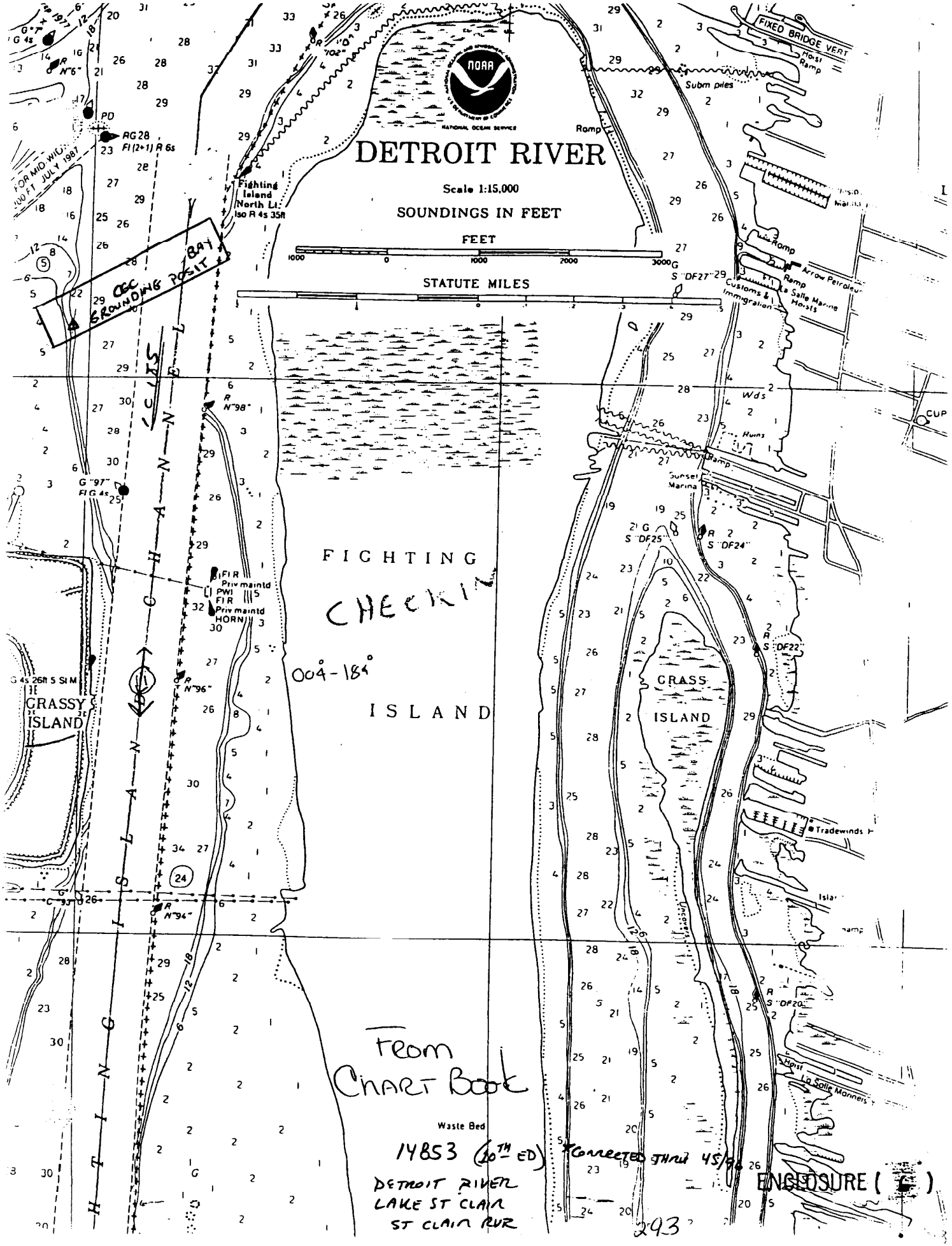
e. All U/W OODs and break-in OODs have received training on emergency shiphandling, bridge team coordination and risk evaluation/reduction.

f. A safety observer watch has been implemented as part of the bridge team. Instead of being an informal tasking the position is now entered as part of our smooth log and stood similar to an OOD watch with required reliefs when the vessel is operating in restricted waters.

g. Regular training is now held on the Standing Orders and Navigation Standards after each lengthy inport, with at least one training session per quarter.

3. With the successful completion of Group Ready for Operations Evaluation on 8 October, I believe that WOLF BAY is now operating in accordance with required standards.

Chart 14853 for the Detroit River, Lake St. Clair, and the St. Clair River, 10th Edition, Jan 25/92),


DETROIT RIVER
Scale 1:15,000
SOUNDINGS IN FEET
FEET
STATUTE MILES
NOAA
NATIONAL OCEAN SERVICE
FIXED BRIDGE VERT
Hoist
Ramp
Subm piles
Ramp
Arrow Petroleum
La Salle Marine
Hoists
Customs & Immigration
Fighting Island North Lt.
Iso R 4s 35ft
RG 28
Fl (2+1) R 6s
FOR MID-WIDTH 200 FT JULY 1987
CGC GROUNDING POSIT
BAY
1 CITS
CHANNEL
FIGHTING
ISLAND
CHECKIN
004°-184°
GRASSY ISLAND
GRASS ISLAND
Sunset Marina
Ruins
Wds
Tradewinds
Waste Bed
La Salle Mariners
Hoist
Uncovers
From Chart Book
14853 (10TH ED)
*CORRECTED THRU 45/96
DETROIT RIVER
LAKE ST CLAIR
ST CLAIR RVR
ENCLOSURE (6)
293

rograph, is also the plane of reference for
e lake level is above or below Low Water
oths are correspondingly greater or lesser

Y	JUN	JUL	AUG.	SEPT.	OCT.	NOV.	DEC.

w Water Datum

verage levels (1986-1995)

xtreme Levels (period of record)

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depths. If the lake level is above or
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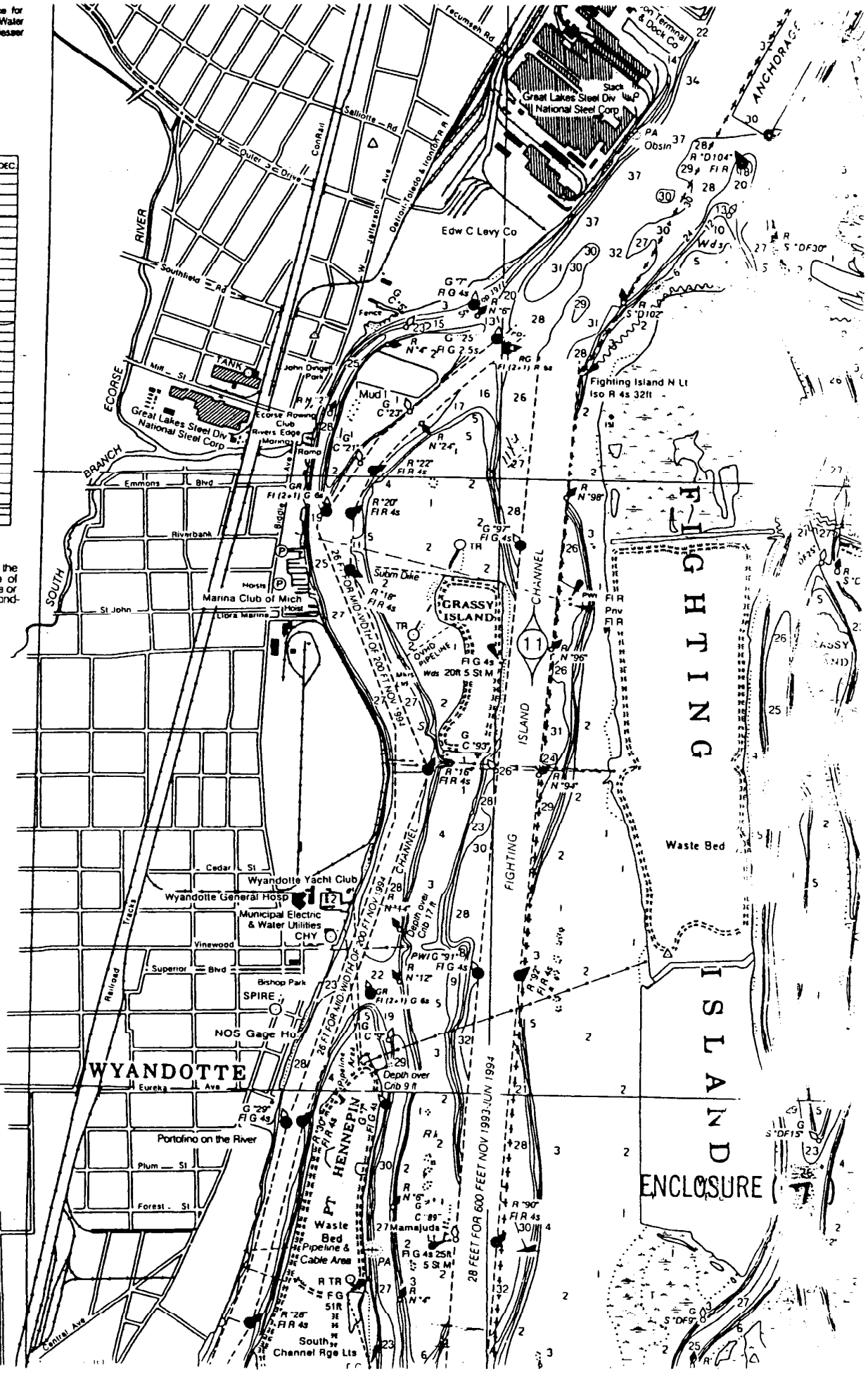

Chart 14848

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ENCLOSURE (7)

GROUNDING OF ISLAND CLASS CUTER IN THE VICINITY OF NORTHWEST CHANNEL, GREAT BAHAMA BANK

3000

From: LCDR I.B. INVESTIGATING
To: Commander, Coast Guard Group Miami

Subj: **INVESTIGATION INTO THE CIRCUMSTANCES SURROUNDING THE GROUNDING OF ISLAND CLASS CUTTER. THAT OCCURRED IN THE VICINITY OF NORTHWEST CHANNEL, GREAT BAHAMA BANK.**

Ref: (a) Commander, Coast Guard Group Miami ltr 5830 of July 1988
(b) Administrative Investigation Manual, COMDTINST M5830.1

1. As directed by reference (a) an informal investigation was conducted to determine the circumstances surrounding the grounding of CGC ISLAND CLASS in the vicinity of Northwest Channel, Great Bahama Bank, LT C.O.(Commanding Officer and Conning Officer) and SN JONES(Quartermaster of the Watch and Helmsman) were designated as, and accorded all rights of parties to this investigation. Both parties voluntarily submitted written statements, which are enclosed, and answered all questions posed by me. Based upon my investigation, the following findings of fact, opinions and recommendations are submitted.

2. Findings of Fact.

a. CGC ONETEN was on a three day, law enforcement patrol under Group Miami OPCON. This patrol was concentrating on the Northwest Providence Channel area of the Bahamas and an RBDF rider was aboard. The Commanding Officer claimed to be familiar with the area, having patrolled south of Chub Cay once before. However, LT C.O. had not been in the area to the west of Chub Cay, south of Northwest Channel.

b. The CGC ONETEN was short of qualified watch standers on this patrol due to personnel at school and several, new crew members who had not qualified yet. There were three qualified OOD's, four qualified QMOW's, and three qualified EWO's onboard. Therefore, LT C.O. (Commanding Officer) was standing OOD watches in a 1 in 3 rotation.

C. Prior to sailing, there were three, outstanding CASREP's on CGC ONETEN's plant. They were the stabilizing fins, the air conditioning compressor, and the spare, 65 HP outboard engine. The fins were stalling at 22 KT5 and above.

Subj: INVESTIGATION INTO THE CIRCUMSTANCES SURROUNDING THE GROUNDING OF USCGC ISLAND CLASS CUTTER THAT OCCURRED IN THE VICINITY OF NORTHWEST CHANNEL, GREAT BAHAMA BANK.

d. Patrol Boat Squadron One records indicate a consistent problem had been occurring with the Raytheon AN64 radar aboard CGC ONETEN however, LT C.O. stated the radar had been fixed by the Squadron ET'S on a previous patrol. There were no PMS records found either on the CGC ONETEN or at Patrol Boat Squadron one to show the most recent alignment/calibration on the radar or the fathometer.

e. There is no tactical data published or available for the 110 foot Patrol Boats as of this date.

f. During the evening of, and early morning of the patrol, CGC ONETEN was patrolling a triangular pattern from the Southwest corner of the Berry Islands to the Northeast corner of Andros Island to the southern end of the Northwest Channel. The ship was running without navigation lights on. The Commanding Officer had ordered the OOD's to close and identify all Northwest bound vessels.

g. LT C.O. (the Commanding Officer) assumed the OOD watch at 0737, after having taken a round of radar ranges and plotted a good fix at 0730. The weather was broken, with rain squalls in the vicinity. Visibility was 8 NM at best, reducing to 2 NM or less in squalls. The automatic pilot was engaged on course 326 ^{o}T. This course was being steered to resume the 334 ^{o}T trackline laid out on chart 26320. Speed was 600 SRPM or 11.5 knots. SN JONES was acting QMOW for the 0800-1200 watch.

h. At 0800, SN JONES attempted to take a navigational fix using SATNAV and three radar ranges. The fix was poor and LT C.O. took another radar fix at 0803. LT C.O. took ranges to four points, the Northeast corner of North joulters Cay, North Golding Cay, Rum Cay and the Western side of South Stirrup Cay. An excellent radar fix was obtained and LT C.O. resumed the base course of 334 ^{o}T. The speed made good since the 0730 fix was 11.75 kts.

i. At 0819, LT C.O. noted a radar contact on a general SSW heading from Chub Cay at a low speed (5-6 KTS). The contact was maneuvering on various courses. From personal knowledge of the area and smuggling tactics, LT C.O.'s suspicions were aroused by this contact's erratic behavior.

j. At 0820, LT C.O. visually checked the position on the chart by estimating two thirds of the way to the 0830 DR. No fix or DR was placed on the chart for 0820.

Subj: INVESTIGATION INTO THE CIRCUMSTANCES SURROUNDING THE GROUNDING OF USCGC ISLAND CLASS CUTTER THAT OCCURRED IN THE VICINITY OF NORTHWEST CHANNEL, GREAT BAHAMA BANK.

k. At approximately 0825, the radar contact was sighted visually 1.9 NM off CGC ONETEN's starboard bow. The contact was a white hull, sport fishing vessel, approximately 50 feet in length. The contact increased speed and turned hard right, leading NNW towards the Northwest Channel light. LT C.O. increased speed to 900 SRPM (16.1 KTS) and started to chase the contact. LT C.O. ordered SN JONES to man the helm. LT C.O. also called the EOW, MK2 SALTY to manually change the port flapper valve.

l. Around 0826, LT C.O. ordered a course change to the left to lead the sport fisherman. SN JONES properly responded to the order and steered approximately 300"T. SS2 SMITH was on the bridge. LT C.O. ordered him to act as a lookout and keep the binoculars on the vessel. SN JONES lost sight of the vessel during the chase when it entered a squall. Visibility dropped to about 1 NM. LT C.O. maintained radar contact of the vessel and SS2 SMITH kept the vessel visually with use of the binoculars. LT C.O. increased speed to 1100 SRPM (19.5 KTS).

m. Around 0827, LT C.O. realized the range to the vessel was opening and increased CGC ONETEN's speed to 1300 SRPM. The pit log showed this speed to be 23 KTS. LT C.O. stated that given the existing weather conditions and knowing how close the cutter was to the bank, 23 knots was the maximum safe limit. Radar contact of the vessel was momentarily broken due to the vessel being in a squall. MK2 SALTY the EWO, came to the bridge to verify the balancing of the engine tachometer readings. LT C.O. did insure the engine tachometers were reading the same when MK2 SALTY asked.

n. LT C.O. claimed to have mentally set "safe limits" to avoid going on the bank. They were to not go beyond 7.2 NM North of North joulters Cay, not to get to the West of North Joulters Cay, and if the fathometer registered anything while set on the 100 fathom scale, the Cutter was crossing the 200 meter depth line (i.e. getting too close to the bank). However, no danger bearings or a danger range were placed on the chart. Shoal waters were not marked.

o. Around 0828, LT C.O. had regained radar contact of the vessel and noticed the vessel's range to continue opening. Also the vessel was drifting left. LT C.O. estimated the vessel's speed to be 28-30 KTS. SN JONES reported light blue water ahead. LT C.O. and SN JONES saw the fathometer register 30 fathoms.

Subj: INVESTIGATION INTO THE CIRCUMSTANCES SURROUNDING THE GROUNDING OF USCGC ISLAND CLASS CUTTER THAT OCCURRED IN THE VICINITY OF NORHWEST CHANNEL, GREAT BAHAMA BANK.

LT C.O. gave the command "hard right rudder" and brought the throttles to neutral. SN JONES properly responded to the rudder command and began to put the rudder hard right.

p. At 0829, LT C.O. put the throttles in reverse. Before the engines could engage CGC ONETEN grounded. LT CO. immediately placed the throttle back to neutral. The cutter hit bottom several times before fully stopping. LT C.O. questioned whether both engines were actually in neutral, and so completely shut down both MDE's and the fins. MK2 SALTY sounded the collision alarm and piped for all hands to check spaces for damage, as ordered by LT C.O.

q. Immediately after grounding, LT C.O. ordered the crew to check for flooding. SN SMITH was on the forecastle as the anchor detail. LT C.O. went to the fantail and observed CGC ONETEN to be aground aft. LT C.O. ordered fuel to be transferred forward. At 0836, the crew reported no apparent flooding in any compartment, including the fuel tanks, which were sounded. LT C.O. ordered leadline soundings to be taken. The soundings indicated 9 feet on the port side and 6 feet on the starboard side. LT C.O. stated the Cutter uses a navigational draft of 10 feet.

r. At 0839, LT C.O. lowered the RHIB into the water to reduce weight aft and have the RHIB (equipped with a 90 horsepower outboard) assist CGC ONETEN in getting off the bank. A 2" tow line was passed to the RHIB and a strain was taken.

s. At 0849 CGC ONETEN floated free from the grounded position of 25-26.9 N 078-09.75W. The RHIB towed the cutter towards open water off the bank. The RHIB was equipped with a fathometer and was taking depth readings to safely guide CGC ONETEN into deeper water. At this same time the engineers reported the flange cracked around number 1 MDE reduction gear. LT C.O. used short bursts of power to the port shaft (number 2 MDE) to help get CGC ONETEN into deeper water.

t. During the period from the grounding until CGC ONETEN was anchored in safe waters, weather was extremely poor. A hard rainfall and heavy winds were experienced making progress toward re-floating slow.

u. At 0936, CGC ONETEN anchored in position 25-26.6 North, 078-09.1 West in 24 feet of water. The RHIB was brought onboard. LT C.O. contacted Group Miami via HF voice radio and passed the

casualty report regarding the grounding, specifically noting the starboard MDE out of commission. LT C.O. passed the intentions to conduct further checks and evaluate the possibility of transiting to Miami under her own power.

V. At 0948, LT C.O. sent two, volunteer divers, LTJG XO and MK2 SALTY into the water to inspect the hull and determine the extent of damages. LT C.O. claimed to do this to guarantee the "safety of the ship and crew." LTJG X.O. is an experienced diver and was using snorkeling gear only on this dive. MK2 SALTY is a currently PADI qualified, experienced diver and was using full SCUBA gear on this dive. At 1104, the divers completed their dive and were back onboard CGC ONETEN. The divers confirmed there was extensive damage to both propellers and the starboard stabilizing fin. They also reported possible damage to the starboard strut and shaft.

w. By 1126, LT CO. had conducted sufficient engine tests with number two MDE to determine CGC ONETEN was capable of safely operating on one shaft. CGC ONETEN got underway heading towards Nassau, Bahamas. At 1133, LT C.O. momentarily stopped the cutter for 21 minutes to lock the starboard shaft. An uneventful transit towards Nassau occurred. CGC ONETEN debarked the RBDF rider at Nassau and then proceeded to Coast Guard Base Miami Beach at 600 SRPM on the port shaft, making about 8 knots good. CGC ONETEN arrived at CG Base Miami Beach around 1800.

x. An underwater hull inspection of CGC ONETEN was conducted on 26 July. Many still photos and a video tape were made on this dive, which are held by SRD Miami. The inspection report detailed extensive damage to both propellers, paint scraping damage covering much of the hull, a badly dented and bent starboard stabilizing fin, a cracked starboard reference anode, and a bent starboard shaft. Possible bending to the port shaft was also reported. Struts, rudders and transducer dome appeared undamaged. No through hull holes nor cracked or pitted welds were discovered. A LTJG from SRD Miami estimated the repair costs to $55,000.00. He also stated that the decision had been made to replace the starboard reduction gear at an approximate cost of $15,000.00 to $20,000.00. The total estimate for all the repairs due to the grounding is $65,000.00 to $70,000.00.

y. No injuries occurred as a result of the grounding.

Subj: INVESTIGATION INTO THE CIRCUMSTANCES SURROUNDING THE GROUNDING OF USCGC ISLAND CLASS CUTTER THAT OCCURRED IN THE VICINITY OF NORTHWEST CHANNEL, GREAT BAHAMA BANK.

3. Opinions.

a. LT C.O. the Commanding Officer of CGC ONETEN was pursuing an active, law enforcement case when the cutter went aground. LT C.O.'s decision to chase the suspicious acting sport fisherman was correct and necessary. The primary cause of the grounding was LT C.O.'S failure to correctly evaluate the ship's position while aggressively attempting to intercept this highly suspicious contact.

b. Current smuggling tactics include the use of shallow areas to avoid detection and interdiction. If the Coast Guard is to effectively meet its law enforcement mission, we need the 110 foot, WPB's to patrol on and near the banks. The WPB's Commanding Officers must correctly balance an aggressive approach to interdiction with a certain degree of caution and transit the banks in pursuit of the smugglers. In LT C.O.'s statement, LT C.O. has included a superb procedure for navigating the banks. This method or a similar one needs to be adopted as standard operating procedure to safely and wisely pursue the enemy.

c. LT C.O. did not have the intention to zealously chase the sport fisherman onto the banks. LT C.O. had mentally given up the chase when the Cutter neared the safe limit of 7.2 NM north of North Joulters Cay. Unfortunately, by the time LT C.O. decided to give up the chase, the course and speed of CGC was such that the momentum was going to carry it onto the banks regardless of any course or speed changes at that point.

d. My reconstruction of the CGC ONETEN's positions are enclosed on chart 26230 labeled RECONSTRUCTION. By re-plotting the 0730 and 0803 fixes, I found a set of 124.5 degrees True and a drift of .5 knots. However, this apparent current was not a significant factor in the grounding. At 0825, LT C.O.'s order to "lead the vessel" to the helmsman resulted in a course change to about 300 degrees True. Only 1.6 NM existed between the ship's position and the bank at this point. At 23 knots, CGC ONETEN would reach the bank in about four minutes.

e. The three safety parameters LT C.O.used in this case were insufficient to prevent the grounding. First, CGC ONETEN went on the bank 7.0 NM north of North Joulters Cay, which is less than the 7.2 NM danger range that LT C.O. believed would warn of an approach to the bank. Second, the radar should have shown CGC ONETEN going to the west of N. Joulters Cay (anything less than 180 degrees True) around 0827. LT C.O. did

not use this parameter correctly or unheeded it due to the primary belief that the 7.2 NM danger range would give ample warning. Third, the fathometer parameter of 200 meters gave LT C.O. no time to react. The 200 meter curve is only .10 NM from the 5 meter curve of the bank at the point where CGC ONETEN went on the bank. At 23 knots, only a fraction of a minute would pass from the time the fathometer registered any depth until CGC ONETEN would go onto the bank.

f. On 19 July, LT C.O. made the correct decision to sail even though the Cutter was short of qualified personnel. This decision led to LT C.O. having to stand an OOD watch in a 1 in 3 rotation. However, standing the watch was not a significant factor in the grounding.

g. LT C.O.'s decision to not call additional personnel to the bridge as the Cutter was approaching shallow waters was also correct under these circumstances. I agree with the reasoning that before anyone else could be called to the bridge and be given an adequate brief to understand what was happening and to position the boat, the chase would be over. Also, having a lookout and the EWO, MK2 SALTY on the bridge during much of the chase to assist if needed.

h. Using 23 knots of speed in low visibility just 1 to 2 NM from coral heads is a questionable action for the prudent seaman to undertake. As part of this investigation, I was able to ride the CGC ONETEN to observe the speed characteristics and operation of a 110 foot WPB. I was exceptionally impressed with the speed available and the quick response of the engines to come up in speed. When the clutch speed is 11.5 knots, and top speed is 30 knots, the perspective of moderate speed is somewhere in between - about 23 knots. Nevertheless, 23 knots was an excessive speed for the existing weather conditions and area of the chase. WPB Commanding Officers must not allow the thrill of a chase to override the safe operation of their units. Although I can understand how and why LT C.O. used 23 knots in this case, I do not believe LT C.O. was taking all factors into account to avoid hazarding the vessel.

i. LT C.O.'s decision to send experienced divers down to inspect the hull was not in strict observance of Coast Guard policy. However, I believe LT C.O.displayed good judgment in allowing this dive to insure that the boat's underwater condition was sound enough for the transit home.

Subj: INVESTIGATION INTO THE CIRCUMSTANCES SURROUNDING THE GROUNDING OF USCGC ISLAND CLASS CUTTER THAT OCCURRED IN THE VICINITY OF NORTHWEST CHANNEL, GREAT BAHAMA BANK.

j. The actions LT C.O. and the crew took after the grounding were correct and insured the minimum amount of damage. The swift shifting of fuel and launching of the RHIB allowed the vessel to re-float itself quickly. Use of the RHIB to tow and guide the cutter to safer waters was outstanding. The quick, professional actions of the entire crew allowed the ship to return to port safely without further damage.

k. As part of this investigation, I carefully tried to rule out any possible electronics problems as a contribution to the grounding. Although I believe the grounding occurred primarily due to personnel error in positioning, I did discover some important factors regarding the care, maintenance and capabilities of the radar and fathometer that need to be addressed. None of these factors significantly contributed to the grounding. However, correcting them may help prevent future groundings. The radar's ARPA system is not equipped to plot NAVLINES on the radar screen. In this case, a NAVLINE plotted from North Joulters Cay denoting the shoal waters could have alerted LT C.O. that the Cutter was standing into danger much earlier then when LT C.O. took action. NAVLINES can act as effective danger bearings for the OOD that knows how to use them. The fathometer does not have an audible alarm for warning of shallow depths. In this case, the bottom was so steep an audible alarm probably would not have mattered. However, if the WPB's are to continue operations on or near the banks, a better fathometer equipped with audible alarms could help. Also, the transducer is placed about two-thirds of the way aft from the bow. It needs to be much closer to the bow so the OOD will have maximum time to correctly respond to depth changes. The last point regarding electronics is the poor record keeping. No records of PMS are being maintained by the ships or the Squadron. The Squadron ET's are so overburdened that they only respond to corrective actions. PMS is not being done except for when the gear is being repaired. The only records available are corrective work orders. Either more ET's are needed or more attention to PMS is required for this situation to be remedied. The Squadron does have a letter on file requesting more ET's, which addresses this problem.

l. An in depth review of CGC ONETEN's qualification procedures for OOD's and QMOW's was conducted by me. The procedures are correct and more than adequate. Also, I reviewed LT C.O. s standing orders to the OOD. They appear adequate and complete. The section on navigation and low visibility was not followed to the letter in this case. However, the circumstances of the chase and LT C.O.'s knowledge that the pursuit would last

only a few minutes precluded the possibilities of following the standing orders to the letter. LT C.O.'s flexibility in this case was necessary and correct.

m. Although it is a phrase which may be said too often, I believe that there is a "cost of doing business' in this case which cannot be overlooked. If we expect our WPB Commanding Officers to aggressively pursue law enforcement on or near the banks, then we might have a grounding occur. It is a carefully calculated risk. In this particular case, LT C.O. exhibited sound judgment in chasing her quarry, then giving up the chase when it was realized he was too fast. I believe LT C.O. said it best, "Operationally, it was important to stop him. I guess I just pushed it too much."

4. Recommendations.

a. No disciplinary action be taken in this case.

b. Patrol Boat Squadron One develop and implement standard operating procedures for WPB's operating on/near the banks. LT C.O.'s method of bow and open bridge lookouts, a full Navigation team and the RHIB scouting ahead for shallows may be a good place to start.

I

c. Obtain a NAVLINES capability for the ARPA on the WPB's and train all Commanding Officers and ODD's on how to use it correctly. Move the transducer forward on the WPB's soon. Equip the WPB's with an audible alarm fathometer, preferably one that also records the bottom contours to aid the OOD's in navigation. Immediately begin keeping records on electronic PMS and calibration/alignments. Either the boats or the Squadron should perform this function. Institute a pre-underway check-off, which includes the Squadron ET's careful check and review of the electronics status (including PMS) with the WPB Commanding Officers. This check-off should be completed one week prior to the scheduled departure date. Continue the pursuit to get more ET's at Squadron.

I.B. Ivestigating

MeTO

U.S. Department of Transportation
United States Coast Guard

Commander
Seventh Coast Guard District

Federal Building
909 SE 1st Ave, RM, 944
Miami, FL 33131-3050
Staff symbol: d
Phone: (305)536-5654

LT McGEE - INTERESTING!
PLEASE RETURN TO ME!
JTC//

16000
OCT 2 6 1988

From: Commander, Seventh Coast Guard District
To: Commander, Coast Guard Section, Greater Antilles
Commander, Coast Guard Group Key West
Commander, Coast Guard Group Miami
Commander, Coast Guard Group St. Petersburg
Commander, Coast Guard Group Mayport
Commander, Coast Guard Group Charleston

Subj: WPB GROUNDING

1. On 20 July 1988, a 7th District WPB 110 grounded on Great Bahama Bank. At the time of the grounding the cutter was proceeding at high speed attempting to intercept an unidentified contact which was apparently seeking refuge on the Bank. Shoal water was clearly charted.

2. As a result of this accident the cutter was seriously damaged and made unavailable for operations for a period of over 60 days. Direct repair costs amounted to $154,800. The cost of incidental services such as divers and a tow from Miami to the Yard increases the overall cost of this incident considerably.

3. My review of the investigation raises a number of issues which bear discussion. First is the notion that somehow the nature of the law enforcement mission justifies a departure from accepted principles of prudent seamanship. This is simply not the case. In the pursuit of our business at sea, suicide missions are neither intended nor admired. The objective is to pursue the mission diligently while remaining within the operational envelope of the resource. In this case the limits of the cutter were exceeded with grounding the result. Whatever the mission, a cutter should be so managed as to arrive on scene unimpaired and fully capable of doing the job.

4. Another disturbing thought which emerges in this case is that groundings in our OPAREA are inevitable and that they are thus an acceptable cost of doing business. While experience does indicate that groundings are inevitable, only in the rarest of instances (for example hitting an uncharted object), are groundings not the result of either negligence or errors in judgment. They may be a cost of doing business but by no stretch of the imagination are they an acceptable cost.

16CCO
OCT 1 8

Subj: WPB GROUNDING

5. The 110 ft WPB is thought by some to be an expendable resource provided for a drug interdiction mission of finite duration. Not so! This class of cutter will surely be with us for years to come as the replacement for cutters of the 82 and 95 foot classes. They are ships in every sense of the word and must be managed at sea with the same standard of care and prudence as all commissioned cutters of the Coast Guard.

6. Another misguided theme is the idea that because the 110 has a clutch speed of 11 kts and a maximum speed of 30 kts, speeds over 20 kts appear moderate and so become moderate in practice. This is nonsense. 20 plus kts is FAST...particularly when approaching shoal water.

7. A principal purpose in investigating operational accidents is to determine the causative factors so that lessons may be learned and reoccurences prevented. Investigations which focus more on rationalizing a preconceived recommendation as to disciplinary action than on getting to the root cause of an accident do little to improve our profession. I expect better.

8. Command of a Coast Guard patrol boat is a privilege bestowed upon only a fortunate few of our shipmates. With this privilege comes absolute responsibility and accountability for the safety of the cutter and her crew. This fact must be foremost and ever present in the minds of our commanding officers. Our performance and indeed our very existance as a seagoing service demands nothing less.

9. I expect that professional excellence at sea will be rewarded generously. A necessary corollary to this is that equity and objectivity demand appropriate documentation of unfortunate events as well as more positive accomplishments. Group and Section Commanders shall be guided accordingly.

10. Please ensure that your WPB commanders are apprised of my views on this subject.

MARTIN H. DANIELL

GROUNDING OF 82' WPB

AT MOLOKINI CRATER, HI

ON 11NOV95

November 1995

SUBJ: INVESTIGATION OF USCGC PT. REEF GROUNDING AT MOLOKINI CRATER NOVEMBER 1995

Findings of Fact

1. The USCGC POINT REEF went aground on a reef in Molokini Crater at 1837 hours November 1995.

2. The Commanding Officer of the POINT REEF, was the underway Officer of the Deck when the cutter ran aground.

3. The USCGC POINT REEF went aground in position 20-37.9N, 156-29.9W.

4. Prior to the grounding, there were no navigational fixes taken during any underway periods that day.

5. The Commanding Officer was the only person on the bridge when the grounding occurred.

6. The POINT REEF's Navigation Standards, signed by The Commanding Officer, require navigational fixes every 2 - 3 minutes in restricted waters. Restricted waters, as defined by the instruction, include channels or passages whose navigable breadth is one half mile or less.

7. Molokini Crater's navigable breadth is less than one half mile.

8. There were no personnel injuries as a result of the grounding.

9. Sunset occurred at 1757.

10. The Commanding Officer intended to moor the POINT REEF to one of the mooring buoys inside Molokini Crater and sent their small boat inside the crater to find the moorings.

11. The small boat had difficulty finding the moorings and returned to the POINT REEF to get an additional person to assist in locating the mooring buoy.

12. The small boat experienced engine problems, specifically a low lube oil alarm, and was ordered to return to the POINT REEF by the Commanding Officer.

13. The POINT REEF proceeded into the crater to expedite the recovery of the small boat.

14. The last known estimated position of the POINT REEF was when the Commanding Officer looked at the radar screen to center the cutter in the crater.

15. The Commanding Officer turned the POINT REEF to starboard, towards the reef, to effect a lee on the port quarter in order to recover the small boat.

16. At the time of the grounding, the POINT REEF just completed small boat recovery operations and had clutched in its engines with the intent to exit the crater.

17. The on scene weather was clear, winds from 020 degrees True, speed 12 knots (wind was blowing POINT REEF onto the reef), visibility was eight miles, seas were two to three feet.

18. The XPO was not onboard. He was returning from Small Arms Instructor school at RTC Yorktown. The QM2 was acting XPO.

19. The Commanding Officer was given his Miranda/Tempia Warning. The witness was the BM1. The Commanding Officer elected to make a statement.

20. The Special Sea Detail was set at 1830. There is no indication from any crewmember that setting the detail was piped over the ship's announcing system. When questioned, none of the crew could remember it being piped. The QM2 whose duty was on the bridge during Special Sea Detail, did not go to his post until hearing the engines slow down, after the Sea Detail was set. The QM2 was below decks in his rack.

21. The damage to the POINT REEF as a result of the grounding was a damaged port propeller, a bent shaft (although not bent enough to warrant an emergency repair), and scrapes and dents to the skeg. Estimated cost of the damage is $9164.00.

22. All equipment was in proper working order including the radar, compass and Global Positioning System (GPS). Equipment failure was not a factor in the grounding.

23. The chart used was 19347. It was corrected through Notice to Mariners 28/95, which was the latest correction. There were no track lines or fixes on this chart until after the grounding. 1850 was the time of the first fix.

24. A larger scale chart, taken from Charlie's Charts, was used to identify shoal water inside the crater. No fixes were plotted on this chart as it was not used for navigational purposes.

25. The tide was not a factor because it was within five minutes of high tide (slack water). High tide occurred at 1842. The current was setting the POINT REEF 180 degrees true at 0.75 knots.

26. The following narrative is a summary of the day's events based upon the entire evidence and questioning the crew by the investigative board. It is helpful to the investigation and the presentation of the facts that a summary of the entire day be included in order to understand the events preceding the grounding.

The POINT REEF was moored overnight the night to the Lahaina Channel mooring buoy in Maui, Hawaii. The cutter got underway for Lahaina to take on fuel at 0530. After taking on fuel in Lahaina, the POINT REEF got underway at 0655 to conduct boardings in the vicinity of Molokini Crater.

The cutter conducted boardings all morning, with The Commanding Officer on the bridge for virtually the entire period. The QM2 had the underway OOD and The Commanding Officer was providing the command situational awareness. During this entire period, no evidence of navigational fixes can be found. The Commanding Officer verbally admitted that no fixes were taken because of the varying nature of their operations.

At 1314 the POINT REEF responded to a report of a vessel in distress off of Makena Point, Maui. The cutter's small boat experienced engine problems during the response and had to be brought onboard the POINT REEF while the rescue was in progress. Maui Fire Department finished prosecuting the case while the POINT REEF departed enroute to Maalea Harbor to effect repairs. There is no evidence of any navigational fixes during this period either.

At 1733 the POINT REEF got underway after effecting repairs to the small boat. The small boat preceded the POINT REEF enroute Molokini Crater. The Commanding Officer was on the bridge with the BM2 as underway OOD. The intention was for the small boat to locate the mooring buoys in Molokini Crater and the POINT REEF to moor there for the night.

Approximately halfway from Maalea Harbor to Molokini Crater, The Commanding Officer relieved the BM2 of the underway OOD in order for him to brief the deck force on the mooring evolution. The Commanding Officer was left alone on the bridge. At 1830 the Special Sea Detail was set to enter Molokini Crater but there is no evidence that the command was passed over the ship's announcing system. Still no fixes had been taken up until this point.

SUBJ: INVESTIGATION OF USCGC PT. REEF GROUNDING AT MOLOKINI CRATER NOVEMBER 1995

The QM2 was below in his rack and did not report to the bridge for his assigned position during the Special Sea Detail. He did not know the detail had been set. Upon hearing the engines slow down, he got up and went to the bridge. The QM2 stated that he looked into the radar, realized it was on the wrong scale, changed the scale, but did not take a fix. At this point, the small boat was experiencing engine problems again so The Commanding Officer decided that mooring in Molokini Crater was not a safe thing to do. The Commanding Officer ordered the recovery of the small boat and turned the POINT REEF to starboard, towards the reef, in order to recover the small boat.

The Commanding Officer realized he was getting set towards the reef and at 1834, sent the QM2 down from the bridge to hasten the recovery of the small boat. This left The Commanding Officer alone on the bridge. The small boat was recovered and The Commanding Officer clutched ahead to exit the crater. Approximately thirty seconds later at 1837, the POINT REEF ran aground. General Quarters was sounded and condition Zebra was set throughout the ship. The Commanding Officer backed the POINT REEF off the reef and exited the crater on the starboard shaft.

General Quarters was sounded and condition Zebra was set throughout the ship. The crew responded well, checked all compartments and determined that there was no internal damage or flooding.

The QM2 set condition Zebra in his required zone then went to the bridge. He arrived at approximately 1840. The Commanding Officer had been alone on the bridge this entire period. The QM2 estimated the grounding position, then took the first fix of the day at 1850.

Opinions

1. The cause of the grounding was from a series of errors that built upon each other until the vessel was in a situation which they could not get rectify. The inexperience of the command coupled with poor judgement were the main factors. Failure to follow the ship's navigation procedures was also a major contributor to the incident. Loss of situational awareness by the Commanding Officer was a minor factor but played a part immediately prior to the grounding.

2. Based upon the facts as listed above, the board is under the opinion that the Commanding Officer used poor judgement by bringing his vessel into relatively unfamiliar waters after dark. His decision to moor in Molokini Crater was a poor decision and he did not exercise proper risk management in making the decision.

3. The Commanding Officer needlessly endangered his crew and hazarded his vessel. There was no operational reason for the POINT REEF to be inside Molokini Crater after sunset. Additionally, the Commanding Officer did not prepare his crew or his vessel adequately for the mooring evolution. Normally, during an evolution such as this, the cutter would have had two to four personnel on the bridge. There was no discussion or actual personnel assignment, despite the fact that it was an unfamiliar evolution and the cutter was missing experienced personnel. A navigational brief or some discussion of duty assignments is prudent seamanship. Commandant's Navigation Standards for vessels less than 180 feet require a checklist for entering restricted waters and recommends a navigation brief prior to entering restricted waters. Neither of these were completed prior to entering Molokini Crater. Team coordination, as taught in PCO School, would have eliminated the errors involved with personnel assignment.

4. The POINT REEF' underway OODs did not follow proper navigation procedures, not even the Commanding Officer. The Command Navigation Standards clearly indicate the frequency of navigational fixes for restricted waters. The fact that not a single fix was taken during any underway period that day (prior to the grounding) violates the Commanding Officer's Standing Orders and is also not prudent seamanship.

5. The Commanding Officer lost his situational awareness just prior to the grounding. When he sent the QM2 down from the bridge to assist in the recovery of the small boat he lost his second set of eyes that would have helped maintain situational awareness. The Commanding Officer was focused on the recovery of the small boat and did not realize how close he had come to the reef by turning to starboard. Additionally, when he turned to look back to receive the boat recovered report he did not get his bearings or a reference point prior to clutching in the

engines. A second set of eyes would have possibly seen the "big picture" and maintained situational awareness.

6. The unit procedures are sound if they are followed. Under normal circumstances, in a situation such as this, the XPO would have had the Deck and the CO would have had the Conn. This splitting of duties allows concentration on a single task instead of trying to manage multiple evolutions. What concerned the board, however, is the continual turnover of personnel that get underway when the POINT REEF sails. The unit, POINT REEF and SARDET Kauai, have a pool of nineteen assigned personnel. From this pool, the command selects a proper mix of ten personnel to get underway with the cutter. The others remain ashore to respond as a SARDET as directed by Group Honolulu. The constant change of personnel, required to cross train everyone, does not allow for continuity and synergy among the crew. This leads to personnel not being familiar with all assigned duties. This may have been a factor in the grounding.

Recommendations

1. The Commanding Officer be charged for violation of the Uniform Code of Military Justice, Article 110 (Improper hazarding of a vessel).

2. Due to the lack of prudence by The Commanding Officer, the board recommends a Letter of Reprimand be awarded as Non-Judicial Punishment

3. The POINT REEF conduct a navigational stand down to train its personnel in proper navigational procedures for all underway evolutions.

4. Group Honolulu conduct an Operational Readiness Evaluation on the POINT REEF after the navigational stand down. The should concentrate heavily on navigation procedures and underway drills.

5. Given the amount of damage to the POINT REEF and the fact that no personnel were injured, the board recommends that the Commanding Officer continue in his duties as Commanding Officer of the USCGC POINT REEF.

3. There is no proof or documentation to the Ships position anytime that night; there are only two direct navigational quotes pertaining to the position of the ship. They are:

a. The QM2 stated that the cutter started a half mile from the reef and drifted towards the crater.

b. The Commanding Officer stated that he passed through the center of the crater (according to the radar screen).

4. These statements are true to the best of my knowledge. I have attempted to reenact the exact position of the grounding based on the limited amount of information available.

I. R. Plotin

November 1995

From: QMC I. R. Plotin
To: President, Informal Investigation Board

Subj: INVESTIGATION OF USCGC POINT REEF GROUNDING

1. As requested, I am serving as a neutral party to determine the exact location of the grounding of the USCGC Point REEF. To the best of my navigational abilities, using statements from the Point REEF crewmembers, I have determined that the Point REEF ran aground in position 20-37.9N 156-29.9W.

2. The following factors contributed to my decision:

a. Based on the expected currents, using documented DMB data, the vicinity of Molokini Island sets 180 True at .75 kts.

b. The tide was not a factor because it was (slack) within five minutes of high tide.

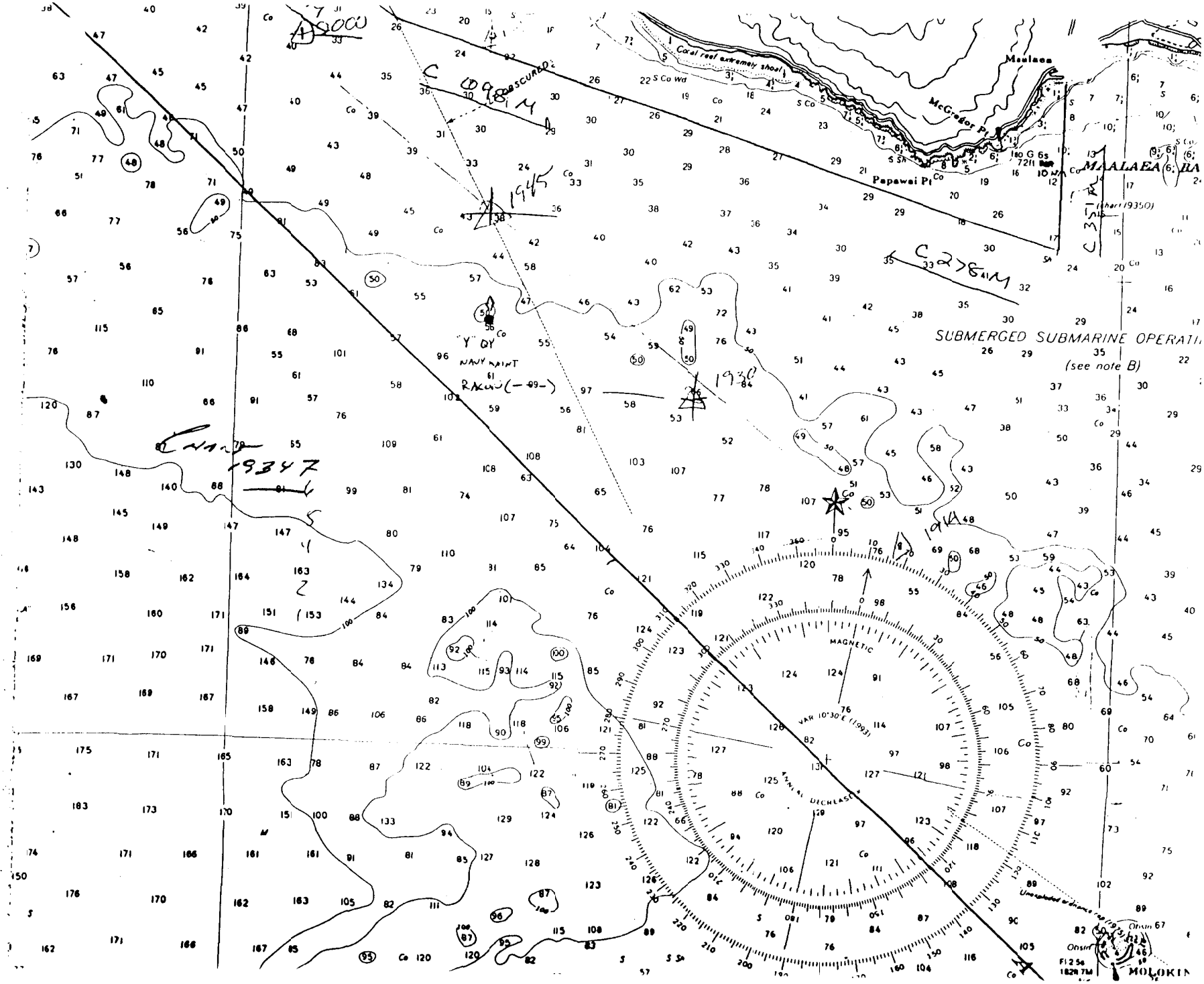
c. The Commanding Officer stated that he was in the center of the crater based on radar return. [This was fifteen minutes prior (1822) to grounding. There was no documented radar range error).

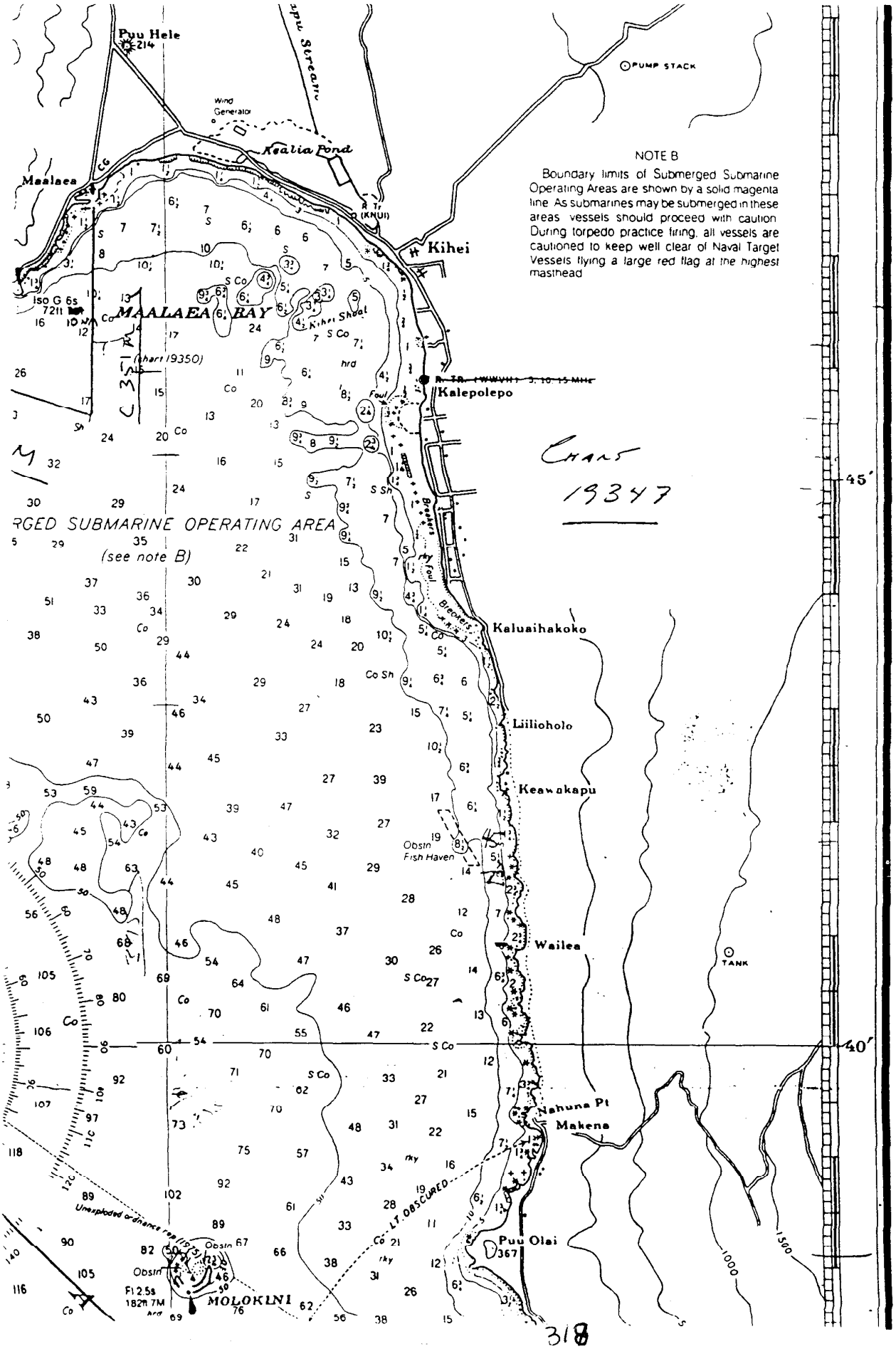
d. The Commanding Officer stated he was still drifting ten minutes later [1832), but getting set towards the crater walls. After that, he backed away, twisting to starboard. This twisting, left McGregor point light bearing 340 relative. [No fixes were taken). Three minutes later the small boat was recovered (1835) and secured for sea. Two minutes later, just after clutching in (1837), the boat hit bottom.

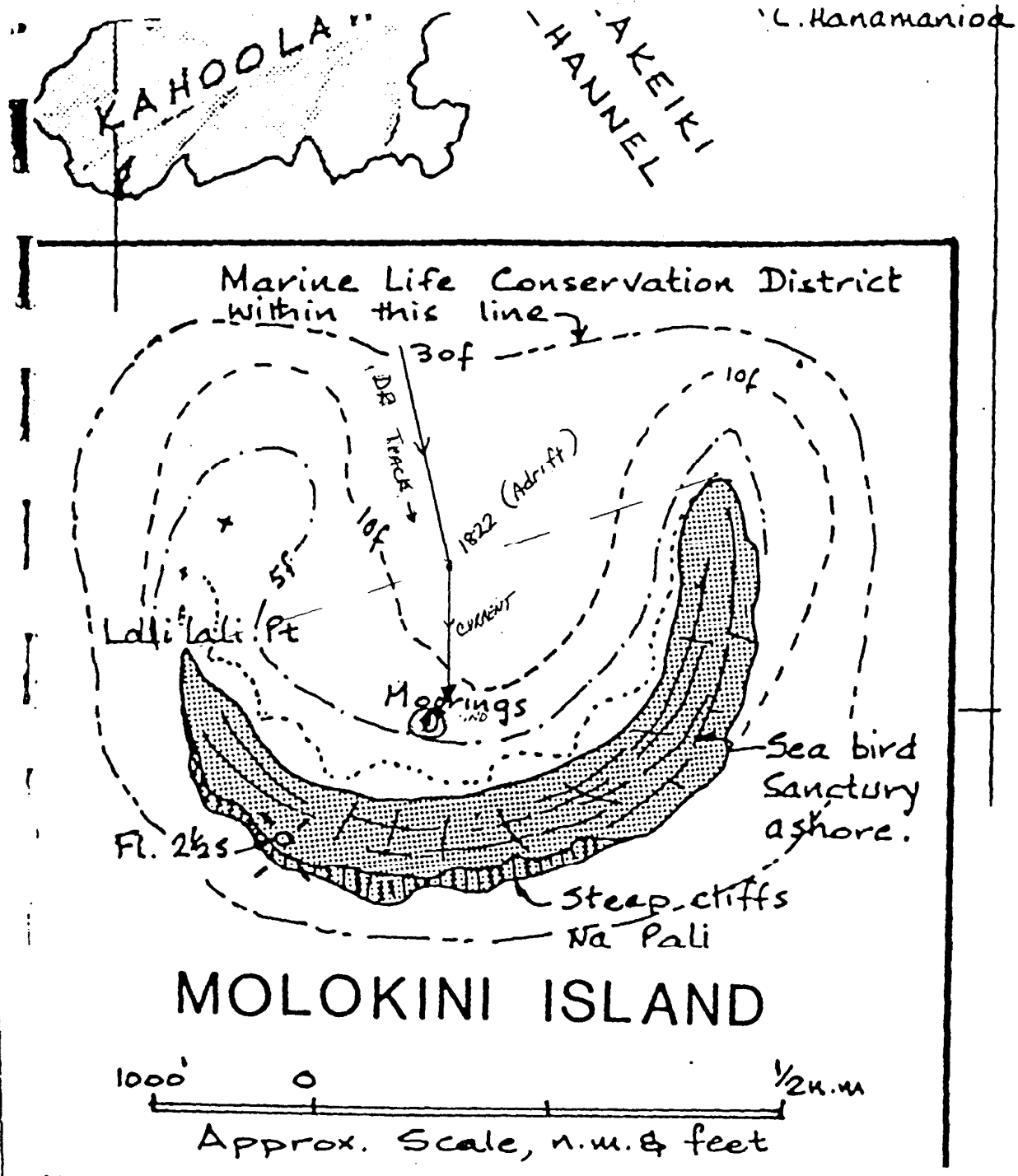
e. The Chronological log states that the boat touched bottom in position 20-38.1N 156-29.9W based on GPS (I assume). [I don't concur with this GPS reading. It is 400 yards to the North of my position were I suspect their grounding. If they were at this position, they would not have been inside the crater, but just outside the walls).

f. The anchor crew states that the mooring buoy is 150 yards from shore and ET2 states that the cutter was a short distance from the mooring ball. [The RHI was in the vicinity of the mooring ball, went back to the cutter got another crewman, went back to the mooring ball and found it, in just 15 minutes.

g. The SS2 said that at 1845, he looked off the starboard side and saw the bottom. This means the ships heading must have been approximately 010 Magnetic.


Coral reef extremely shoal
Maulaea
McGregor Pt
Papawai Pt
MAALAEA
SUBMERGED SUBMARINE OPERATI
(see note B)
MAGNETIC
VAR 10°30'E (1995)
DECREASING
MOLOKI


Puu Hele
214
Wind Generator
Kealia Pond
Maalaea
Kihei
PUMP STACK
NOTE B
Boundary limits of Submerged Submarine Operating Areas are shown by a solid magenta line. As submarines may be submerged in these areas, vessels should proceed with caution. During torpedo practice firing, all vessels are cautioned to keep well clear of Naval Target Vessels flying a large red flag at the highest masthead
MAALAEA BAY
Kihei Shoal
Iso G 6s
72ft
(chart 19350)
Kalepolepo
Chart
19347
RGED SUBMARINE OPERATING AREA
(see note B)
Breakers
Kaluaihakoko
Liilioholo
Keawakapu
Obstn
Fish Haven
Wailea
TANK
45'
40'
Nahuna Pt
Makena
LT OBSCURED
Puu Olai
367
Unexploded ordnance reported
Obstn
Fl 2.5s
182m 7M
MOLOKINI
1000
1500
318



⊗ POINT OF IMPACT 20-37.9N, 156-29.9W

→ CURRENT VECTOR (WINTER - HIGH TIDE 180°T @ .75 KTS est.)

↻ BACK/TWIST - MANUVERING TO STBD, BEAM TO CURRENT & SET SOUTH.

TIDE (NO FACTOR)

319

11/20/95

STANDARD BEARING BOOK
OPNAV FORM 3530/2 (7-74)

CHART # 1934

RECORD GYRO BEARINGS

LAHAINA, MAUI
PLACE

GYRO ERROR _____

10 NOV 95

DATE TIME	10 NOV 95 PT. A	PT. B	CPL			DEPTH
2000	1440	~~2343~~ ~~1043~~	950			75'
2030	1440	2350	930			75'
2100	1460	2350	970			75'
2130	1450	2340	950			75'
2200	1460	2345	960			75'
2230	1440	2350	950			75'
2300	1440	2350	940			75'
2330	1450	2340	950			75'
2400	11 NOV	95				
2430	1440	2350	950			75'
0100	1440	2330	950			75'
0130	1440	2350	970			75'
0200	1460	2350	970			73'
0230	1440	2370	950			75
0300	1460	2350	950			75
0330	1440	2370	950			75'
0400	1440	2370	950			75'
0430	1460	2390	960			70'
1850	20 39.6N	156 29.9W				N/m

Certified to be
a True Copy
LT, USCG

ENCLOSURE(

STANDARD BEARING BOOK
OPNAV FORM 3530/2 (7-74)

CHART # 19347

RECORD GYRO BEARINGS

SOUTH MOVI
PLACE

GYRO ERROR

11 NOV 95

DATE TIME	GPS					DEPTH
1914	20 42.37	156 32.37				20 FM
1930	20 43.9	156 34.8				
1945	20 45.4	156 37.1				
~~2000~~	20 47.7	156 39.5				
2015	20 49.6	156 42.2				
2030	20 52.0	156 46.4				
2100	20 56.2	156 50.6				N/m
2130	20 59.1	156 56.3				
2200	~~21 00.0~~	157 02.0				
2230	21 02.0	157 10.0	CHART	19351		
2300	21 02.6	157 17.0				
2330	21 03.6	157 22.4				
12 NOV 95						
0000	21 04.8 ~~21 05.2~~	157 29.6 ~~157 32.7~~				20 FM
0030	21 05.7	157 35.0				22 FM
0100	21 08.6	157 41.3				N/m
~~CHART~~	# 19357					
0130	21 11.9	157 47.2				N/m
0145	21 13.9	157 49.7				N/m

SOFT GROUNDING OF 82' WPB OFF OF BERKELEY REEF LIGHT SAN FRANCISCO BAY ON 06MAR83

From: LCDR I. B. Investigator, USCG
To: Commander, Coast Guard Group San Francisco

Subj: INVESTIGATION INTO THE SOFT GROUNDING OF USCGC POINT NO POINT (WPB 82000) ON 06MAR, IN THE VICINITY OF BERKELEY REEF LIGHT, SAN FRANCISCO BAY

Ref: (a) CG Supplement to MCM, 1969 (Rev.)
(b) Appendix II to Annex U, CCGD12 OPLAN

PRELIMINARY STATEMENT

1. This investigation was conducted pursuant to enclosure (1) during the period 10 to 22 March 19 , by this officer into subject incident.

2. LTJG CO was designated as a party to this investigation and was accorded his rights as a party in accordance with paragraph 0304 of reference (a), see enclosure (2). No other persons were designated as parties to this investigation.

FINDINGS OF FACT

1. LTJG CO is the Commanding Officer of USCGC POINT NO POINT (WPB 8200) and had the conn during the incident.

2. BM1 XO is the Executive Petty Officer of USCGC POINT NO POINT (WPB 8200) and had the helm during the incident.

3. POINT NO POINT was providing a tour of the Emeryville-Berkely waterfront for 22 members of the Berkely Waterfront Committee from 1308 to 1530, 6 March 19.

4. Weather on scene during the incident was overcast with approximately 8 miles of visibility, wind from the south at 5-10 knots, no significant wave conditions were present. The incident occurred approximately 2 hours after low tide, tide was flooding at about 1.5 feet above mean lower low water.

5. POINT NO POINT struck the bottom at 1352, 6 March, approximately 50 yards northeast of the Berkely Reef. Charted depht is 7 feet, fathometer indicated 7 feet beneath the keel.

6. POINT NO POINT freed herself at 1353, 6 March.

7. The piloting team was not being used during the period 1308 to 1530, 6 March.

8. There are no known submerged hazards to navigation between the Berkely Land Fill and the Berkely Reef.

9. No personnel were injured as a result of the grounding.

10. No damage was sustained to private property as a result of the grounding.

11. No damage was sustained to POINT NO POINT machinery or appurtenances as a result of the grounding.

12. POINT NO POINT sustained a dent on the skeg near frame 50, approximately 2 feet long, 2 inches deep, as a result of the grounding.

13. Estimated cost to repair the dent, In conjunction with her scheduled dry docking is 700k.

OPINIONS

1. POINT NO POINT was executing a mission that was proper and her duty to perform in providing the waterfront tour on 6 March.

2. The grounding would have occurred if the piloting team was set. The object struck was not charted and the indicated water depth was being monitored and agreed with the charted depth.

3. The actions taken and ordered by LTJG CO after the grounding were prudent and in agreement with accepted seamanship practices.

4. POINT NO POINT is capable of unrestricted operations and has not been significantly damaged as a result of the grounding.

5. POINT NO POINT Msg 080120 MAR, SITREP ONE and final report of grounding, should have been sent immediately following the grounding; rather than waiting for the damage assessment.

RECOMMENDATIONS

1. No disciplinary action be taken against any personnel.

2. POINT NO POINT be repaired in conjunction with her scheduled dry docking in July.

3. All boat crews be cautioned when operating in shallow water, even if the chart indicates no hazards present. Due to the severe storms it is possible that many shoals have formed.

4. A notice to mariners be issued to warn that a shoal exists in approximately four feet of water between the Berkley Reef and the Berkeley Land Fill.

I.B. INVESTIGATOR

From: Commander, Twelfth Coast Guard District
To: Commadant (G-LGL)

Subj: INVESTIGATION OF GROUNDING OF USCGC POINT NO POINT (WPB 8200) ON 6 MARCH IN THE VICINITY OF BEREKELY REEF LIGHT SAN FRANCISCO BAY

Ref: (a) Command at Sea Orientation Manual (CG-359)
(b) Safety and Occupational Health Manual, COMDTINST M5100.29
(c) U. S. Coast Guard Regulations, COMDTINST M5100.3
(d) Organization Manual for Patrol Boat (82' WPB)(CG-260-0-6)
(e) U. S. Coast Pilot, Volume 7
(f) COMDNOTE 1540 of 5 May 1982 as amended
(g) COMDTINST M1611.10A Chapter 3-B-1.C(3)

ACTION OF THE FINAL REVIEWING AUTHORITY

1. The probable cause of this grounding was a lack of adequate preparation, lack of navigation, and the poor judgment of the Commanding Officer. The result of these was that on a calm, clear day in San Francisco Bay a Coast Guard Cutter grounded near a distinctly charted shoal area.

2. I concur with Opinions 1, 3 and 4 of the Investigating Officer.

3. I did not aree with Opinion 2 for the following reasons. The grounding probably occurred because:

a. Departure drafts were not entered in the vessel's log as required by paragraph 4-2-2 of reference (c). The investigating officer should have determined the approximate or theoretical draft of POINT NO POINT at the time of the grounding and the effects of the additional people aboard the vessel. Reference (d), POINT NO POINT Organization Manual, describes the fully loaded condition wherein the ship draws 3 foot 7 inches forward and 5 foot 11 inches aft while displacing 67.5 long tons. Calculating the passenger weight (assuming 150 lbs each x 23 passengers) added 2.2. long tons to the vessel's displacement. The result draft with the added passenger was 3 foot 7 inches forward, 6 foot and 7 tenths of an inch aft.

b. There was no navigation team set, tracklines were not laid down, a plot was not maintained nor was a lookout assigned. Despite the clear weather inside San Francisco Bay these would have been prudent precautions when piloting outside marked channels in shallow water.

c. The Executive Petty Officer was left on the bridge apparently in charge of the vessel when the Commanding Officer twice left the bridge while underway. The Executive Petty Officer was not qualified as an Officer of the Deck as required by current directives. The XPO had not completed the required end of course test for navigation rules.

d. There is no evidence to indicated that the fathometer was either properly calibrated or was a accurate indicator in very shallow depths.

e. The POINT NO POINT was on a shoal within two hours of the time of predicted low water. The investigating officer should also have determined the exact height of the tide at the time of the grounding. The height of the tide at the time of the grounding was 1.1' above MLLW.

f. Page 1 of reference (e), U. S. Coast Pilot, makes two important point in a paragraph entitled Under Keel Clearances. First, It cannot be too strongly emphasized that even charts based on modern surveys may not show all sea-bed obstructions or the shoalest depths, and actual tide levels may be appreciably lower than those predicted. Second is an explanation of settlement and squat of ships in shallow waters. It states, Settlement is appresciable when the depth is less than seven times the draft of the ship, and increases as the depth decreases and the speed increases. The commanding Officer, POINT NO POINT should have heeded these warnings as the chart shows depths between a maximum of seven feet and Berkley Reef which is AWASH at MLLW, since his reconstructed draft was in excess of six and a half feet aft. For the above reason, I disagree with recommendation 4 of the investigating officer that a Notice to Mariners article is required; the area is correctly charted.

4. Opinion 5 is not complete in that a SITREP is not all that was needed. Reporting requirement for Vessel Mishaps are prescribed in reference (b), Safety and Occupational Health Manual. Also, the Commanding Officer's contention that he could not find guidance from all his operational directives and pertinent publications on the format for a report of grounding is regrettable. In at least three publications he has onboard references (a), (b) and (c) is to be found the pertinent discussion, definition and direction.

5. The recommendations of the Investigating Officer and the Action of the Convening Authority do not contain specific instructions or direction to prevent a reoccurrence of this or a similar incident. Towards this end I have instructed Commander Group San Francisco to:

a. Tighten this unit inspection. Many, if not all, of the discrepancies in POINT NO POINT operations would have been noted and corrected by a more aggressive and thorough progam of observation and evaluation.

b. Insure that his unit Commanding Officers and Officer in Charge are aware of and are complying with the effecive, appropriate regulations, instructions and directives concerning piloting and navigation.

c. Verbally counsel the Commanding Officer in accordance with reference (g).

6. Subject to the foregoing comments, the proceedings, findings of fact, opinions and recommendations, of the investigating officer, as commented and acted on by the convening authority, are approved.

HURRICANE DAMAGE TO 110' WPB IN GULF OF MEXICO ON 3-4OCT95

INVESTIGATION INTO THE CIRCUMSTANCES SURROUNDING THE DAMAGE TO USCC ISLAND CLASS (WPB) ON 3-4 OCTOBER 1995

ACTION OF THE CONVENING/FINAL REVIEWING AUTHORITY

The findings of fact, opinions, and recommendations contained in the report of the informal investigation, as supplemented; are approved with the following comments:

USCGC ISLAND CLASS suffered significant damage ($100K+) as a result of Hurricane Opal avoidance efforts and was lost as a Coast Guard resource for over three weeks while undergoing extensive repairs. In fact, had it not been for the extraordinary damage control efforts of her crew under very demanding circumstances, the ship may very well have been lost. I aplaud the performance of the crew of the ISLAND CLASS in taking prompt and effective action to save their ship.

Appropriate awards have been approved and forwarded to the Coast Guard Board of Awards.

In light of the grave nature of the actual and potential consequences of the series of decisions made and actions taken during this incident, I have undertaken a critical review with an eye toward improving unit hurricane survivability and preventing a recurrence.

Initially, I fully appreciate the unique pressures created by the approach of a major tropical cyclone. The rapidity with which the weather can deteriorate with the approach of the storm, and the violence of a hurricane, are difficult to visualize if they have not been experienced. Each decision may very well mean the difference between life and death; all of this against the background of a tempest whose direction and intensity are constantly changing. For those at sea feeling the brunt of the storm, this decisionmaking becomes even more difficult as the solitary ship is tossed about under the force of wind and wave and information becomes sketchier as lines of communication are stretched. In order to surive major storms demand the most complete planning, the timeliest and most prescient decisionmaking, and flawless seamanship. To mariners, hurricanes are amongst the greatest of challenges. In most cases, the safest procedure with respect to tropical cyclones is to avoid them.

If action is taken sufficiently early, while the vessel can still make considerable way, this is a matter of setting a course that will take the vessel as far as possible from center of the storm. Every effort should be made to avoid the dangerous semicircle, that is the half of the storm to the right of the storm track in the northern hemisphere. This case amply demonstrates the reason for that most basic guidance for small cutter commanding officers do not enter the dangerous semicircle of a hurricane. In all cases, the mariner must remain alert to changes in the direction of movement and speed of the storm and adjust accordingly.

In making a decision to leave or stay, the mariner must take into account the local climatology of tropical cyclones, the predictability of their movement, the speed of movement of both the storm and the potentially evading vessel, the seaworthininess of the vessel, the suitability of the current port, and the proximity and suitability of the intended destination haven.

Tropical cyclones in the Gulf of Mexico tend to have a large range of storm speeds and are notoriously unpredictalble. This, in combination with the shape of the Gulf of Mexico, and the scarcity of adequate hurricane shelters in the northern Gulf, encourage an early departure once the evasion option is selected.

The decision to sortie ISLAND CLASS from Panama City was made under just such demanding conditions. On the morning of 3 October 1995, it was evident that ISLAND CLASS's homeport mooring would be affected to some degree by hurricane Opal which was predicted to strengthen and enter the Group Mobile AOR within 48 hours. There were three major options considered in the selecting a safe haven for ISLAND CLASS and two other visiting 82' WPB's: (1) stay in port at the pier or at a designated hurricane mooring; (2) proceed west to Mobile, the gulf ports of Mississippi, or beyond; (3) proceed southeast to St. Petersburg or Key West.

The first option of remaining in the port of Panama City was rejected because of the fear that the designated hurricane mooring would have been unable to withstand the power of the predicted category IV+ hurricane and that the accompanying storm surge would wash over the pier facilities making them untenable. While this was then believed to be true, it should be noted that the Navy's 165' Asheville class patrol boats, tugs and other small craft remained in Panama city and rode out the storm without incident (a number of these vessels were in storage and could only be towed from port). In fact, ANT Panama city assisted the 165's by setting sinkers outboard of the ship's regular moorings to help hold them off the dock. The 55' ANT boat was undamaged at her storm mooring.

Based on the information available at the time the decisions were made, the decision to sortie ISLAND CLASS from Panama City was appropriate. Once the decision was made, the second and third options were weighed simultaneously as mutually exclusive alternatives. The advantages of proceeding westward included the availability of several adequate, although not superior, port facilities and removal of the vessels to the predicted navigable semicircle. However, the vessels would have to cross the predicted storm track and the speed of ICW travel could have been significantly slowed by other vessels evading the storm. The advantages of proceeding east would be that the storm track would not have to be crossed and that the ports of St. Petersburg and Key West were available, both being either outside or in the southernmost regions of any predicted strike area. The disadvantages included the lack of usable ports between Panama City and St. Petersburg, and travel through the dangerous semicircle.

In retrospect, either decision (to proceed west in the ICW or southeast to St. Petersburg) would have provided a safe transit and safe haven, if properly executed.

Several hours passed before the decision was approved at all levels to allow ISLAND CLASS to proceed southeast. Great concern existed among several members of Eighth District staff in approving the proposed course of action that would be a deviation from existing hurricane bills and put a relatively small vessel to sea in the dangerous semicircle of a major storm. Commander, Coast Guard Group Mobile was adamant that ISLAND CLASS be

allowedto proceed to the southeast. Eventually, however, the Eighth District did not object to the ISLAND CLASS's sortie plan.

Later, the Eighth District had to countermand Group Mobile's order to sortie the two visiting 82' WPBs in the wake of ISLAND CLASS - this could have resulted in disaster. The 82's were directed to proceed in a westerly direction; they took refuge in the port of Mobile and rode out the storm without incident.

In view of ISLAND CLASS's concurrently proceeding heavy weather and underway preparations, it is not clear exactly what, if any, impact this delayed decision had on the execution of the sortie. What is clear, however, is that the crucial decision on a prudent course of action for ISLAND CLASS should not have had to have been made on the spur of the moment. Hurricanes are sufficiently common in the Gulf region that I have required that detailed and current contingency plans be in place prior to the beginning of each hurricane season. Annex C of the CCGDEIGHT OPLAN 9780-35 requires that WPB's identify in their hurricane bill pre-selected refuge moorings. Earlier identification of alternative hurricane shelters allows for the rational consideration of alternative mooring sites well before an actual emergency arises. Plans must contain not only preparations for category III or smaller hurricanes, but also for major storms such as Opal.

In this case little consideration appears to have been given to existing hurricane contingency plans, probably because these plans were inadequate ISLAND CLASS's hurricane bill, which I have attached to the investigation as enclosure (52), lists a single potential hurricane mooring, the anchor buoy adjacent to Alligator Bayou in St. Andrews Bay. As noted previously, this mooring was determined by the commanding officer to be unacceptable in light of the projected strength of Opal. Once this alternative was rejected, there is no further guidance in the plan except to confer with OPCON regarding possible refuge locations for category III (or higher) storms. In effect, the existing hurricane bill provided no guidance or preplaning for catergory IV+ storms, those storms that demand the greatest degree of planning. The decision to allow a relatively small craft to put to sea in the face of a major hurricane such as Opal should not have had to have been made under urgent circumstances and without a full and detailed consideration of alternatives. This lack of preparation increased the potential for communications breakdowns and misunderstandings, and encouraged hurried and indecisive judgments.

For example, once the decision was made to sortie to the southeast, the next logical decision would have been to identify a suitable destination port. There was great confusion and misunderstanding regarding this crucial point. The commandiing officer, as set forth in the ship's MOVEREP and LOGREQ, believed when he departed at 1321R that he was headed for Key West. The Chief of Staff and Chief, Operations Division believed throughout this incident that the cutter's destination was St. Petersburg with Key West as an option only if the storm threatened St. Petersburg. At approximately 1630R, the Group Mobile Operations Officer, upon discovering that ISLAND CLASS was headed for Key West, ordered the vessel to St. Petersburg. The indecisiveness surrounding ISLAND CLASS's intended destination continued throughout the evening. At approximately 1900R, the Group Mobile Commander, after learning of the Operations Officer's order,

ordered that word be passed to the ISLAND CLASS that the commanding officer could decide which port to head for based on his best judgment. The commanding officer headed (again) for Key West this vacillation resulted not only in unnecessary confusion, but also in an increased transit for ISLAND CLASS as it altered course based on changed tasking. The single most important factor considered by the commanding officer in determining the choice of a suitable hurricane haven, a factor which was never passed to the Eighth District, was the Optimum Track Ship Routing (OTSR) port sortie recommendation received from the Navy on the morning of 3 Oct 95. OTSR recommended that seaworthy vessels depart Panama City at first light and proceed to the vicinity of Dry Tortugas. A minimum SOA of 10 knots in 12 foot seas was required; vessels unable to maintain that SOA were directed to seek best shelter inport or in protected waters. The commanding officer's reliance on the OTSR recorrmendation in this case was flawed for two primary reasons:

1. OSTR recommendations are intended for use by large, seagoing vessels (note that USS STEPHEN F. GROVES and USCGG COURAGEOUS both rode out this storm in the dangerous semicircle, without damage) and are not necessarily appropriate for Coast Guard patrol boats.

2. A perfectly adequate port of refuge, St. Petersburg (at which USCGC POINT COUNTESS rode out the storm without incident) was bypassed because of blind reliance on an OTSR recommendation.

While weather bulletins and forecasts, and ship routing recommendations are excellent guides, they are not a panacea and are not a substitute for thoughtful planning and reasoned judgment. Reports from remote sources are not infallible and may be sufficiently inaccurate, or insufficient for individual circumstances, to induce a mariner in a critical position to make a decision that may unwittingly increase the danger to his/her vessel. Execution of a well thought out plan supplemented by observations made onboard the vessel and decisions tailored to existing conditions is the most reliable method to ensure the safety of the ship.

The delay in getting ISLAND CLASS underway and the delays occasioned by the changed tasking necessitated an increased speed in order to make up time to clear the closing storm center. While initially acceptable for the existing sea state, the extra speed resulted in a very punishing ride once the vessel cleared Cape San Blas. There are many circumstances, hurricane avoidance being among them, that necessitate pushing equipment and people to their operating limits. Commanders must be keenly aware, however, that pushing the envelope may result in unanticipated, and often dire consequences. Risk assessment will remain a critical tool and responsibility of all commanders.

The decision to sortie the cutter having already been rnade, the high speed may well have been necessary and prudent given the then predicted storm track and the relative proximity of the intended destination port of St. Petersburg. However, the commanding officer's decision to continue to Key West at this extraordinary speed later in the evening was not prudent. The course change brought ISLAND CLASS closer to the center of the storm and necessitated a significant lengthening of the high

speed transit directly into the building seas and swells, continuing the punishing ride for both the vessel and the crew. Even fully accounting for all delays from all sources, had the vessel continued on to St. Petersburg, the vessel would have been safely in port at the time the flooding occurred. I find little to commend the decision to lengthen the hazardous voyage, to forego a proximate and adequate hurricane haven, and to turn into the teeth of the storm.

Operating the vessel at excessive speed for the existing sea state over an extended time period resulted in significant structural damage and endangerment of the vessel and her crew. The excessive operating; speed and the undertaking of the attendant risks were believed to be necessary by the commanding officer soley because of his misguided perception that he had no make up distance to comply with the SOA contained in an hours-old recommendation message. Blind adherence to an OSTR recommendation is not a substitute for the exercise of good judgment and proper seamanship.

The assumption by the commanding officer that Key West was the only acceptable hurricane haven on the west coast of Florida calls into question the initial decision to proceed to sea in the southeasterly direction. Transiting at exceptionally high speed into heavy seas for the entire length of the state of Florida in open waters in a 110' Patrol boat in order to find refuge from a rapidly moving hurricarne brewing in the confined waters of the Gulf reflects flawed judgment. The risk to a ship the size and light construction of the ISLAND CLASS over the exposed distance of more than 300NM is simply too great.

The commanding officer's decision to change course to Key West and forego the adequate refuge of St. Petersburg thereby requiring a continuation of the transit at excessive speed was imprudent and was the proximate cause of the casualty. Commander, Coast; Guard Group Mobile shall ensure that this incident is appropriately reflected in the commanding officer's next OER.

The decision by Commander, Coast Guard Group Mobile to contermand the order directing ISLAND CLASS to the nearest safe hurricane refuge was flawed and set the stage for the damage sustained by the vessel.

In light of the concerns I have set forth regarding the adequacy of Eight District hurricane planning and execution, expecially regarding the identification of hurricane mooring and the dispersal of cutter, Chief, Operations Division, shall unertake an intensive review of existing district hurricane mooring and dispersal plans. He shall also determine te availability of Team Coordination Training and coordinate the execution of this team training and exercises, shall be undertaken with an eye to correcting the deficiencies noted in this action. These improvements will be implemented prior to 1 June 1996, the official beginning of the next hurricane season.

I am also deeply concerned about the logkeeping procedures utilized by ISLAND CLASS. Logs are official records of the Coast Guard and have legal and historical significance. They must be accurate and maintained in accordance with existing instruction. In this case, new entries and revisions were made weeks after the events actually occurred and were based on after the fact judgments and consensus recollections of events and conditions. Changes were not annotated in any way; all the modifications

being made without the knowledge of the investigating officer as he was attempting to reconstruct the events as they occurred. These unauthorized alterations to official logs show poor judgment, create at least an appearance of impropriety, and are not acceptable. Commanding Officer, USCGC ISLAND CLASS shall conduct a comprehensive review of Coast Guard logkeeping procedures with all members of the crew.

In the same vein, I am also concerned that the crucial communications underlying the decision made in this incident were not recorded on existing Eighth District Command Center telephone lines. The absence of a complete record of communications has hindered the reconstruction of events, especially the analysis and timing of decisions made. Chief, Operations Division, shall ensure that measures are taken to preserve future critical command communications and decisions via the use of recorded telephone line or other appropriate methonds.

A copy of this report will be sent to Commandant (G-ENE) for considerations and possible implementation of the ISLAND CLASS naval engineering improvement recommendations set forth in the report of investigation. The original report of this investigation will be maintained at the Eighth District Legal Office

This case is closed.

GROUNDING OF 82' WPB

IN ENGLISHMAN BAY

ON 03MAY95

of Transportation
United States
Coast Guard

USCGC [redacted]

Rockland, ME 04841-3498
Staff Symbol: [redacted]
Phone: (207) 596-6763

5830
13 May 95

From: LCDR [redacted], USCG
To: Commander, Coast Guard Group Southwest Harbor

Subj: INVESTIGATION OF THE GROUNDING OF USCGC POINT [redacted] (WPB 82[redacted]), ENGLISHMAN BAY ON 3 MAY 1995

Ref: (a) CG GP Southwest Harbor ltr 5830 of 3 May 95
(b) Administrative Investigations Manual, COMDTINST M5830.1
(c) Coast Guard Regulations, COMDTINST M5000.3B
(d) Cutter Navigation Standards and Procedures, COMDTINST 3530.2
(e) Navigation Standards and Procedures, [redacted] 3530.1
(f) Standing Orders for Deck Watch Officers, [redacted] 3530.2
(g) Cutter Training and Qualification Manual, COMDTINST M3502.4D

Preliminary Statement

1. At 0823Q on Wednesday 3 May 1995, USCGC POINT [redacted] (WPB 82[redacted]) ran aground in position 44° 35.90' N 067° 30.00' W, on Boundary Ledges in Englishman Bay.

2. In accordance with references (a), (b) and (c), a one-officer informal investigation was conducted to determine the circumstances surrounding the grounding of USCGC POINT [redacted] (WPB 82[redacted]) in Englishman Bay on 3 May 1995.

3. Upon mooring at CG Station Jonesport following the grounding, BMCM [redacted], Officer In Charge of POINT [redacted], had key members of his crew and the bridge team prepare statements. These statements were completed with no corroboration. As a result, exact times of events vary to some degree. These statements were presented to the Investigating Officer (IO) following POINT [redacted] transit from Jonesport, ME to American Shipyard in Newport, RI on 8 May 1995. The IO interviewed the key players after reading each statement in order to rectify discrepancies and to accurately reconstruct the events leading up to the grounding.

4. BMCM [redacted] and the crew of POINT [redacted] were extremely cooperative in providing statements and information to the IO.

Findings of Fact

That:

1. At 2220Q on Tuesday 2 May 1995 following a day of patrolling under the OPCON of CTU 44.1.1 and completing two law enforcement boardings along the US/Canadian border, POINT [redacted] anchored north of Roque Island, ME in Shorey Cove position 44° 35.52' N 067° 31.40' W with the intention of steaming south out of Englishman Bay and out to the US/Canadian border on Wednesday morning in search of draggers working over the border. (Enclosures 2, 3, 5 & 20)

2. At 0800Q on Wednesday 3 May 1995, underway preparations were completed and the anchor detail was set. (Enclosures 4, 14 & 16)

3. Weather conditions at 0800Q 3 May 1995: Winds-050 degrees true/9 kts, *Visibility-10nm, Barometer-30.08 steady, Temperature-*Dry Bulb 45 degrees F, Sea/Swell Waves-none noted. (Enclosures 4 & 14)

FACTS #4 - #14 EXPLAIN NAVIGATION DATA AND NAVIGATION PRACTICES USED ABOARD POINT [redacted] THE DAY OF THE INCIDENT. IN ACCORDANCE WITH REFERENCE (B), THE INVESTIGATING OFFICER CHOSE [redacted] USCG, EXECUTIVE OFFICER ABOARD USCGC THUNDER BAY (WTGB 108), "A COMPETENT OFFICER, NOT ATTACHED TO THE SHIP INVOLVED AND NOT A MEMBER OF THE ADMINISTRATIVE INVESTIGATION, TO WORK UP THE RECKONING OF THE SHIP FROM THE DATA AVAILABLE TO ENABLE THE INVESTIGATIVE BODY TO FIX THE TRUE POSITION OF THE SHIP AT THE TIME OF TAKING THE GROUNDING." THE RECREATED NAVIGATIONAL PLOT WAS DONE IN BLACK PEN WITH HIGHLIGHTED FIXES AND ESTIMATED POSITIONS.

4. POINT [redacted] routinely uses GPS, LORAN C and radar ranges to fix the ship's position while underway. There were no casualties to the electronic navigation equipment on 3 May 1995. The radar had been tuned by Group Southwest Harbor ETs approximately three weeks prior to the incident. Radar error was posted as 0 degrees on 3 May 1995. The fathometer was set on the correct mode (feet). (Enclosures 6, 7 & IO's interview w/OIC)

5. POINT [redacted] magnetic compass was last swung on 6 October 1993. Zero deviation was recorded for all headings. It was noted that the compass was slow to respond indicating a new pivot and jewel would be needed. BMCM [redacted] was aware the compass status, however, he is confident in the compass as he regularly determines compass error by azimuths of the sun and using shadow bearings. (Enclosures 13 & 21)

6. POINT [redacted] OOD's are unable to use visual turn bearings or take visual danger bearings as both peloruses were removed and replaced with two spot lights sometime before BMCM [redacted] *assumed command.* (IO's interview w/OIC)

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7. POINT [redacted] had drafts recorded prior to sailing as follows: 3' 7" Forward and 5' 11" Aft. (Enclosure 2)

8. BMCM [redacted] correctly computed the tides by a hand held Tide Finder computer. However, they were not posted. The tide state at the time of the grounding (0823Q) was +0.3 feet above MLLW and rising (low tide was at 0754Q with a height of +0.2 feet above MLLW). Currents were not calculated by POINT [redacted] The current at the time of the grounding was ebbing at 0.39 kts in the direction of 215 degrees true.
(Enclosures 11, 12 & IO's interview w/OIC)

9. On 3 May 1995, Chart 13326, the largest scale available for the area, was being used by the Conn. No corrections were made as none have been issued for the new 12th edition. POINT [redacted] uses the automated Notice to Mariners system. Soundings were in feet. (Enclosures 5, 7, 15 & IO's interview w/OIC)

10. Hazards were not marked on the chart nor was the ship's navigational draft (18 feet) used to mark shoalwater. A trackline to take the ship from the anchorage to the 135 degrees magnetic trackline (which was laid to take the ship through Englishman Bay and have the cutter pass 200 yards to the northeast of Boundary Ledges) was not laid on the chart. Tracklines were not labeled. A DR plot was not maintained. Set and Drift were not determined. Objects for fixing positions were labeled only in the vicinity of the anchorage in Shorey Cove. Turn bearings/ranges were not used, advance and transfer were not used in turns and danger bearings/ranges were not used as required by reference (d). (Enclosures 5, 6 & 9)

11. Radar ranges were taken and recorded in the Standard Bearing Book from the time of anchoring on 2 May 1995 until 0700Q 3 May 1995 in order to fix the ship's position. Minimum/Maximum safety ranges were designated for each radar point. Several ranges were recorded during this period that fell below the minimum and above the maximum. At 0735Q on 3 May 1995, a GPS fix was recorded, plotted on the chart and verified by LORAN C. The next fix recorded and plotted on the chart was 0825Q (two minutes following the grounding). The 0735Q and the 0825Q fixes were the only two fixes on the chart, however, they were not marked with the times. (Enclosures 5, 6 & 7)

12. There is a discrepancy between the fix recorded in the Standard Bearing Book at 0825Q (GPS checked by LORAN C) and the fix plotted on the chart. The IO discovered that the ship's 0825Q fix that was laid on the chart was taken by radar (arcs were evident), however the objects and the ranges were not recorded in the Standard Bearing Book. BMCM [redacted] informed the IO that POINT [redacted] QM1 took a radar fix and wrote the ranges on a separate piece of paper following the grounding while the BM1 took a GPS fix and recorded it in the Standard Bearing Book. The QM1 used radar ranges to the following points: the north point of Shoppe Pt. (770 yards), south point of Shoppe Pt. (770

yards), closest point to Great Head (1050 yards), Boundary Ledges (960 yards) and Marsh I. (1690 yards). This explains the 90 yard difference from LTJG [redacted] plotted position of the 0825Q fix (he used the GPS data recorded in the Standard Bearing Book) and the QM1's fix (a radar fix). Considering the state of the tide and the recorded drafts of POINT [redacted], the 11 foot depth recorded by fathometer in the Standard Bearing Book at 0825Q would fix the ship on the 14 foot curve directly between the two fixes. (Enclosures 5, 6, 7, 8 & 11)

13. A Nav brief was not conducted prior to sailing. (IO's interview w/OIC)

14. Material Condition Yoke was set the entire day of the incident. (Enclosure 4)

FACTS #15 - #19 EXPLAIN THE PERSONNEL ON WATCH AND INVOLVED IN THE INCIDENT.

15. BM1 [redacted] (XPO), who reported aboard July 1994, was the Conning Officer. He was somewhat familiar with the area as this was his second time in Englishman Bay. He has an Interim Certification as an underway OOD in accordance with reference (g) as he has not completed his Personnel Qualification Standards (PQS) for underway OOD. However, he does not have a letter in his record that documents this Interim Certification. His tours prior to this assignment included: LEDET [redacted] as a BM1 (91-94), Station [redacted] as a BM1 (OOD and Coxswain) (88-91), USCGC [redacted] as BM3 to BM2 (QMOW and Buoy Deck) (85-88), Station [redacted] as a BM3 (Coxswain) (82-85) and Base [redacted] as a SN (82). BM1 [redacted] stated to the IO that he still feels new at his job and compared this feeling to "learning to walk again." He stated that he still has a hard time comparing the radar picture to the chart. BMCM [redacted] stated that BM1 [redacted] is at times, completely overwhelmed with all his duties, that his last assignment at the LEDET did little to prepare him for his duty as XPO, that his MLE experience has greatly benefited the unit and that he works tirelessly to perform all of his duties in a professional manner.
(Enclosures 4, 16 & IO's interview w/OIC & BM1 [redacted])

16. QM1 [redacted]. (Operations Petty Officer and Navigator), who reported aboard May 1994, was on the bridge as a safety observer. He had conned the ship into the anchorage the evening of 2 May 1995. He has an Interim Certification as an underway OOD in accordance with reference (g) as he has not completed his PQS for underway OOD. However, he does not have a letter in his record that documents this Interim Certification. He has passed the CG Institute NAVRUL course, but has failed on two occasions to pass the CG Deck Watch Officer Exam as required in reference (g). Although he is the designated navigator, he is technically not eligible as he does not meet the requirement in reference (d) that he be a fully qualified underway OOD. His tours prior to this assignment included: USCGC [redacted] as a QM3

to QM2 (91-94)(came into the CG as a QM3 after serving in the Navy), Naval Reserve 80 foot mine warfare ships as a QM3 (U/W OOD) (88-90), 600 foot Navy Amphibious ship as a QMSR to QM3 (85-88). QM1 [redacted] will be departing the CG in August 1995 as he was "expecting the CG to be a lot different from the Navy." BMCM [redacted] has counseled QM1 [redacted] on several occasions for his failure to properly carry out his duties as Navigator, his failure to properly mark hazards on charts and his failure to lay down tracklines.
(Enclosures 2, 17, 18 & IO's interview w/OIC & QM1 [redacted])

17. SA [redacted], who had been aboard for five months, was the Helmsman and Lookout at the time of the grounding. He has not completed PQS for this watch station.
(Enclosure 19 & IO's interview w/SA [redacted])

18. BMCM [redacted] (OIC), who reported aboard April 1994, was not on the bridge at the time of the grounding. He was extremely familiar with area as he had once served as OIC of CG Station Jonesport. His tours prior to POINT [redacted] included: OIC of USCGC POINT [redacted] as a BMCM (91-94), OIC Station Jonesport as a BMCS (88-91), OIC USCGC [redacted] as a BMC (87-88), OIC Station [redacted] as a BMC (84-87), XPO ANT [redacted] as a BM1 (83-84), XPO USCGC [redacted] as a BM1 (80-83), Station [redacted] as a SA to BM1 (the last 4 months as XPO) (76-80). In October 1980, with 4 years and 1 month in the CG, he was certified at the D1 OIC Review Board for both SAR and ATON (ashore and afloat). (Enclosures 20 & 21)

19. MK2 [redacted] (Acting EPO) was the Engineer of the Watch and was in the engine room securing the fire pump at the time of the grounding. (Enclosure 22)

20. MKC [redacted] (EPO) was on regular leave. (Enclosure 22)

FACTS #21 - #29 RECONSTRUCT THE EVENTS IMMEDIATELY BEFORE, DURING AND IMMEDIATELY FOLLOWING THE GROUNDING. THEY ARE BASED ON THE WRITTEN STATEMENTS AND THE INVESTIGATING OFFICERS' INTERVIEWS.

21. At 0806Q 3 May 1995, the anchor was aweigh and BM1 [redacted] maneuvered POINT [redacted] 500 yards to the north of the anchorage and turned the cutter to a southwesterly heading to keep the anchor detail out of the wind while the anchor was washed down and secured. (Enclosures 4, 14, 16 & 20)

22. At 0816Q, the anchor was secured. MK2 [redacted] departed for the engine room to secure the fire pump and make a round. BM1 [redacted] set the "normal u/w watch" consisting of the OOD, EOW and Helmsman as this area was considered "familiar restricted waters" in accordance with reference (e). SA [redacted] took the helm. QM1 [redacted] took a seat on the port side of the bridge to observe the evolution. The "modified navigation detail" was actually ~~in~~ being followed as a safety observer was on the bridge in accordance with reference (e). BMCM [redacted] went below to use the head in his cabin. (Enclosures 9, 16, 17, 19, 20 & 22)

23. The last fix before the grounding was taken by GPS and verified by LORAN C at 0735Q prior to weighing anchor. BM1 [redacted] did not fix the ship's position after the anchor was secured or before he started maneuvering out of Englishman Bay. (Enclosures 5, 6, 7 & 10's interview w/BM1 [redacted])

24. At 0817Q, BM1 [redacted] had SA [redacted] steer 065 degrees magnetic to bring POINT [redacted] around Great Head at a radar range of 700 yards to put the cutter in a charted depth of 31 feet. After getting in deeper water, Boundary Ledge Buoy Green Can #5 (LLNR 1200) was bearing 020 degrees relative, approximately 500 yards off the starboard bow. BM1 [redacted] ordered right five degrees rudder to go around Great Head and to get closer to buoy #5. (Enclosures 5, 16, 17 & 19)

25. At 0820Q with right 5 degrees rudder still on, BM1 [redacted] increased shaft RPMs to 500 (12.5 kts). At 0822Q, BM1 [redacted] was piloting by seaman's eye and determined the cutter to be too far right of where he thought the cutter should be. Buoy #5 was now bearing 030 degrees relative, approximately 200 yards off the starboard bow. BM1 [redacted] checked the chart and the radar and ordered "left 5 degrees rudder and steady on course 135 degrees magnetic." After hearing the order, SA [redacted] did not steer left 5 degrees rudder. Instead, he picked up the binoculars, looked at and reported what appeared to be debris or seaweed in the water to the east of Boundary Ledge Buoy #5 (the general area of the intended track). After about 10 seconds, SA [redacted] put the binoculars away and turned the helm to the ordered rudder command. (Enclosures 16, 17, 19 & 23)

26. At 0823Q as POINT [redacted] steadied on course 135 degrees magnetic, buoy #5 was approximately 40 yards off the starboard beam. As the cutter moved closer to the debris, QM1 [redacted] saw the water swirling and stated, "I wonder what is causing that whirlpool action." The cutter was now moving between 10 and 12 kts. Within seconds, POINT [redacted] keel struck a ledge making the cutter's stern lift up and heel to port. The engines were immediately brought to neutral by SA [redacted]. The wake and the cutter's momentum carried and dragged the keel across the ledge and back into safe water. QM1 [redacted] left the bridge to inform the crew and to inspect the forward part of the ship. (Enclosures 14, 16, 17 & 19)

27. BMCM [redacted] had finished using the head and was sitting on the edge of his bunk thumbing through a copy of National Fisherman when he felt the cutter strike the ledge. As he exited the cabin, looking aft, he saw buoy #5 off the starboard quarter at about 35-50 yards. While proceeding to the pilot house, he felt the stern raise up and the cutter heel to port before drifting to a stop. At 0825Q, upon reaching the pilot house, BMCM [redacted] surveyed the situation, observed a kelp bed to the northwest of the cutter's position, set General Quarters, ordered BM1 [redacted] to take a GPS and LORAN C fix and ordered QM1 [redacted] back to the bridge to take a radar fix. Within minutes, all

compartments and voids had been inspected for signs of damage or flooding. No damage was evident.
(Enclosures 5, 7, 8, 14, 16, 17, 20, 22 & 24)

28. With the cutter in safe water, BMCM [redacted] sent MK2 [redacted] to the engine room while he tested the shafts. BMCM [redacted] found no major vibrations at low engine RPMs. At 0835Q, he deployed the RHIL with QM1 [redacted] and SA [redacted] to attempt to determine the position of buoy #5 and the ledge position using a hand held GPS receiver. At 0901Q, QM1 [redacted] plotted the GPS position of buoy #5 (44° 35.91' N 067° 30.08' W) and it appeared that the buoy was 100 yards to the west of the buoy's chart position. QM1 [redacted] determined the position of the ledge and that of the grounding to be 44° 35.90' N 067° 30.00' W.
(Enclosures 4, 5, 14, 16, 17, 19, 20 & 22)

29. Between 0846Q and 0858Q, after recovering the RHIL and testing the shafts and rudders, BMCM [redacted] discovered the port shaft had a severe vibration at 1250 engine RPMs and the starboard shaft had a severe vibration at 1350 engine RPMs. He determined it safe to bring the cutter back to homeport, Jonesport, at a speed of 8.5 kts. CTU 44.1.1 and Group Southwest Harbor were informed of the incident by radio and cellular phone respectively. POINT [redacted] moored in Jonesport at 1000Q.
(Enclosures 4, 14, 20 & 24)

30. BMCM [redacted] hired a diver to assess the damage on 3 May 1995. It was determined that POINT [redacted] would need emergency dry docking. POINT [redacted] was scheduled for routine dry docking 22 May-26 June 1995. POINT [redacted] transited from Jonesport, ME to Newport, RI (American Shipyard) in the company of several D1 Group small boats from 5 to 7 May 1995.
(Enclosures 14, 25, 27 & 28)

31. POINT [redacted] was dry docked on 9 May 1995. A brief description of damage includes: cracks and holes along the entire length of the skeg, dents and ripples along the skeg shell plating, large dents at web frame 43 for 6 feet and 8 feet forward of bulkhead 60, two large cracks at bulkhead 60 and 70 and extensive damage to both propellers. The initial damage report on 9 May 1995 seemed to indicate a need for total skeg replacement and replacement of both propellers. The cost repairs would be approximately $80,000. The time to make repairs would be approximately 30 days. On 11 May 1995, NESU Boston and MLC representatives reevaluated the situation and are contemplating replacing the propellers and only replacing several sections of the skeg. This would bring the cost down to approximately $30,000 and would take approximately 14 days. NESU Boston and MLC representatives are waiting for another proposal from American Shipyard. (Enclosures 26, 32 & IO's interview w/MKCS [redacted] (MLC) & OIC)

FACTS #32 - #36 EXPLAIN THE RECENT HISTORY OF BOUNDARY LEDGES BUOY #5 (LLNR 1200)

32. Boundary Ledges Buoy #5 is a 3CR (a third class/green can/radar reflective) with serial number 3C78164 (third class/made in 1978/the 164th buoy of this type built in 1978). It has a 5000 pound sinker, 75 feet of 1 1/8" chain, has an accuracy class of "C", has a tolerance radius of 75 yards, and a watch circle radius of 24.18 yards. The buoy's assigned position (AP) is 44° 35'54.282" N 067° 30'03.968" W. (Enclosure 29)

33. Buoy #5 was serviced, had a mooring check and position check using DGPS on 6 July 1994 by USCGC [redacted]. It was on station and left watching properly when USCGC [redacted] left the buoy. USCGC [redacted] revisited the buoy on 13 July 1994 following the grounding of S/V Heart Beat. The buoy again was found to be on station using DGPS and left watching properly. (Enclosure 29)

34. At some point prior to 19 April 1995, Station Jonesport received complaints from local mariners about the position of buoy #5. This prompted Station Jonesport to investigate the buoy's position. Using GPS, Station Jonesport found the aid to be slightly off station. They also noticed the ledges extended beyond the buoy's AP. This was confirmed at mean low water where the ledge is clearly visible. The symbology on the chart marking Boundary Ledges even indicates a "rock awash" (meaning a rock that becomes exposed or nearly so, between chart sounding datum and mean high water). They added that at the buoy's present position, a vessel could run aground by passing close aboard going southeast or northwest. Station Jonesport submitted a letter with this information to D1 (oan) via Group Southwest Harbor on 19 April 1995. (Enclosures 5 & 29)

35. One week before POINT [redacted] grounding, while moored at Group Southwest Harbor, BMC [redacted] OIC ANT Southwest Harbor asked BMCM [redacted] to check out a green can buoy #5 in Jonesport AOR near Roque Island if he was going to be in that area. BMCM [redacted] was not sure if it was buoy #5 in Chandler or Englishman Bay, but he did not press BMC [redacted] on which one it was. BMC [redacted] stated to BMCM [redacted] that he had received a letter from BMCS [redacted], OIC Station Jonesport, about the buoy. BMCM [redacted] told BMC [redacted] that he would take a look if he had the chance. BMCM [redacted] had totally forgotten about this request until after the grounding. BMCM [redacted] had originally planned to be offshore and in Eastport during his patrol week. BMCM [redacted] stated that he would have remained on the bridge the morning of the grounding had he remembered BMC [redacted] request. (Enclosure 21 & IO's interview w/BMC [redacted])

36. On 5 May 1995 at 1220Q with the tide state at +10 feet, following POINT [redacted] grounding, QM2 [redacted], USCGC [redacted] traveled to Station Jonesport with a DGPS receiver and a 20 foot extension antenna to position check buoy #5 in Station Jonesport's RHI. He found the buoy to be on station and watching properly (207 degrees true at 3.5 yards from AP). (Enclosure 29)

37. Several recommendations were made in an investigation following POINT [redacted] lost propeller on 30 September 1994. One recommendation stated "Navigation standards, Standing Orders, and log keeping practices must be properly drafted, promulgated and followed. PT [redacted] should be given a period of two to three weeks in charlie in homeport (or at the Group), with access to a CGSW, modem and laser printer to complete these tasks. Priorities must be assigned, and have been assigned well, but it is too dangerous to continue operating outside the guidelines set by Commandant for the sake of expediency. This task is too large for the crew of PT [redacted] to effect alone, and aid should be rendered from Group Operations and similarly configured vessels, where applicable." (Enclosure 30)

38. BMCM [redacted] stated to the IO that he had not seen the recommendations of that investigation and the IO provided a copy for his review. However, BMCM [redacted] has since drafted Navigation standards and Standing Orders and although they were not officially promulgated until 5 May 1995, they were being followed by POINT [redacted] crew. They are attached as enclosures. (Enclosures 9, 10 & IO's interview w/OIC)

39. The Damage Control PQS and Damage Control training program are in place on POINT [redacted]. The PQS and JQR programs for all other watch stations as outlined in reference (g) were not being followed aboard POINT [redacted]. On 11 May 1995, BMCM [redacted] ordered all reference materials to comply with reference (g) and began to formalize the PQS and JQR programs.
(Enclosure 21 & IO's interview w/OIC)

40. BMCM [redacted] was awarded the Meritorious Service Medal while serving as OIC of USCGC [redacted] for his efforts to develop a consolidated PQS book for 82' WPBs. The process was not complete before his departure from D13. (Enclosure 21)

41. When BMCM [redacted] took command of POINT [redacted], a PQS program was nonexistent. (Enclosure 21)

42. BMCM [redacted] has been working on editing a complete set of all the PQS combined on Document Designer that are specific for 82' WPBs. (Enclosure 21)

43. The LANTAREA Operations/Mobility Training Team visited and trained POINT [redacted] from 15-19 August 1994.
(Enclosures 21 & 31)

44. All formal resident and pipeline training was completed in accordance with reference (g). (IO's interview w/OIC)

45. A unit training level assessment based on reference (g) for the last twelve months was conducted on 8 May 1995 by BMCM [redacted]. POINT [redacted] was 100% complete in all required shipboard drills and exercises.
(Enclosure 21 & IO's interview w/OIC)

46. QM1 [redacted] attended the newly formed Operations Officer/Bridge Resource Management course at USCGA in February 1995. (Enclosure 21)

47. BM1 [redacted] attended the OPS/MOB Navigation and Piloting Refresher course sponsored by USCGC [redacted] in Rockland, ME in April 1995. (Enclosure 21)

48. The POINT [redacted] had holiday routine on 1 May 1995. POINT [redacted] got underway for patrol at 0930 2 May 1995. POINT [redacted] was at anchor from 2220Q 2 May 1995 until 0806Q 3 May 1995. All members of the POINT [redacted] crew on the bridge on 3 May 1995 stated that they were not fatigued. (Enclosures 2, 3, 7 & IO's interview w/OIC, QM1 [redacted], BM1 [redacted] & SA [redacted])

49. BMCM [redacted] describes his operational tempo as busy. He stated that since he installed new engine hour meters on the Main Diesel Engines in August 1994, POINT [redacted] has logged over 1100 actual underway hours. From 22 August 1994 to the end of September 1994, POINT [redacted] covered for other D1 WPBs during the Haitian crisis and logged 307 hours (29 days underway averaging 10.6 hours underway per day). (Enclosure 21 & IO's interview w/OIC)

530

50. No personnel injuries were suffered as a result of the grounding. (IO's interview w/OIC)

COLLISION OF WPB WITH CG PIER DURING 09 SEP 95 HURRICANE

HISTORY

A. At 081300Q September 95 CGC POINT QUAY returned to homeport after Hurricane LUIS storm evasion and related SAR and resumed a scheduled CHARLIE maintenance status. The cutter was underway for approximately four days with a brief stop in Martinique for fuel. There were no mechanical problems with the vessel during this period but it did experience degraded HF communications (limited range) and inoperative feet indication on the fathometer. The surface radar experienced the loss of range rings, the Variable Range Marker (VRM) and a poor quality picture. GANTSEC's Electronics division was briefed upon the cutter's return to homeport and a technical assist visit was scheduled for 12 September. No CASREP message traffic was initiated and notifications to GANTSEC staff were not made.

B. On 12 September GANTSEC Electronic Technicians (ET) arrived as scheduled. Fathometer and HG communication degradations were repaired. Troubleshooting on the radar continued.

C. At 140640Q GANTSEC directed CGC POINT QUAY to assume Hurricane Condition Three.

D. At 140800Q CGC POINT QUAY initiated an oil change which included both main diesel engines, reduction gear and ship service generators.

E. At 140858Q CGC POINT QUAY reported to GANTSEC that Hurricane Condition Three was set, meaning the cutter had assumed a BRAVO-2 status. The oil change was still in progress.

F. At 141400Q the HURRIWARNLANT (141800Z) Storm forecast position for 160200Q was 18.7n 65.8w, 20 NM east of San Juan, PR with maximum sustained winds at 80 knots and gusts to 95 knots. The storm track continued to be revised to the east.

G. At 141500Q GANTSEC ETs depart St. Thomas. A three hour operational test of the radar was completed and the unit was determined to be fully functional.

H. At 141515Q GANTSEC (ole) ordered the Commanding Officer of CGC POINT QUAY (via phonecon) to get underway as soon as possible in accordance with a recently promulgated hurricane evasion tasking message and proceed directly to Base San Juan, PR for fuel and further storm avoidance tasking. GANTSEC had not been briefed concerning ongoing oil change. CGC POINT QUAY Commanding Officer expressed his desire to remain at homeport and is again directed to get underway.

I. At 141550Q the Commanding Officer of CGC POINT QUAY advised GANTSEC OPCEN that his estimated time of departure from St. Thomas would be 142000Q. The reason given for the delay in departing was the need for crew members to gather personal effects. The GANTSEC OPCEN watchstander understood 2000Q to be CGC POINT QUAY's estimated time of arrival at Base San Juan and arranged for refueling at that time. No mention of the ongoing oil change was made during this phonecon.

J. At 142000Q CGC POINT QUAY was at Special Sea Detail. The oil change was completed at 1700Q and sunset was observed at 1825Q. The radar display suddenly vanished and a burning smell was noted in the athwartships passageway. The MK1 indicated that the smell could be as a result of the recently completed oil change. There were no obvious indications on the radar control unit of electrical damage although the

Commanding Officer believed it was a burning smell associated with a CHARLIE class fire. The radar unit was not accessed for inspection.

K. At 142030Q the first in a series of phone calls between CGC POINT QUAY and duty officers at GANTSEC were initiated with the report of the radar casualty. The Commanding Officer expressed the desire to remain in St. Thomas overnight due to safety related concerns of making a nighttime transit to Base San Juan, PR without an operational radar. The GANTSEC Command Duty Officer (CDO) coordinated a plan to have CGC TREASURE ISLAND, underway in the vicinity of St. Thomas, to escort POINT QUAY to Base San Juan. The commander of GANTSEC was briefed by the CDO and concurred with the plan. He directed the CDO to brief CGC POINT QUAY that it was with his strong recommendation that the cutter depart under escort but that the ultimate decision remained with CGC POINT QUAY. CGC POINT QUAY declined to get underway, citing the concern that the escort vessel could be diverted for SAR during escort. GANTSEC's Commander was briefed on CGC POINT QUAY's decision. At that point he considered relieving the Commanding Officer of CGC POINT QUAY with either the current Commanding Officer of CGC TREASURE ISLAND or one of his OPCEN duty officers that had previous 82' WPB experience. The TREASURE ISLAND CO relief was ruled out and the OPCEN controller option was also dismissed as there was not sufficient time to safely transport him from San Juan to St Thomas . A direct order was not given to direct CGC POINT QUAY to proceed to Base San Juan under escort. CGC POINT QUAY then expressed the desire to moor at a cruise ship mooring buoy located in Charlotte Amalie Harbor and remain there as the storm passed. The decision was made by GANTSEC that CGC POINT QUAY would get underway at 150600Q and proceed directly to Base San Juan.

L. At 150600Q the CGC POINT QUAY Commanding Officer arrived onboard and at 0615Q contacted the GANTSEC CDO and again expressed his desire and ability to safely remain in St. Thomas based on his evaluation of storm forecast data. The CDO reviewed the hurricane pattern and, based on his best case estimate of a 0800Q departure time for CGC POINT QUAY, recommended to GANTSEC Commander that due to the possibility CGC POINT QUAY could be overrun by the storm due to its unexpected, delayed departure and no vessels now in position to assist in the event CGC POINT QUAY suffered a mechanical casualty, the only option remaining was for CGC POINT QUAY to ride storm out on cruise ship mooring buoy as recommended by its Commanding Officer. GANTSEC's Commander concurred and CGC POINT QUAY was directed remain in St. Thomas.

M. At 150910Q CGC POINT QUAY was secured to the Coast Guard mooring buoy. The radar was fully operational when the cutter departed the pier at 0845Q. The EPO was not onboard. The Commanding Officer had previously approved his scheduled 151320Q departure from St. Thomas in support of TAD orders. The flight was canceled on the morning of the 15th but the EPO did not make any attempt to return to the ship or notify them that he was remaining in St. Thomas.

N. At 151100Q GANTSEC's CO, OPS, OLE and CDO were in conference discussing hurricane status. The OPCEN CDO contacted CGC POINT QUAY via cellphone for a status update and determined that CGC POINT QUAY was not at the cruise ship mooring buoy but was actually secured at a Coast Guard mooring buoy in anchorage A-2. The GANTSEC ATON Officer was directed to gather all available data on the mooring buoy. A letter from USCGC BLACKHULL dated 27 July 95 was presented to the GANTSEC Commander which contains an opinion that neither the sinker nor chain is designed to hold a ship the size of an 82' WPB in anything other than light weather conditions. CGC BLACHULL was contacted but did not provide any amplifying data other than a fax of the

most recent aid positioning data sheet and maintenance results. The option of taking the entire crew off the vessel was then considered and briefed to CGC POINT QUAY. GANTSEC's final decision was to have crew remain onboard. Specific tasking as to securing the cutter to the anchor chain vice buoy and placement of an additional anchor to be used as a tension indicator was passed to CGC POINT QUAY and complied with. A 5" three strand line with 40 feet at the forward bit was secured to the mooring chain using the unit rescue swimmer deployed from the RHI. The anchor was set 20 degrees to port with 100 feet of line at the bit. Strain was equal on both lines and the cutter's heading was 090 degrees magnetic. A second, standby anchor was rigged on the foc'sle. The small towing hawser was used for this anchor and was rigged forward from the main hold and pushed under the ammunition boxes but not lashed down.

O. At 152030Q both main diesel engines were placed on-line. The crew was mustered to reset chaffing gear. Estimated winds were 080/75 knots. (anemometer inoperative prior to getting underway)

P. At 152300Q generators were placed in parallel. CGC POINT QUAY sighted numerous vessels breaking mooring/dragging anchor, some in close proximity to the ship.

Q. At 160041Q the Commanding Officer sounded the collision alarm as a sailing vessel was approaching close aboard to port. The XPO successfully avoided the collision by using both throttles and rudders. Based on VHF conversation with the M/V LADY SALVOR, also anchored in the harbor, wind velocity was estimated at 100+ knots and shifting to the south.

R. At 160100Q CGC POINT QUAY heard a marked difference in wind noise. It was observed by the Commanding Officer and Executive Petty Officer that the Coast Guard Pier, being used as a danger range reference point and marked with the VRM, was moving within the danger circle. All hands were piped topside to cut lines. The BM2 and SA were directed to discontinue putting on safety harnesses and tending lines and proceed immediately to the foc'sle to cut the anchor line and line attached to the mooring buoy. The vessel continued to be pushed to the northwest as the bridge was reluctant to come ahead until they could confirm that both lines had been cut. The XPO attempted to keep the bow of the Cutter into the winds and seas.

S. During station keeping and prior to lines being cut the XPO lost the starboard engine. Just prior to receiving the report of the engine casualty the MK1, stationed on the fantail, observed a capsized, submerged 15' by 7' blue hulled P/C go under the starboard quarter. He laid to the engine room and was able to restart the starboard engine immediately, noting a grinding noise and the thud of something hitting the hull on the starboard side under the cutter. Thirty seconds later the XPO reported the loss of the port engine to the MK1 who returns to the engine room. Post event examination confirmed one of the cutter's lines (backup anchor line rigged but not secured on the foc'sle most likely fell over port side when Cutter started taking heavier roles after becoming detached from the mooring buoy) was fouled in the port prop. During this time the BM2 and SA made their way to the foc'sle. The line to the mooring buoy had already parted and the BM2 cut the anchor line free. CGC POINT QUAY immediately fell beam to the wind and four foot seas. The XPO attempted to move the cutter's bow through the wind by using the starboard shaft. His interpretation of the radar picture was that the Cutter was 150 yards west of the west end of the Coast Guard Pier.

T. Just seconds after the anchor line was cut and the port engine was put back on line by the MK1, CGC POINT QUAY hit the southwest end of the Coast Guard Pier and took an estimated 45-50 degree role to port. Personnel were located on the bridge, on the foc'sle,

in the engine room, in the athwartships passageway or clinging to the port side lifelines or handrail on the super structure. Approximately the forward third of the cutter impacted the pier prior to being pushed back to a more upright position on the north side of the pier face. Storm surge continued to drive the cutter until it came to its final resting place on top of the harbor's waterfront pier. Both engines and generators were still on line after CGC POINT QUAY came to final position.

GROUNDING OF 95' WPB

OFF OF ELVIN COVE, AK

Memorandum

U.S. Department of Transportation
United States Coast Guard

Subject: COMMENTS CONCERNING GROUNDING OF NINETYFIVE ON 4 SEPT 19[redacted] NEAR ELFIN COVE, ALASKA

Date: MAY 15 19[redacted]

5830

From: Chief, Cutter Division

Reply to Attn of: G-OCU
Riley: 267-1509

To: Chief, General Law Division

Ref: (a) G-LGL memo 5830 dtd 15 April, 19[redacted]
(b) COMDTINST 3530.1, Cutter Navigation Standards and Procedures

1. The investigative report attached to reference (a) was reviewed by my staff with the following comments:

a. Reference (b) was published in an attempt to avoid just this type of mishap. A cutter entering a relatively unfamiliar port, especially at night, must exercise extreme care. Reference (b) provides guidelines for safe cutter navigation in restricted waters. Stationing a navigation detail, (even a modified detail; one individual plotting the vessel position at regular intervals) probably would have averted this mishap. While navigating by "seamans eye" when proceeding in or out of a vessel's homeport under excellent conditions, may be considered by some as "prudent", the possibility of error is still too great. Even in the best circumstances, the "prudent" navigator will go "by the book".

b. Although assigning the helmsman the duties of the lookout may not have been a contributing factor in this case, it is not in keeping with the spirit of Rule 5 of COMDTINST M16672.2A, Navigation Rules, International-Inland. IMO recommendations on Navigational Watch-keeping state that "no duties shall be assigned or undertaken which would interfere with the keeping of a proper lookout". The recommendations further state that "the duties of the lookout and helmsman are separate and a helmsman who is steering is not a lookout".

R. A. LUCK

NOTE:
This investigation has been reproduced for instructional purposes only. The names, dates, and units have been removed as a professional courtesy to those involved. Please make the best use of this material to learn from other's misfortunes. If you happen to know the names of the people or units involved please observe the professional courtesy and don't mention them. Remember; there but for the grace of God ....

Memorandum

U.S. Department of Transportation
United States Coast Guard

Subject INVESTIGATIVE REPORT: GROUNDING OF USCGC NINETYFIVE ON 4 SEP 19[redacted] NEAR ELFIN COVE, ALASKA

Date 15 APR 19[redacted]
5830

Reply to Attn of G-LGL: 267-1553

From Chief, General Law Division

To Chief, Operational Law Enforcement Division
Chief, Safety Programs Division Wiling 4/11
Chief, Cutter Division
Chief, Search and Rescue Division MDR by dir 5/21
Chief, Naval Engineering Division D 6/2/8[redacted]

Ref : (a) CG SUPP. MCM (CG-241)

1. Subject investigative report is forwarded for your information. Although final action has already been taken on the report by the cognizant district commander pursuant to the authority contained in Section 0209 of reference (a), it is considered that its contents may include matters of particular interest to you. Please make comments on this form or attach a separate memo placed beneath this form in the package and forward the file to the next addressee. Please do not remove anything from the file, and please ensure the routing forms remain visible.

2. After review by all addressees, please return the report to G-LGL for filing. Comments and recommended changes to the routing of this (or this subject matter) report are solicited.

K. J. BARRY
By direction

Encl: (1) IR # 101-[redacted]

US Department of Transportation
United States Coast Guard

Commander
Seventeenth Coast Guard District

P O Box 35000
Juneau, AK 99802
Staff Symbol (dl)
Phone (907)
586-7397

5830
IR-17-15
JAN 6 19

INVESTIGATION INTO THE CAUSE AND CIRCUMSTANCES SURROUNDING
THE GROUNDING OF USCGC C NINETYFIVE)
ON 4 SEPTEMBER 19 NEAR ELFIN COVE, ALASKA

ACTION OF THE CONVENING AND FINAL REVIEWING AUTHORITY

The findings of fact, opinions and recommendations of the Investigating Officer, are approved subject to the following comments:

On the evening of 4 September 19 NINETYFIVE was underway in the vicinity of Elfin Cove on a general law enforcement patrol. NINETYFIVE earlier in the day had departed from Yakutat. some 140 miles away. The assigned bridge watch onboard NINETYFIVE that evening consisted of C.O. the Commanding Officer acting as the OOD, CONN serving as the "break-in" POOD, and ~~SN~~ J. DOE assigned as the helmsman/lookout.

At approximately 2133, NINETYFIVE altered course to 142 degrees true for the final three mile leg into Elfin Cove. At that time, the tide in the vicinity of Elfin Cove was flooding in a direction of 080 degrees true at approximately 2.8 knots. Once NINETYFIVE had steadied on course 142, C.O. directed CONN who had previously assumed the Conn, to steer on the four-second flashing white light marking the western side of the entrance to Elfin Cove. C.O. further instructed BM2 CONN that "when . . . closer to the entrance" to come left. At this point C.O. stepped out onto the starboard bridge wing to watch for signs of a rock located approximately 325 yards northwest of the entrance to Elfin Cove. Sometime later CONN directed the helmsman to steer to the left of the white entrance light. C.O. because of his position on the starboard bridge wing, did not hear CONN order to change course and CONN never informed him of the course change.

After having been on the starboard bridge wing for an unknown period of time, C.O. noticed right bearing drift of both the pier at Elfin Cove and the entrance light. He entered the bridge and quickly realized the vessel was too close to the shoreline on the eastern side of the channel. He immediately pulled back the throttles to clutch and ordered the helmsman to come right ten degrees. J. DOE , the helmsman, already having his rudder at right 10 degrees, increased it to right 20 degrees. At 2145, the NINETYFIVE ran aground in position 58° 12.3' North, 136° 21.35' West. There were no injuries as the result of the grounding. The cost of repairs resulting from this incident were $7,122.57.

12 JAN 19

359

IR # 101

The primary cause of the grounding of the NINETYFIVE can be isolated to a few salient facts. First, when the turn to 142 degrees true was made for the final leg into Elfin Cove, the position of the NINETYFIVE was never established. The last fix taken by the NINETYFIVE was at 2124, some twenty-one minutes before the grounding and eight minutes before the final turn into Elfin Cove was made. C.O. was well aware that his vessel would experience a flood tide during the entrance to Elfin Cove, which would set his vessel towards the eastern side of the channel. However, he neglected to take a fix after the turn. Next, C.O. by his preoccupation with the location of a known hazard off the starboard side, placed himself in position such that he was unable to observe or hear the commands given by CONN Finally, C.O. failure to clearly advise CONN of the desired time when he should come left "when . . . closer to the entrance" of Elfin Cove, set the stage for the ultimate grounding of the NINETYFIVE

A vessel grounding, even when the damage is minor, is a serious event. The responsibility imposed on commanding officers for the safe navigation of their vessels is a demanding one, especially here in southeast Alaska. This incident is particularly noteworthy because it represents the second time the NINETYFIVE has been aground in just over 12 months while under the command of C.O.

I am concerned over the apparent absence of any kind of a briefing, formal or informal, on the situation that could be expected on approaching and entering Elfin Cove. There is no evidence to indicate any discussion of the hazards, such as the kelp-covered rock that had to be cleared, the current that could be expected, procedures that might be taken if an emergency arose, or other clues to determine if everything was going normally, ever occurred. I am disappointed not to find that these precautions had been taken when this was the commanding officer's first trip into Elfin Cove at night, the POOD was "breaking-in" and the helmsman had never been at the wheel during prior entries to Elfin Cove. A more heightened awareness of the potentially dangerous circumstances would have been prudent. The Chief, Operations Division is directed to make pre-port entry briefings a standard requirement in the District SOP for all vessels entering port except when appropriate circumstances dictate otherwise.

Notwithstanding the above facts, while I find C.O.s actions reflect several errors in judgement on his behalf, other factors serve to mitigate the seriousness of these errors. These factors include, C.O.s perceived need to risk a night approach into Elfin Cove in order to remain in compliance with the minimum fuel requirements of the District SOP, the professionalism with which he responded to the grounding minimizing the extent of the damage to his vessel and his effectiveness in directing his crew's response to the emergency.

APPENDIX A

FINDINGS OF FACT

1. Finding of Fact 1. Also pertinent is the fact that [redacted] C.O. assumed command of USCGC NINETYFIVE on 31 May 19[redacted]. Since that time he has conducted numerous law enforcement patrols and search and rescue efforts throughout southeast Alaska.

2. Finding of Fact 4. It should be noted that NINETYFIVE departed Yakutat on 4 September 19[redacted].

3. Finding of Fact 8. The basis for this fact is Annex I to CCGD17 SOP No. 1 - (YR), Paragraph G, which requires District vessels (except STORIS) to maintain as a minimum, 75 percent of their fuel capacity onboard at all times. Vessels shall refuel whenever they are at or below the minimum required fuel level. (Enclosure 30).

4. Finding of Fact 15. The NINETYFIVE Organization Manual assigns the duty of lookout as follows:

a. When underway in a normal watch section, the helmsman serves the dual role of steering the vessel and acting as the lookout. He is expected, to the extent possible, to perform both jobs simultaneously.

b. A separate lookout is normally only assigned during periods of reduced visibility (rain, fog, snow, smoke). When a separate lookout is assigned, it shall be their sole duty to act as lookout and they shall be stationed as far forward as possible. (Enclosure 24).

5. Finding of Fact 19 should correctly read: NOAA Chart 17302 (Icy Strait and Cross Sound) is the largest scale chart for entering Elfin Cove. (Enclosure 15).

6. Finding of Fact 24. From his position on the starboard bridge wing, C.O. could not see off the port side of the vessel to determine how close he was coming to the westernmost point of land. He also could not hear the commands given to the helmsman by [redacted]

7. Finding of Fact 25. Also pertinent is the fact that [redacted] CONN never informed C.O. that he had directed the helmsman to alter his course and steer to the left of the entrance light. (Enclosure 4).

8. Finding of Fact 47. Additionally, I take notice of the fact that the Personnel Qualification Standard System, COMDTINST M3502.3, is not incorporated into the unit training plan.

OPINIONS

1. I disagree with Opinion 7. While the weather was generally favorable and sufficient visual navigational aids were present to lessen the risk of entering Elfin Cove at night, the risk was still significant. C.O. stated he was "comfortable" with a night approach. However, his actions belied this statement. C.O. prior trip into Elfin Cove occurred during the day when conditions were significantly different. Further, his concern with the location of the rock northwest of the entrance to Elfin Cove was sufficient to distract his attention from the overall navigation of his vessel and represented a significant factor in the grounding of ~~CAPE~~ NINETYFIVE

2. I Agree with Opinion 9 only in part. The opinion correctly points out that the radar is but one of several aids to be utilized in the safe navigation of a vessel. However, to the extent that this opinion infers that the radar would have been of little assistance in apprising the OOD of the fact the vessel was straying too far from the intended track line and subsequently into danger, I disagree. A significant factor in the grounding of NINETYFIVE is the fact that no fix was taken after the final turn was made into Elfin Cove. The availability of the radar to quickly indicate at least a relative position of the vessel to surrounding points of land, albeit on a small scale, may have been enough to alert the commanding officer of the impending danger.

3. I agree with the first sentence of Opinion 12, to the extent that not setting a special sea detail in this situation could be considered normal, when compared with the practices of other Seventeenth District WPB commanding officers. However, I disagree with the assertion that setting the special sea detail is of limited value because it provides dated information. Setting the special sea detail (or navigational detail) improves a commanding officer's flexibility. It allows him the opportunity to better oversee the entire operation of his vessel rather than having to focus on a single aspect. In this case, C.O. 's preoccupation with the location of a known hazard, focused his attention on that single aspect. Had he elected to set the special sea detail, or alternatively appoint a specified individual to serve as a bow lookout, he may have been able to recognize the impending danger sooner.

4. I agree in general with Opinion 16. The completeness of NINETYFIVE 's underway training and navigation drills reflect favorably upon the unit as indicated by the recent District Inspection and PACAREA Training Team visits. However, I am concerned that nowhere in this investigation is any reference made to the utilization of the Personnel Qualification Standard (PQS) System in determining when an OOD will be qualified to stand underway watches without supervision. The primary purpose of this system was to develop a uniform procedure to qualify OOD's and to clearly establish an individual's competence prior to certification.

RECOMMENDATIONS

1. I disagree with Recommendation 4. There currently is sufficient guidance provided to WPB commanding officers in the Seventeeth District SOP, Annex I on when to set the special sea detail. Requiring a commanding officer to set the special sea detail whenever within a specified distance of land (i.e. five miles) would necessarily require setting the special sea detail virtually whenever steaming in southeast Alaska. The decision when to set the special sea detail must remain within the sound discretion of the commanding officer, to be deterimined on a case by case basis.

2. I agree with Recommendation 5 in part. NINETYFIVE s Ship's Organization and Regulations Manual should accurately reflect those procedures actually practiced. However, it should only reflect those procedures if they are prudent as well. In this case, blindly following "common practice among Seventeenth District WPB skippers" was inappropriate. The commanding officer in this situation by his own actions, demonstrated he was sufficiently concerned about the location of the hazard near the entrance to Elfin Cove that he allowed himself to become focused on acting as a lookout. His actions prevented him from overseeing the overall safe navigation of his vessel. The Chief, Search and Rescue Branch is directed to insure that any revisions to the Ship's Organization and Regulations Manuals reflect those procedures which are both prudent and practical.

3. I disagree with Recommendation 6. Currently annual visits by Program Managers, the District Inspector and PACAREA Training Team are being made. While program managers are obviously concerned with the safe operation of the vessels, they are also concerned with other support aspects of the vessel. I do not believe that requiring the program manager to deploy annually with each of the WPB's within the District, to observe standard operating practices, would add measurably to the level of competence of the commanding officer or the crew.

4. I disagree with Recommendation 7. The term "breaking-in" by its very nature connotes that the person serving in that position is less than fully qualified and supervision is required. Further, during a crucial maneuvering evolution in restricted waters such as this, supervision of a trainee on watch would obviously be essential. The PQS system specifically delineates those skills a POOD/OOD is expected to be able to perform before being designated as a qualified OOD. The Commanding Officer, ~~USCGC~~ NINETYFIVE is directed to implement the standards and procedures contained in the PQS system in qualifying OOD's.

5. In addition to those recommendations previously included, the following supplemental recommendations are approved;

Recommendation 8: This investigation provides many valuable lessons learned and will hopefully serve as a useful aid in the prevention of future incidents of this type. The Chief, Search and Rescue Branch shall insure that an appropriately "sanitized" copy of this action is made required reading for all Seventeenth District CO's and XO's of floating units, and all deck watch officers and XPO's.

Recommendation 9: As noted in this investigation, contributing factors to this incident were the District SOP's requirement that (1) all vessels proceed at their best economical speed except in certain enumerated instances, and (2) that all vessels shall maintain at least 75 percent of their fuel capacity on board at all times, returning to port to refuel whenever they fall below this level. NINETYFIVE 's transit time from Yakutat at its best economical speed prevented it from reaching Elfin Cove before dark. However, the vessel's fuel state at that time was at the point where the SOP required it to refuel. The Chief, Operations Division is directed to review the feasibility of reducing the minimum fuel to be maintained onboard to 60 percent of capacity and changing the requirement to return to port from "shall" to "should".

US Department of Transportation
United States Coast Guard

Commander
Seventeenth Coast Guard District

P.O. Box 35000
Juneau AK 99802
Staff Symbol (m)
Phone (907) 586-7351

5830

2 OCT 19[redacted]

From: LCDR I. B. INVESTIGATING ~~USCG~~, Investigating Officer
To: Commander, Seventeenth Coast Guard District (dl)

Subj: INVESTIGATION INTO THE GROUNDING OF THE USCGC NINETYFIVE ~~(W~~ ~~)~~ ON 4 SEPTEMBER 19[redacted] IN ELFIN COVE, ALASKA AT POSITION 58-12.3N, 136-21.4W

Ref: (a) CGC Supp MCM (CG-241)
(b) TAB A to APPENDIX Q To CCGDSEVENTEEN SOP NO. 1-(YR)
(c) CCGD17 (dl) ltr 5830 dtd 10 Sep [redacted]; Appointing Order

1. During the period 10-30 September 19[redacted], I investigated the circumstances surrounding the grounding of USCG NINETYFIVE on 4 September 19[redacted] in the vicinity of Elfin Cove, Alaska.

PRELIMINARY STATEMENT

LTJG C.O. Commanding Officer of USCGC NINETYFIVE, was designated as a party on 10 September 19[redacted] by me during a telephone conversation since the vessel was at USCG Base Ketchikan for repairs. This was done so he could obtain legal counsel, if desired, before I arrived at USCG Base Ketchikan to conduct the investigation. We reviewed the Understanding of Rights again on 11 September when we met together at USCG Base Ketchikan. ~~LTJG~~ C.O. waived the rights to be represented by counsel. He was present when each witness assigned to USCGC NINETYFIVE was interviewed at USCG Base Ketchikan. He was unable to be present during other interviews because of his duties of Commanding Officer while the vessel was in Ketchikan. C.O. was given an opportunity to review the statements and copies of all evidence and request further information from witnesses, which he declined to do. C.O. chose to make a statement.

~~BM2~~ CONN was designated a party at his request on 12 September 19[redacted]. He was interviewed initially on 11 September but was not designated a party at that time, after careful consideration by me. However, after further thought, I met with ~~Petty Officer~~ CONN the following day and reviewed the Understanding of Rights as a Party form with him. He then asked to be designated as a party. He declined to call counsel at that time. He was given the opportunity to review the statements and other evidence and request further information from the witnesses, which he declined to do. ~~Petty Officer~~ CONN made a statement as a witness on 11 September and chose to keep his statement as part of the record after being designated as a party on 12 September 19[redacted].

Subj: INVESTIGATION INTO THE GROUNDING OF THE NINETYFIVE ON 4 SEPTEMBER 19[redacted] IN ELFIN COVE, ALASKA AT POSITION 58-12.3N, 136-21.4W

During the investigation, I visited USCG Base Ketchikan on TAD orders on 11-12 September 19[redacted] to inspect the damage and interview the parties and witnesses.

Some difficulties were encountered during the investigation. The designation of the Investigating Officer was made on 10 September, almost six days after the incident. As a result, the vessel and crew were located at USCG Base Ketchikan when the investigation started and repairs to the vessel had begun. Therefore, some damaged areas were removed before I arrived to inspect the vessel.

~~SN~~ J. DOE who was the helmsman at the time of the incident, was attending Pacific Area Law Enforcement Training in the San Francisco area during most of the investigation. I interviewed him by telephone on 16 September 19[redacted].

While the ~~USCGC~~ NINETYFIVE was drydocked at USCG Base Ketchikan, other repairs and maintenance were performed by Base personnel that were not associated with the grounding. There was no separate record of work performed to repair the grounding damage. However, the General Foreman calculated these costs and called them in by telephone on 30 September 19[redacted].

During the investigation I interviewed the Commanding Officers of the other Seventeenth District WPBs to determine the normal practice of WPB operations concerning special navigation details. I felt this was necessary to put the degree of actual WPB navigation in Alaska in perspective since C.O. had previously been cautioned by the District Commander on setting the proper navigation bill because of a prior grounding.

Also during the investigation, I reviewed training records and data to determine the readiness level of ~~USCGC~~ NINETYFIVE concerning navigation in general.

Having thoroughly inquired into all the facts and circumstances connected with the subject incident and having considered the evidence adduced, I find as follows (all times local, unless otherwise indicated):

FINDINGS OF FACT

1. The ~~USCGC~~ NINETYFIVE) is commanded by ~~LTJG~~ C.O. ~~, USCG~~ (Enclosure 2)

2. On 4 September 19[redacted], ~~USCGC~~ NINETYFIVE was deployed on general law enforcement patrol with secondary emphasis on training. The patrol areas were Lynn Canal, Icy Straits, Cross Sound and Yakutat. (Enclosure 33)

Subj: INVESTIGATION INTO THE GROUNDING OF ~~USCGC~~ NINETYFIVE ON 4 SEPTEMBER 19[redacted] IN ELFIN COVE, ALASKA AT POSITION 58-12.3N, 136-21.4W

3. USCGC NINETYFIVE 's crew consists of one officer and thirteen enlisted members. All hands were onboard for the patrol on 4 September 19[redacted]. (Enclosure 23)

4. At 0954, ~~USCGC~~ NINETYFIVE departed the Chevron Fuel Pier, Yakutat, Alaska enroute Elfin Cove, Alaska. All vessel machinery and equipment were operating normally, except for the the Oily Water Separator and Ship's radar. (Enclosures 3, 10, 12)

5. A casualty report on the Ship's radar was not transmitted prior to the grounding incident. The CASREP was sent on 8 September 19[redacted]. (Enclosure 38)

6. The Commanding Officer and Petty Officers of the Deck (POOD) were aware that the radar was inoperative. There were several attempts to check the operation of the radar during the transit to Elfin Cove. The radar remained inoperative until it was energized after the grounding and began working. (Enclosures 3, 4, 9)

7. The intended trackline enroute Elfin Cove was 140.5 miles. (Enclosure 16)

8. The ~~USCGC~~ NINETYFIVE is required to maintain a minimum of seventy five percent fuel onboard. (Enclosure 30)

9. The average speed of advance of ~~USCGC~~ NINETYFIVE was 12.5 knots during the transit from Yakutat to the vicinity of Elfin Cove. (Enclosures 10, 12)

10. The time in transit to the vicinity of Elfin Cove from Yakutat at 12.5 knots is 11 hours, 14 minutes. (Enclosure 17)

11. The Commanding Officer had entered Elfin Cove once before aboard ~~USCGC~~ NINETYFIVE He stated that he felt entry into Elfin Cove after dark did not concern him as the forecast called for clear skies and calm seas, and it was nearly a straight-in approach with a well-marked entrance. (Enclosure 3)

12. The recorded weather at 042100 was: winds 350 degrees true at 10 knots, skies clear, visibility 15 miles, air temperature 52 degrees Fahrenheit. The recorded weather at 042200 was: winds calm, skies clear, visibility 15 miles, air temperature 53 degrees Fahrenheit. No seas were recorded since 041900. (Enclosure 10)

13. ~~USCGC~~ NINETYFIVE observed sunset at 042000, 11 3/4 miles northwest of Cape Spencer. Sunset at Elfin Cove was 1957. (Enclosures 10, 16)

14. The tide was +4.5 feet and current was flooding in a direction of 080 true at 2.8 knots at 042145 at Elfin Cove. (Enclosures 18, 19)

15. At 041935, C.O. assumed the deck and conn of USCGC NINETYFIVE. At 041943, CONN assumed the conn; LTJG [redacted] retained the deck because Petty Officer [redacted] was breaking in as underway POOD. J. DOE was on duty as helmsman for the 2000-2400 watch. (Enclosures 3, 4, 5, 10)

16. There were no documents on file indicating Petty Officer CONN was a qualified Petty Officer of the Deck during his 2000-2400 watch on 4 September 19[redacted]. He was standing a break-in watch as POOD. (Enclosure 26)

17. The Officer of the Deck is responsible for the safety of the ship, including safe navigation. He shall see that the ship is skillfully steered and kept on course. He is responsible for insuring that necessary precautions are taken to prevent accidents. (Enclosure 26)

18. The Officer of the Deck normally has both the deck and the conn. At various times another person can be designated to relieve the OOD of the conn. Even when the OOD is relieved of the conn, that officer retains a considerable measure of responsibility of the ship. (Enclosure 26)

19. NOAA Chart 17302 (Icy Strait and Cross Sound) is the smallest scale chart for entering Elfin Cove. (Enclosure 15)

20. At 042054 a fix was plotted on NOAA chart 17302. That fix placed USCGC NINETYFIVE 1.2 miles southwest of Cape Spencer Light with tracklines and DRs plotted to Elfin Cove. (Enclosures 13, 15)

21. The trackline from the 2054 fix was 072 degrees true. Fixes were obtained at 2109 and 2124 using visual bearings. No other fixes were obtained prior to the grounding. At 2133 the vessel's course was changed to 142 degrees true to begin the 2.5 mile leg into Elfin Cove. After the course change, the speed was reduced to 8 knots. Therefore, the ETA in Elfin Cove was approximately 18 minutes after the turn. (Enclosures 13, 14, 16)

22. The conning petty officer, CONN gave the command to steer 145 degrees true after the vessel steadied on 142 degrees true to head the vessel between the flashing red, 4 second light and the flashing white, 4 second light marking the entrance to Elfin Cove. (Enclosures 3, 4)

23. After making the course change to 142 degrees true, LTJG C.O. observed that the pier and navigation entrance lights were lit and clearly visible. (Enclosure 3)

24. After noticing the turning maneuver by CONN C.O. suggested to him that he keep the vessel headed for the white entrance light and then come left when closer to the entrance. C.O. then stepped out on the right bridge wing to watch for signs of the rock (1 3/4 fathom mark) located 325 yards northwest of the north entrance light to Elfin Cove. He was familiar with the thick kelp surrounding the rock area. (Enclosure 3)

25. Petty Officer CONN noticed that steering 145 degrees true resulted in the vessel heading for the white light on the west side of the entrance. Sometime later, CONN changed the course by directing the helmsman to steer left of the white light. (Enclosure 4)

26. After having been out on the starboard bridge wing for a short time (exact time unknown), C.O. noticed a right bearing drift of the pier and entrance light. He stepped into the bridge and observed that the vessel was too close to the shore on the port side. He immediately pulled the throttles back to clutch and commanded the helmsman to come right 10 degrees. (Enclosures 3, 5)

27. ~~SN~~ J. DOE the helmsman, had the rudder at right 10 degrees when C.O. gave the command right 10 degrees rudder J. DOE then increased his rudder to nearly 20 degrees right. (Enclosures 3, 5)

28. At 042145, USCGC NINETYFIVE ran aground in position 58-12.3N, 136-21.35W. C.O. observed the fathometer indicating 5 to 10 fathoms. (The fathometer is located at frame 34, approximately 60 feet aft of the bow.) (Enclosures 3, 10, 13, 14, 43)

29. There were no personal injuries as a result of the grounding and follow-up damage control action. (Enclosure 3)

30. After the grounding, the radar was energized and began operating. It was used to fix the position of the vessel. (Enclosures 3, 8, 13)

31. Immediately upon impact, C.O. shut the engines off, and set the general emergency bill, setting material condition Zebra throughout the vessel. (Enclosure 3, 4, 6, 7, 8, 9, 10, 12)

32. Primary investigation commenced immediately after the grounding. Sounding of fuel tanks commenced at 2146; no damage found. At 2147 primary investigation commenced in the engineroom; there was no apparent structural damage or flooding. A crease was discovered 6 inches forward of bulkhead 27, extending 6 feet aft which was 25 inches left of the center line. Water was seeping into compartment A-3-C (sewage pump room) at approximately one pint per minute. Shoring commenced immediately. At 2200 the water tanks were sounded; negative damage. (Enclosures 10, 12)

33. Soundings were taken by leadline around the vessel but could not be completed prior to the vessel floating free. (Enclosure 3)

34. At 042201, ~~USCGC~~ NINETYFIVE floated free. Both main engines were started and the vessel was moved to safe water. Engine and rudder tests indicated no limitations. (Enclosures 3, 10, 12)

35. At 2209 secondary investigation of the engineroom began. There was negative structural damage and flooding. At 2229 primary mechanical shoring in compartment A-3-C was completed. At 2235 flooding completely stopped. At 2237 USCGC NINETYFIVE departed the vicinity Elfin Cove enroute Auke Bay, Alaska. At 2245 additional mechanical shoring was installed. (Enclosures 10, 12)

36. At 050340 USCGC NINETYFIVE diverted to SAR case number 060. 0450 USCGC NINETYFIVE moored Auke Bay, Alaska. (Enclosures 11, 35)

37. USCGC NINETYFIVE was drydocked for repairs at USCG Base Ketchikan on 8 September 19[redacted]. The inspection of the underwater body revealed the following damage:

a. Port Side:

(1) A maximum 1 1/2 inch crease extending from 15 inches forward of bulkhead 15 to web frame 21, 10 inches from the centerline.

(2) A maximum 2 inch crease extending from 11 inches forward of bulkhead 27 to web frame 35, 25 inches from the centerline.

37. b. Skeg:

(1) Damage beginning 30 inches aft of bulkhead 39 extending aft 7 feet, 5 inches; damage penetrated approximately 4 inches into the skeg.

(2) Damage beginning 1 foot aft of web frame 53 extending 4 feet aft; damage penetrated approximately 3 inches into the skeg.

(Enclosures 31, 39, 42)

38. The following repairs were made at USCG Base Ketchikan for a total cost of $7,122.27, requiring 147 manhours:

a. Replaced the second crease just forward of bulkhead 27, port side by cutting out the area surrounding the crease and installing new metal.

b. Replacing two sections of the skeg, one section on the starboard side and one small underneath section.

(Enclosures 31, 32, 42, 44)

39. A casualty report on the Ship's radar was transmitted on 8 September 19[redacted]. The radar was repaired by ERS Ketchikan on 11 September 19[redacted] by replacing the indicator power module. (Enclosures 38, 40)

40. The USCGC NINETYFIVE 's "Ships Organization and Regulation Manual" requires a three person underway watch, consisting of an Officer/Petty Officer of the Deck, Engineering Petty Officer of the Watch, and Helmsman/Lookout. Safe navigation is specifically addressed in the Standing Orders, requiring the OOD/POOD to take fixes every 30 minutes in open water and every 15 minutes when within 5 miles of the closest danger. A Dead Reckoning (DR) plot is required for two fixes ahead. The Special Sea Deatil is to be set 10 minutes prior to entering port. (Enclosure 25)

41. At 2145 the required underway watch was set. The Special Sea Detail was not, but the crew was preparing for mooring. [redacted] X.O. Executive Petty Officer, was on his way to the bridge to assume his normal position to assist with piloting/navigating the vessel to Elfin Cove. (Enclosures 3, 9, 10)

42. The required trackline for entering Elfin Cove was laid out with DRs to the last turn before entering Elfin Cove. Also, the required fixes were obtained on the navigation plot until the last turn; the last fix was at 2124. (Enclosures 13, 14, 16)

43. The position of the grounding (58-12.3N, 136-21.35W) was one mile from the entrance to Elfin Cove. This position differs slightly with the reported longitude of 136-21.4W. (Enclosure 14, 34)

44. During the 3 1/2 months prior to the grounding, USCGC NINETYFIVE conducted a minimum of four fog nav/limited visibility navigation drills soon after getting underway for normal operations; a minimum of three drills prior to mooring/anchoring; and at least one while underway for various drills. (Enclosure 27)

45. The last District Inspection (2-5 April 19[redacted]) resulted in an overall evaluation of "outstanding" with low visibility navigation rated as "excellent", magnetic piloting rated as "outstanding", and piloting by gyro compass rated as "outstanding". The unit training program had no discrepancies and the effectiveness "was reflected in the outstanding results of written examinations and the operational exercises conducted." (Enclosure 28)

46. The last training visit by PACAREA Training Team One, 3-7 February 19[redacted], resulted in satisfactory evaluations of all categories of training and drills with excellent comments concerning attendance, enthusiasm, interest, and command support. (Enclosure 29)

47. Training for break-in POODs is done during break-in watches underway and at anchor. All POODs are trained to take fixes by radar, LORAN, visual, and bottom contour. (Enclosure 9)

48. USCGC NINETYFIVE had previously grounded on 18 August 19[redacted] in Wrangell Narrows. C.O. [redacted] was Commanding Officer at that time and was on the bridge as back-up navigator. There was minor damage and no repairs were necessary. The proper navigation detail was not set according to the Ship's Watch Quarter and Station Bill. The District Commander addressed this matter in his letter to the Commanding Officer (5830 of 13 NOV [redacted]), directing him to make regular use of manning standards and procedures dictated by the Watch Quarter and Station Bill whenever the vessel encounters situation requiring other than normal steaming routines. (Enclosure 41)

49. It is a normal practice of Seventeenth District WPBs to modify the special navigation details, depending on the Commanding Officer's perception of particular hazards. Usually both the CO and XPO are present on the bridge during crucial maneuvering evolutions. (Enclosure 45)

Subj: INVESTIGATION INTO THE GROUNDING OF USCGC NINETYFIVE ON 4 SEPTEMBER 19[redacted] IN ELFIN COVE, ALASKA AT POSITION 58-12.3N, 136-21.4W

OPINIONS

1. The primary cause of the grounding of USCGC NINETYFIVE in Elfin Cove on 4 September 19[redacted] was the turn made to alter course to the left of the white entrance light before the conning officer and OOD fixed the position of the vessel after the previous turn. This turn, combined with the set of the vessel to the left of track by the flooding tidal current, headed the vessel too close to the shore on the east side of the entrance to Elfin Cove, resulting in the vessel striking a submerged object. (Facts 14, 24, 25, 27)

2. Contributing to the cause of the grounding was the inexperience of the conning petty officer, CONN who was break-in POOD. He gave the command to alter the vessel's heading to the left of the white entrance light but didn't advise the OOD either prior to, or following the turn. (Facts 15, 16, 24, 25)

3. Petty Officer CONN serving as break-in POOD, was performing within the scope of his authority as the conning officer when he gave the helmsman the command to turn to the left of the white entrance light. (Facts 15, 16, 18, 24)

4. A further contributing factor was that the Commanding Officer (also performing as Officer of the Deck) was preoccupied on the starboard bridge wing, looking out for signs of the rock (kelp) northwest of the entrance to Elfin Cove, and was unaware of the turn to the left of the entrance which was directed by [redacted] CONN When he observed the right bearing drift of the entrance light, he became concerned and entered the bridge. Immediately he noticed the position of the vessel appeared too close to the east side of the entrance and assumed the conn by taking control of the throttles and directing the helmsman to steer with right 10 degrees rudder. (Facts 15, 17, 18, 23, 25, 26)

5. As the qualified Officer of the Deck, [redacted] C.O. was responsible for all aspects of the bridge watch, including navigation of the vessel, during the 2000-2400 watch on 4 September 19[redacted]. Even though CONN had the conn, it was incumbent upon the qualified OOD, C.O. to ensure safe navigation of the vessel. He should have been more specific when he advised Petty Officer [redacted] to come left "when...closer to the entrance." (Facts 17, 18)

6. After making the turn to steer course 142 degrees true prior to the grounding, a fix was needed to determine the position of the vessel which could have indicated the amount of vessel transfer after making the turn, as well as the amount of set and drift. (Fact 20)

7. Even though USCGC NINETYFIVE s ETA at Elfin Cove was after dark and the radar was inoperative, the risk of entering there was slight because the weather conditions were favorable and sufficient visual aids for navigation were present in the approaches and entrance to Elfin Cove. Further, the Commanding Officer had taken USCGC NINETYFIVE into Elfin Cove previously and was comfortable with the situation surrounding the vessel's expected entry. (Facts 4, 6, 11, 12)

8. Since the radar had been inoperative throughout the day, there was no reason to expect it to work while entering Elfin Cove. (Facts 4, 6)

9. The radar is one of the several aids used in navigating WPBs. It is not relied upon solely for navigation. Therefore, it is reasonable to expect that on a clear night with visibility of 15 miles and several visual aids for navigation present, the lack of radar capability should not have contributed to the incident from a navigation standpoint, except to show, on a small enough scale, the relative position of the vessl compared to the land as it passed between George Islands and Inian Peninsula and into Elfin Cove. (Facts 11, 12, 22)

10. Once the turn to steer course 142 degrees was made and a position fixed after the turn (had that been done), taking further fixes was not likely before mooring in Elfin Cove. (Fact 20)

11. When entering Elfin Cove, it is difficult to plot fixes and lay out danger ranges and bearings using NOAA Chart 17302 once past George Islands, until reaching the section of the chart inset (The vessel grounded before reaching that point.). (Fact 19)

12. Not setting the Special Sea Detail in this situation can be considered normal when compared with normal practice of 17th District WPBs where flexibility is exercised, depending on the hazards perceived by the Commanding Officer. Also, a full Special Sea Detail on a WPB makes the bridge crowded and provides dated information when operating a small vessel in close quarters with rapidly changing situations. (Fact 45)

13. When compared with WPB operations and the Commanding Officer's responsibilities under similiar circumstances, C.O. 's actions concerning this incident were a result of an error in judgement. He should not have allowed himself to get in a position where he could not observe all hazards and movement of the vessel. (Facts 23, 25)

14. The Commanding Officer's response in anticipation of possible grounding was professional and prevented extensive damage to the vessel. C.O. did not panic; he brought back the throttles and avoided making a power maneuver in an effort to escape the situation. Higher speed and radical vessel movement could have caused major damage. (Facts 25, 29, 35, 36)

15. The damage control response to the grounding was excellent. The general emergency bill was set and within one minute primary investigation commenced. A small leak was detected, plugged, and secured within 30 minutes. The crew manned their positions rapidly and carried out their responsibilities professionally. Their response reflects their general attitude of awareness in emergency situations and the high degree of training, teamwork and cooperation among the crew. (Facts 29, 30, 33)

16. The underway navigation training program of USCGC NINETYFIVE is intregrated very well in the vessel's operations. Individual navigation skills are taught by X.O. and LTJG C.O. . Underway navigation drills are conducted frequently. District Inspections and PACAREA training visits reflect favorably on the unit. (Facts 42, 43, 44)

17. The CASREP for the radar should have been sent the morning of the casualty (4 September 19[redacted]). (Facts 4, 5, 38)

RECOMMENDATIONS

1. That C.O. be given an non-punitive letter of reprimand because he made an error in judgement by not fixing the vessel's position after making the last course change for the approach to Elfin Cove; he did not specifically advise the break-in POOD who was conning the vessel when to make the final turn immediately prior to entering Elfin Cove; and he became preoccupied on the starboard bridge wing looking for signs of shallow water near the entrance, failing to position himself where he could observe all hazards to the vessel.

2. That the incident which is the subject of this investigation be reflected in C.O. 's "Officer Evaluation Report" as it pertains to his performance in the areas of "being prepared," "professional expertise," and "judgement."

3. That no action be taken against Petty Officer CONN because of his status as break-in POOD.

4. That the District WPB Program Manager review and evaluate the practice of WPBs within the Seventeenth District on setting the Special Sea/Piloting/Navigation Detail. This review should include input from the Commanding Officers. Then District guidance on what is expected should be promulgated.

Subj: INVESTIGATION INTO THE GROUNDING OF USCGC **NINETYFIVE** (WPB [redacted]) ON 4 SEPTEMBER 19[redacted] IN ELFIN COVE, ALASKA AT POSITION 58-12.3N, 136-21.4W

5. That USCGC **NINETYFIVE** 's "Ship's Organization and Regulation Manual" be revised to describe procedures actually practiced -- especially for circumstances requiring certain navigation details.

6. That the District WPB Program Manager or his representative visit WPBs once a year on actual deployments to observe standard WPB practices in the waters of Alaska. This should not be for "inspection" or "underway for drills."

7. That the responsibilities of personnel "breaking-in" on training watches be specified in the USCG Regulations and appropriate Shipboard instruction manuals. Research during the investigation failed to discover any clear-cut guidance on this issue.

I. B. INVESTIGATING

5830
IR-17-15-[redacted]
6 [redacted]

In light of all the above facts, and in order to uphold the high standards of responsibilty required of commanding officers while at the same time recognizing the pressures of the operating environment, I have determined that the appropriate action in this case, and the one I have taken, is to award a nonpunitive letter of reprimand. The Chief, Search and Rescue Branch is also directed to make appropriate comment on this event in LTJG [redacted]'s next OER.

Attached as an Appendix to this Action are my detailed comments on specific findings, opinions and recommendations. The Investigating Officer is commended for his prompt completion of this thorough report.

This report of investigation is forwarded to Commandant (G-LGL) for record purposes in accordance with Section 0211, Coast Supplement to the Manual for Courts-Martial (CG-241).

E. NELSON JR.

Encl: (1) Appendix A

Copy: CO, [redacted]

GROUNDING OF 110' WPB

AT FOWL CAY, EXUMA CAYS

BAHAMAS

of Transportation
United States
Coast Guard

Commander
Seventh Coast Guard District

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NOTE:
This investigation has been reproduced for instructional purposes only. The names, dates, and units have been removed as a professional courtesy to those involved. Please make the best use of this material to learn from other's misfortunes. If you happen to know the names of the people or units involved please observe the professional courtesy and don't mention them. Remember; there but for the grace of God ....

5830/BI 12-[redacted]
JUN [redacted]

INVESTIGATION INTO THE CIRCUMSTANCES SURROUNDING THE GROUNDING OF USCGC ISLAND CLASS (WPB [redacted] ON OR ABOUT 19 DECEMBER [redacted]

ACTION OF THE FINAL REVIEWING AUTHORITY

The findings of fact, opinions and recommendations contained in the report of the informal board of investigation, as acted upon by the convening authority, are approved, with the following comments.

1. LT SMITH commanding officer, USCGC ISLAND CLASS (WPB [redacted], decided to attempt an anchorage at Fowl Cay, Exuma Cays, Bahamas on 19 December [redacted]. This course of action was selected to provide crew rest and operational positioning of his vessel. At about 1530, ISLAND CLASS commenced an approach to the anchorage. Fowl Cay had not been used as an anchorage by any other of the Patrol Boat Squadron One boats in the past. The area is not well charted. During the approach to the anchorage, contrary to the advice of LTJG [X.O.], his executive officer, LT SMITH did not set the special sea detail, maintain an accurate plot of his vessel's position, man the chains with a leadsman, and did not make any use of terrestrial ranges to determine set and drift. LTJG [X.O.] specifically recommended that ISLAND CLASS launch the RHI and send it on ahead to keep a watch out for shoalwater. At about 1610, ISLAND CLASS struck bottom and went aground, sustaining approximately $20,000 damages and requiring relief from her regularly scheduled patrol duties for repair.

2. The convening authority's recommendation to provide LT SMITH 'strong counselling in lieu of the punitive letter of reprimand recommended by the investigating officer is disapproved. Non-judicial punishment action for violation of Article 110, UCMJ, negligent hazarding of a vessel, shall be initiated and processed in accordance with the applicable regulations within the Manual for Courts-Martial and Coast Guard Military Justice Manual. Although I am aware that it is sometimes necessary for law enforcement resources to enter areas which are hazardous, in this case, there was no operational necessity to do so. Any operational advantage (i.e. positioning for future operations) was minor, at best.

5830/BI 12-88

JUN [redacted]

Subj: INVESTIGATION INTO THE CIRCUMSTANCES SURROUNDING THE GROUNDING OF USCGC ISLAND CLASS (WPB [redacted]) ON OR ABOUT 19 DECEMBER [redacted]

The convening authority has otherwise adequately reviewed and commented upon this investigation and is directed to ensure that all other recommendations of the investigating officer are carried out.

A copy of this report of investigation is forwarded to Commandant (G-LGL) for record purposes.

[redacted]

U.S. Department of Transportation
United States Coast Guard

Officer-in-Charge
Seventh District TACLET

USCG Air Station
Opa Locka, FL 33054
Tel: (305) 593 2298

5830
03FEB[redacted]

From: LCDR I. B. INVESTIGATING [redacted] USCG
To: Commander, Coast Guard Group Miami

Subj: INVESTIGATION INTO CIRCUMSTANCES SURROUNDING THE GROUNDING OF USCGC ISLAND CLASS (WPB [redacted]) ON OR ABOUT 19 DECEMBER [redacted]

Ref: (a) Commander, CG Group Miami ltr 5830 dtd 28DEC[redacted] (Appointing Order)
(b) CG Supplement, Manual for Courts-Martial
(c) Appendix III to Annex L to Operation Plan CCGD7 No. 1-FY

NOTE:
This investigation has been reproduced for instructional purposes only. The names, dates, and units have been removed as a professional courtesy to those involved. Please make the best use of this material to learn from other's misfortunes. If you happen to know the names of the people or units involved please observe the professional courtesy and don't mention them. Remember; there but for the grace of God ....

Findings of Fact

1. That on 19 December 19[redacted] USCGC ISLAND CLASS (WPB [redacted]) was on law enforcement patrol under the operational control (OPCON) of Commander, Seventh Coast Guard District. (Encl: 6, 10, 26)

2. That LT SMITH [redacted] USCG is the Commanding Officer, ISLAND CLASS and was on 19 December [redacted]. (Encl: 6, 26, 38)

3. That QM2 OOD [redacted] USCG is stationed aboard ISLAND CLASS and was the Officer of the Deck and had the conn aboard ISLAND CLASS from 1138R until 1630R on 19 December [redacted]. He was also personally steering and exercising pilothouse control of the engines from approximately 1545R until 1614R on 19 December [redacted]. (Encl: 6, 26, 27, 28, 39)

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Subj: INVESTIGATION INTO CIRCUMSTANCES SURROUNDING THE GROUNDING OF USCGC ISLAND CLASS (WPB [redacted]) ON OR ABOUT 19 DECEMBER [redacted]

4. That the weather experienced by ISLAND CLASS from 1600R until 1700R on 19 December [redacted] was:

a. wind 065-100T/20 knots,

b. seas 100T/5 feet east of Conch Cut; 090T/1 foot west of Conch Cut

c. swells 090T/12 feet east of Conch Cut; no swell west of Conch Cut

d. visibility 10 miles

(Encl:6, 26)

5. That LT SMITH decided to anchor at Fowl Cay, Exuma Cays, Bahamas for the purpose of crew rest and operational positioning and that at 1530R 19 December [redacted], pursuant to orders of LT SMITH, ISLAND CLASS commenced an approach toward Fowl Cay via Conch Cut. (Encl: 10, 11, 12, 26, 28)

6. That Fowl Cay anchorage and Conch Cut are in Bahamian territorial waters, being within three nautical miles of Bahamian land. (Encl: 11, 12)

7. That on 19 December [redacted] a Royal Bahamian Defense Force (RBDF) officer, shiprider, was aboard ISLAND CLASS and had given LT SMITH permission to be in Bahamian waters, but no ISLAND CLASS log entry reflects an RBDF officer aboard nor permission to enter Bahamian waters. (Encl: 6, 10, 38)

8. That from approximately 1530R until after 1610R on 19 December [redacted] LT. SMITH as well as the Executive Officer, LTJG [redacted] X. O. [redacted] USCG stationed themselves in the pilothouse to supervise and assist in the approach to anchorage. (Encl: 26, 27, 28)

9. That at approximately 1535R 19 December [redacted] ISLAND CLASS entered Bahamian territorial without log entry. (Encl: 6, 7, 11, 12)

10. That at 1610R 19 December [redacted] the tide was rising at Fowl Cay with a computed height of approximately 1832R at 2.7 feet above charted depths. (Encl: 16, 17)

11. That the sun set at 1730R at Fowl Cay on 19 December [redacted] (Encl: 6)

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Subj: INVESTIGATION INTO CIRCUMSTANCES SURROUNDING THE GROUNDING OF USCGC ISLAND CLASS (WPB [redacted] ON OR ABOUT 19 DECEMBER [redacted]

12. That prior to entering Conch Cut LTJG X. O. recommended to LT SMITH that a piloting team be set and that the ISLAND CLASS's attached rigid hull inflatable boat (RHI) be launched to precede ISLAND CLASS to anchorage and that LT SMITH did not act on these recommendations. (Encl: 6, 28)

13. That LT SMITH ordered SN NEWGUY [redacted] USCG to take station at the bow of ISLAND CLASS and report any navigation hazards on the bottom in the path of ISLAND CLASS and that NEWGUY did so assume this duty. (Encl:26, 28, 33)

14. That NEWGUY has never had training in piloting by eye, nor has he ever reviewed the bottom interpretation guidance found in the Yachtsmans Guide to the Bahamas. (Encl: 41)

15. That LT SMITH has never had training in piloting by eye, but is familiar with the bottom interpretation guidance found in the Yachtsmans Guide to the Bahamas. (Encl: 38)

16. That LT SMITH ordered LTJG X. O. to station himself at the radar to assist in navigation during the approach to anchorage. (Encl: 26)

17. That navigation on the afternoon of 19 December [redacted] during the approach to Conch Cut and Fowl Cay was accomplished by "seaman's eye" assisted by reports from LTJG X. O. who was watching the radar, and that no fixes were plotted after 1530R and no dead reckoning (DR) positions were plotted after 1545R along the intended track which was plotted. (Encl: 7, 11, 12, 16, 17, 26, 28)

18. That at approximately 1600R 19 December [redacted] LT SMITH ordered the anchor detail set and the detail did report and assume the duty. (Encl: 26, 29, 30)

19. That material condition YOKE was set onboard ISLAND CLASS during the approach to anchorage on 19 December [redacted] (Encl: 6)

20. That soundings were not recorded in the ISLAND CLASS navigation log during the approach to anchorage on 19 December [redacted]. (Encl: 7)

21. That no soundings are recorded for the intended anchorage at Fowl Cay on chart 26305, Bahamas Chart Kit or 1987 Yachtsmans Guide to the Bahamas. (Encl: 11, 12, 15)

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Subj: INVESTIGATION INTO CIRCUMSTANCES SURROUNDING THE GROUNDING OF USCGC ISLAND CLASS (WPB [redacted]) ON OR ABOUT 19 DECEMBER [redacted]

22. That LT SMITH and LTJG X. O. used the 1987 Yachtsmans Guide to the Bahamas on 19 December [redacted] in preparation for approaching Fowl Cay. (Encl: 26, 28, 38)

23. That ISLAND CLASS and other 110 WPB's carry only one anchor. (Encl: 38)

24. That Commander, USCG Group Miami has supplied guidance to Group Miami WPB's on operating on the Bahamas Banks and on procedures to follow in the event of grounding. (Encl: 19, 20)

25. That neither LT SMITH nor LTJG X. O. had seen or been aware of this guidance prior to this investigation. (Encl: 38, 40)

26. That the 1987 Yachtsmans Guide to the Bahamas recommends in favor of piloting by eye when transitting the Bahamas Banks, but recommends against transitting and piloting by eye when the sun is low and ahead. (Encl: 14)

27. That USCG Regulations requires the Commanding Officer to use all available information concerning navigation of a vessel. (Encl: 46)

28. That at approximately 1605R 19 December [redacted] QM2 (OOD) conned ISLAND CLASS toward the position marked with an anchor on page 49 of the Bahamas Chart Kit steering various courses with a base course of 212T and by clutching and declutching the main diesel engines (MDE) maintained an approximate speed of 5 knots. (Encl: 26, 27, 28, 38, 39, 40)

29. That QM2 (OOD) was purposely keeping to the right of the center of the opening created by the arms of Fowl Cay because he believed there was shallow water to the left of center, and to avoid a dark spot on the bottom. (Encl: 26, 27, 39)

30. That at 1608R LTJG (X. O.) sounded a warning that the water appeared shallow to starboard and astern and at approximately the same time QM2 (OOD) noted a sudden change in the fathometer from 10 feet beneath the keel to less than 5 feet beneath the keel and upon noticing this sudden drop in water depth he reversed engines to stop ISLAND CLASS's forward way. (Encl: 26, 27, 28, 38, 39)

31. That at 1609R:

a. LTJG (X. O.) sounded a warning that the water appeared shallow astern and recommended that QM2 (OOD) not permit ISLAND CLASS to get sternway;

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31. (cont.)

b. LT SMITH also ordered QM2 [OOD] not to permit sternway

c. QM2 [OOD] stopped backing on the port shaft and came ahead at clutch speed on the starboard shaft.

d. ISLAND CLASS turned quickly to port to a heading of approximately 180T
(Encl: 26, 27, 28, 38, 39)

32. That at 1610R 19 December [redacted] ISLAND CLASS struck bottom in less than seven feet of water in position 24-16-25N 076-32-22W. (Encl: 6, 10, 26, 27, 28, 29, 30, 31, 32, 33, 34, 39, 40)

33. That when ISLAND CLASS struck bottom there was little or no way on; the port side was abeam to the wind; the starboard side was approximately alongside shoal water. (Encl: 26, 27, 28, 29, 30, 38, 39)

34. That immediately after grounding QM2 [OOD] commenced several attempts to keep ISLAND CLASS's propellors from striking bottom by pivoting to starboard by engaging the port shaft ahead and the starboard shaft astern and that this maneuver was not successful in that ISLAND CLASS did not turn. (Encl: 26, 27, 28, 39)

35. That during these initial maneuvers by QM2 [OOD] there was disturbance of the bottom from the action of the propellors. (Encl: 26)

36. That at 1614R LT SMITH ordered QM2 [OOD] to stop engines and QM2 [OOD] complied. (Encl: 26, 39)

37. That at approximately 1615R LTJG [X. O.], after consulting with LT SMITH ordered the anchor dropped and the anchor was dropped, and that LT SMITH ordered an inspection of the hull below decks to determine if there was visible damage and flooding. (Encl: 26, 28, 29, 30)

38. That ISLAND CLASS was bouncing on the bottom while it was aground. (Encl: 26, 28, 30, 38)

39. That ISLAND CLASS did not assume a readiness posture of Emergency Stations, Collision/Grounding after the grounding. (Encl: 6, 26, 28, 29, 38)

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Subj: INVESTIGATION INTO CIRCUMSTANCES SURROUNDING THE GROUNDING OF USCGC ISLAND CLASS (WPB [redacted] ON OR ABOUT 19 DECEMBER [redacted]

40. That ISLAND CLASS has no emergency bill to deal with collision or flooding in the Organization and Regulations Manual, but does provide for this bill in the Watch, Quarter and Station Bill. (Encl: 38, 40, 43)

41. That material condition Zebra was not set after the grounding. (Encl: 6, 26, 28, 38)

42. That at 1625R LT SMITH ordered the anchor to be carried by RHI approximately 100 feet off the port bow and dropped and this order was carried out by BM2 SALTY [redacted] USCG. (Encl: 26, 29, 30)

43. That after placing the anchor off the bow SALTY conducted lead line soundings from the RHI in the vicinity of ISLAND CLASS and found water depth to be seven feet astern to starboard, 12 feet astern to port, seven feet forward to starboard and 10 feet forward to port, six feet abeam to starboard with coral heads as shallow as three feet within 10 feet of the ISLAND CLASS. (Encl: 28, 29)

44. That at 1625R LT SMITH ordered to heave around on the anchor and that order was carried out by BM1 [redacted] J. DOE [redacted] USCG. (Encl: 26, 28, 30)

45. That heaving around on the anchor did not free ISLAND CLASS from the bottom. (Encl: 26, 28, 30)

46. That at 1630R LT SMITH assumed the deck and conn. (Encl: 6, 26, 27, 28)

47. That at 1632R LT SMITH used a combination of anchor and both shafts engaged in forward to free the ISLAND CLASS from the bottom and ISLAND CLASS was refloated in approximately 10 feet of water to the port of where ISLAND CLASS was previously grounded. (Encl: 6, 26, 28, 30)

48. That guidance on groundings promulgated by Commander, Coast Guard Group Miami does not address the particular maneuver used by LT SMITH to refloat ISLAND CLASS. (Encl: 19)

49. That after ISLAND CLASS was refloated BM2 SALTY inspected the position occupied by ISLAND CLASS's stern when ISLAND CLASS was aground and found rocks and sand at a depth of five and one-half feet. (Encl: 29)

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Subj: INVESTIGATION INTO CIRCUMSTANCES SURROUNDING THE GROUNDING OF USCGC ISLAND CLASS (WPB [redacted] ON OR ABOUT 19 DECEMBER [redacted]

50. That a subsequent attempt to anchor at 1714R 19 December [redacted] in the vicinity of Rocky Dundas was aborted after discovering that the shank of ISLAND CLASS's anchor was bent. (Encl: 28, 29, 30)

51. That the grounding of ISLAND CLASS was reported by LT SMITH by phone patch and message. (Encl: 10, 28)

52. That ISLAND CLASS experienced vibration when either shaft was engaged after the grounding. (Encl: 8, 9, 28, 38)

53. That LT SMITH and the Engineer Petty Officer, MKC JONES [redacted] USCG experimented with various combinations of engaging, locking, and freewheeling shafts to minimize vibration. (Encl: 38)

54. That on 20 December [redacted] ISLAND CLASS proceeded to the U. S. Navy, Atlantic Underwater Testing and Evaluation Center (AUTEC), Andros Island, Bahamas to evaluate the condition of ISLAND CLASS's underwater body. (Encl: 10, 18, 26, 28, 30)

55. That on 20 December [redacted] ISLAND CLASS underwater body was inspected by U. S. Navy divers at AUTEC and the divers reported to LT SMITH (Encl: 9, 30, 38)

56. That on 20 December [redacted] LT SMITH determined ISLAND CLASS not to be fit to remain on law enforcement patrol and sailed ISLAND CLASS to USCG Base Miami Beach. (Encl: 10, 38)

57. That damage was incurred to ISLAND CLASS as a result of grounding on 19 December [redacted].

a. the port propellor was bent requiring replacement

b. the starboard propellor was bent requiring replacement

c. the hull was dented requiring partial metal replacement

d. the bottom was scraped requiring painting

(Encl: 8, 10, 21, 22, 23, 24, 25, 48)

58. That the costs incurred by the Coast Guard associated with the damage incurred from grounding on 19 December [redacted] totals approximately $28,000.00 (Encl: 35, 36, 37, 42, 43, 48)

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59. That the propellors required immediate replacement to return ISLAND CLASS to an operational status. (Encl: 8, 9, 35, 37)

60. That on 29 December [redacted] both propellors were removed and on 30 December [redacted] two new propellors were installed while ISLAND CLASS was moored at USCG Base Miami Beach. (Encl: 21, 22, 35, 43)

61. That on 31 December [redacted] ISLAND CLASS sailed for sea trials and no vibration attributable to damaged underwater body or other malfunction attributable to grounding on 19 December [redacted] was noted. (Encl: 35)

62. That CDR [redacted] JONES [redacted] USCG, Supervisor, Ship Repair Detachment Miami was aboard for sea trials and is a witness to the results. (Encl: 35)

Opinions

1. That LT SMITH s decision to anchor on 19 December [redacted] was sound. (Fact: 4, 5)

2. That entries in the Log Remarks Sheet should be made to indicate receipt of permission to enter another country's territorial waters and actual entry into those waters. (Facts: 6, 7, 9)

3. That navigation practices onboard ISLAND CLASS on 19 December [redacted] were substandard. (Facts: 12, 17, 20, 27)

4. That substandard navigation practices were not the primary cause of grounding. (Facts: 28, 29,30, 31)

5. That as ISLAND CLASS neared shoal water in Fowl Cay anchorage maneuvering became difficult and ISLAND CLASS was set aground by the wind. (Facts: 30, 31, 32, 33)

6. That LT SMITH was negligent in the performance of his duty as Commanding Officer:

a. when he failed to ascertain the depth of Fowl Cay anchorage prior to entering,

b. when he rejected a recommendation to use ISLAND CLASS s RHI in advance of the cutter,

c. when he relied upon piloting by eye techniques to protect ISLAND CLASS from the bottom during a time of day (near sunset) when

6. c. (cont.) those techniques are known to be difficult to apply and assigned personnel (SN NEWGUY) to the duty of applying those techniques who had not been trained to pilot by eye,

d. when he failed to recognize the grounding situation as it developed and take timely shiphandling action to prevent the grounding;

and that this negligence suffered ISLAND CLASS to go aground resulting in damage. (Facts: 2, 8, 11, 12, 13, 14, 21, 26, 30, 31, 32, 57)

7. That Commander, Coast Guard Group Miami OPORDER 7-86 should be aboard ISLAND CLASS (Facts: 24, 25)

8. That ISLAND CLASS substantively followed the recommendations of Commander, Coast Guard Group Miami OPORDER 7-86 concerning procedures to follow after grounding. (Facts: 34, 36, 37, 42, 43, 44)

9. That action taken by QM2 OOD immediately after grounding was prudent and proper, although this action resulted in some of the damage incurred by ISLAND CLASS (Facts: 24, 34, 35, 43, 49)

10. That action taken by LT SMITH to refloat ISLAND CLASS was prudent and proper and, although some damage resulted from the refloating, the damage to ISLAND CLASS would have been greater had he not taken the action he did. (Facts: 10, 23, 24, 38, 43, 44, 47, 48, 49)

11. That ISLAND CLASS Organization and Regulations Manual has not been completed. (Fact: 40)

12. That ISLAND CLASS should have assumed General Emergency Stations - Collision/Grounding and material condition ZEBRA should have been set after ISLAND CLASS went aground. (Facts: 39, 41)

13. That the guidance available in the Yachtsmans Guide to the Bahamas is valuable, but should be considered only one aid to navigation, not a substitute for other means of navigation. Facts: 26, 27)

13. That actions taken by LT SMITH to return ISLAND CLASS to home port and subsequently to operational readiness were proper. (Facts: 51, 53, 54, 55, 56, 60, 61)

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Subj: INVESTIGATION INTO CIRCUMSTANCES SURROUNDING THE GROUNDING OF USCGC ISLAND CLASS (WPB [redacted]) ON OR ABOUT 19 DECEMBER [redacted]

Recommendations

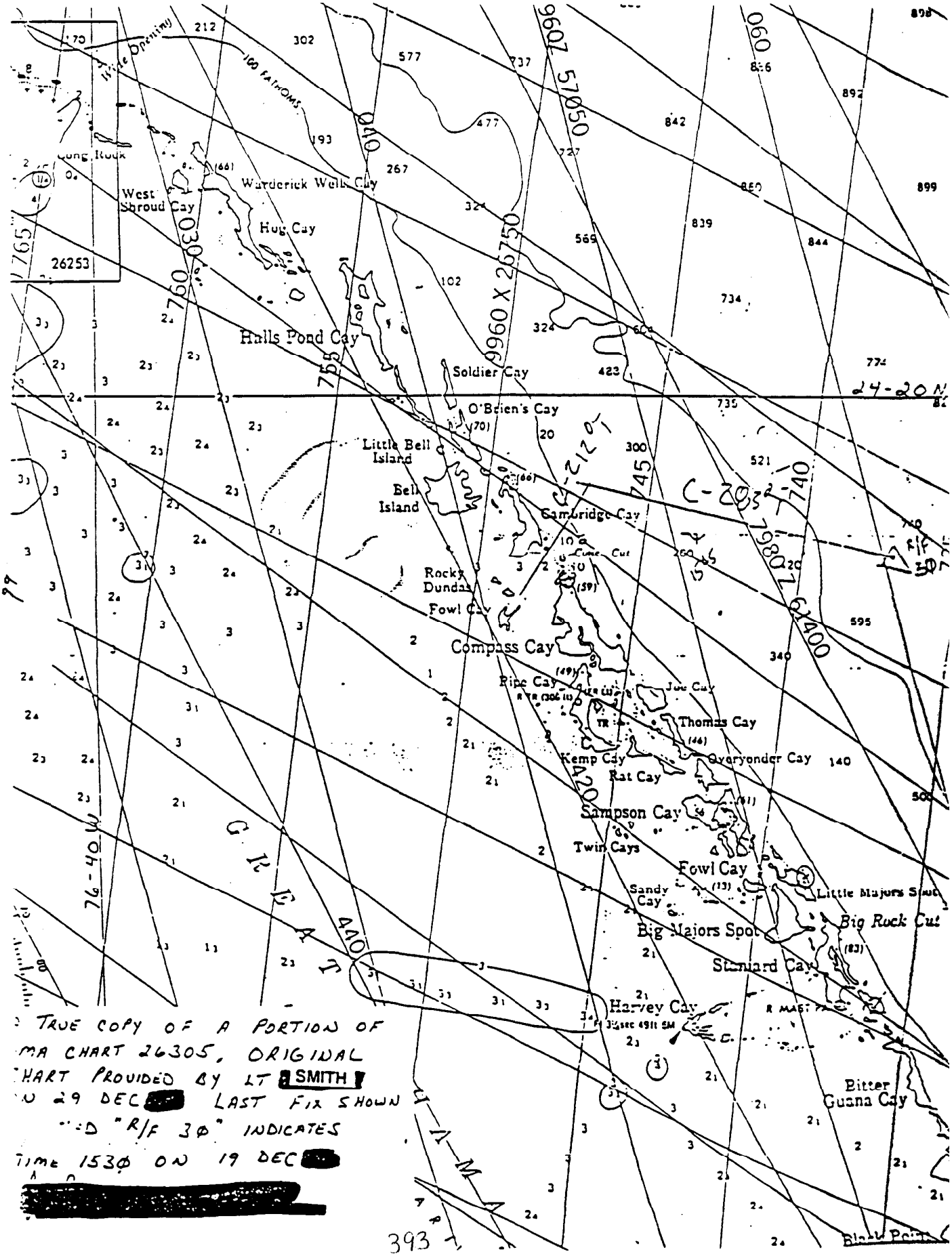
1. That LT SMITH revise log entry requirements aboard ISLAND CLASS (Opinion 2)

2. That LT SMITH institute changes to normal ISLAND CLASS' navigation procedures to include plotting of DR's and fixes and recording and comparison of soundings whenever possible. (Opinion 3)

3. That LT SMITH be addressed a punitive letter of reprimand in accordance with chapter 107, Military Justice Manual (COMDTINST M5810.1A) and section 8-D, Personnel Manual (COMDTINST M1000.6). (Opinion 6)

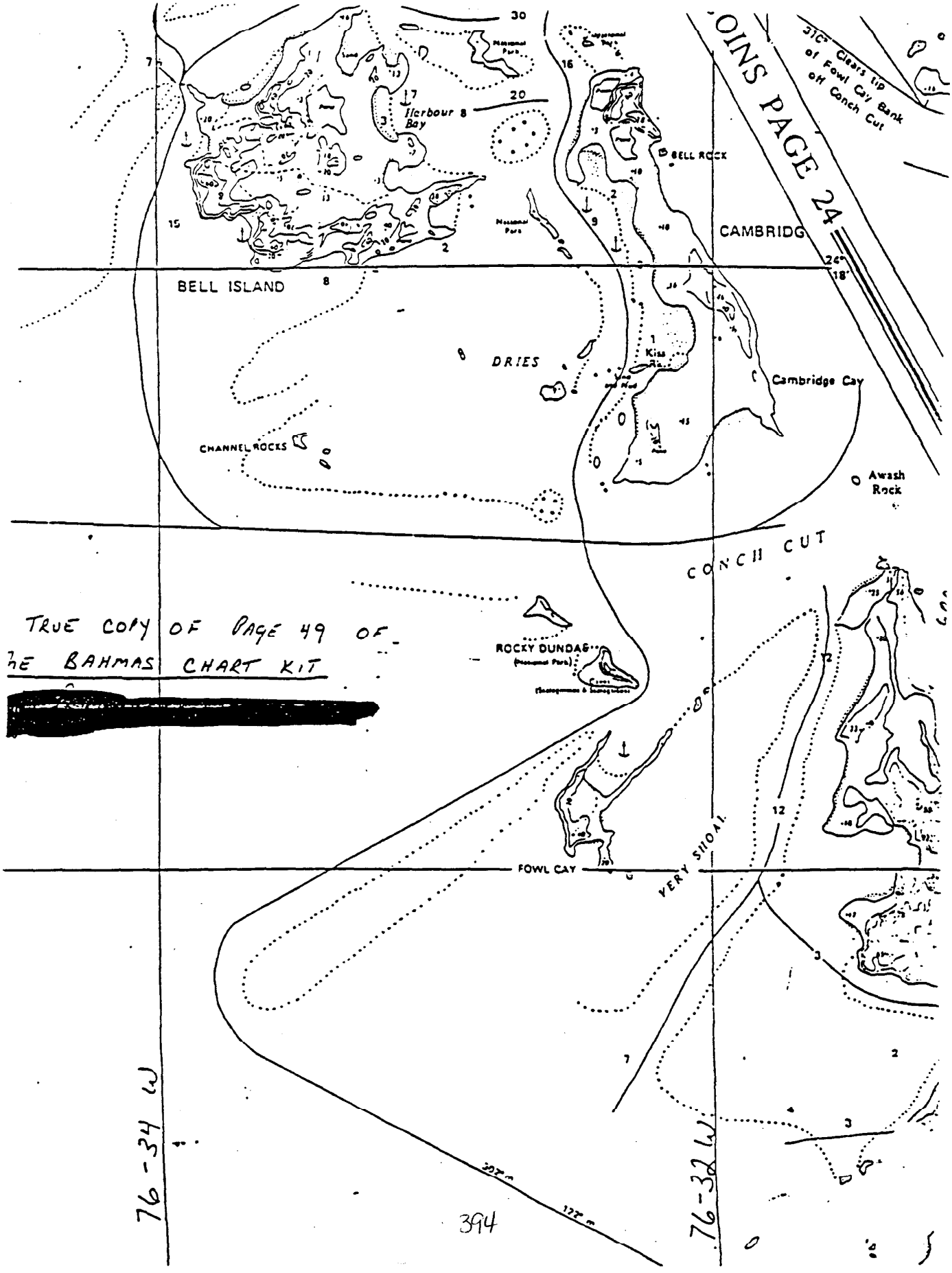
4. That LT SMITH procure Group Miami OPORDER 7-86 for ISLAND CLASS's library. (Opinion 7)

5. That LT SMITH complete and revise the ISLAND CLASS Organization and Regulations Manual. (Opinion 11)



TRUE COPY OF A PORTION OF
MA CHART 26305, ORIGINAL
HART PROVIDED BY LT SMITH
N 29 DEC [redacted] LAST FIX SHOWN
ED "R/F 30" INDICATES
TIME 1530 ON 19 DEC [redacted]

[redacted]



TRUE COPY OF PAGE 49 OF
THE BAHMAS CHART KIT

5. WPB OPERATIONS ON THE BAHAMAS BANKS. Operations on the Bahama Banks, precautions and considerations to be made (always attempt to confine operations to periods of rising tide).

a. Areas where coral heads are know to exist. Do not recommend operating in these area unless required to avert a life threatening situation. Advise Group Miami via fastest available means if transit/entry into these areas is contemplated: (Hens and Chickens, Gingerbread Ground, Little Bahama Bank between West and Memory Rock, Northwest Channel.) If you must operate in these areas, recommend you:

(1) Avoid night operations if at all possible.

(2) Have a small boat lead the way taking soundings/setting temporary marker buoys as necessary.

(3) Position a lookout in the bow with positive communication to the Conn.

(4) Set the piloting team.

(5) Do not rely on the charted position of coral heads and soundings in their vicinity.

b. Areas where coral heads do not exist. (East of Bimini, northeast of Memory Rock, Hurricane Flats). Recommend you:

(1) Ensure radar, LORAN and fathometer are all working properly and errors/corrections posted.

(2) Check soundings on chart carefully.

(3) Take tidal conditions into account.

c. Mackie Shoal. Recommend small unit operations only.

d. GROUNDING. Should the unspeakable occur and your boat is grounded, consideration should be given to the following actions in lightof the specific circumstances in your case.

(1) Stop engines. Check whether or not you might drift free. Check the state of the tide and note whether it is rising or falling.

(2) Sound at the stern and launch small boat to sound around the vessel to identify the direction of good water. Set temporary buoys to mark shoals. If soundings are conducive, attempt to back off and maneuver to good water. Sound all tanks and bilges. Check sea strainers.

(3) If seas are rough , set a kedge anchor to seaward. Use small boat to deploy.

(4) If aground at the bow and pounding hard, sound at stern and if head same as at time of grounding attempt to back off. Set a lookout at the stern with positive communications to the Conn.

(5) Review section 19 chapter 79 NSTM (Stranding).

COLLISION OF 110' WPB

WITH S/V

ON 16JUL97

U.S. Department of Transportation

United States Coast Guard

Commanding Officer
U.S. Coast Guard Air Station
[redacted]

[redacted]
Staff Symbol
Phone [redacted]

5100

From: Commander, Coast Guard Group [redacted]
To: Commander, [redacted] Coast Guard District (o)

Subj: FIRST ENDORSEMENT TO MISHAP INVESTIGATION OF GROUP [redacted] CASE #[redacted], S/V [redacted]

1. Enclosed is the mishap investigation, completed at my direction, concerning the collision of CGC [redacted] with the S/V [redacted] during Group [redacted] SAR case #[redacted]. This is a limited use Coast Guard mishap investigation report. Limited distribution and special handling are required in accordance with COMDTINST M5100.29. Statements made under privilege may not be released under FOIA.

2. One difficulty encountered in assessing the actions of [redacted] crew during this incident was the absence of published standard procedures for WPBs to employ while towing. Our research led us to the PCO/PXO school who use the Boat Crew Seamanship Manual (*COMDTINST M16114.5A*) as a reference for discussing towing evolutions. The procedures discussed in this manual have been widely adopted as operating doctrine within the small cutter community.

3. The facts of the case are not in dispute. The [redacted] crew was properly qualified and utilized accepted techniques and standard equipment throughout. The cutter and Group OPCEN had good comms with the [redacted]. There was no immediate danger to the [redacted] and [redacted] took ample time in dealing with the situation. This mishap could simply be attributed to [redacted] conning officer misjudging the relative drift rate of the [redacted] when making his approach to pass a tow line, but there are several issues in the chain that led to that misjudgment which are worthy of discussion:

COMMUNICATION. Throughout this case, communications, although extensive, were not effective. SMC, OSC, and the master of the S/V [redacted] never reached clear consensus about what options were available and the potential ramifications of each alternative. The [redacted] had an emergency tiller which was completely adequate and was easily installed, after the collision with [redacted] dissuaded them from accepting a tow. In conversation with SMC the master discussed "jury-rigging" a steering repair. The ambiguity of exactly what he meant by "jury-rig" was never resolved and the result was the awkward reality that [redacted] eventually effected a completely satisfactory repair without any outside assistance.

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Subj: FIRST ENDORSEMENT TO MISHAP INVESTIGATION OF GROUP [redacted] CASE #[redacted], S/V [redacted]

STRENGTH OF AN IDEA. This case is a classic example of a crew developing a perfectly workable plan under one set of conditions and then sticking to it in spite of changes in those conditions. The crew, conning officer and SMC were focused on towing the [redacted]. The apparent ease with which they passed a drogue to the [redacted] probably served to confirm the viability of their plan. However, if my impressions from viewing the video are correct, the weather had significantly deteriorated between the time the drogue was passed and the time the towing approach was attempted. The risk/benefit balance of [redacted] plan of action was subtly shifting with each additional knot of wind. The reality of just how much more difficult the second approach would be was unfortunately not realized in time to avoid the mishap.

TEAM COORDINATION. The CO of [redacted] was in an extraordinarily difficult position on this case. He had only been on board for three days. This was his first operational undertaking on a 110. His XO (the conning officer) was a capable and trusted shiphandler. I am certain that all these factors, in combination, made the CO more reluctant to intervene in the maneuver in spite of his own experienced eye telling him it wasn't quite right. When he did intervene it was a moment too late to avoid contact with the [redacted].

3. We are undertaking several initiatives as a result of this incident:

Opportunities to practice towing evolutions can be few and far between for WPBs. We are instituting a program of MLB support for more frequent towing training. Developing the seaman's eye required to accurately assess the many variables associated with these sometimes delicate shiphandling situations can only be done with practice. Our conning officers will be getting more.

Team coordination Training, although not currently required for WPB crews, will be conducted on board both [redacted] cutters. Team training will remain a high priority within this Group. I am confident that becoming more aware of interpersonal/crew dynamics will reduce future mishaps.

This case has already been the subject of considerable discussion and debrief within the Group. We will continue to apply lessons learned to enhance the effectiveness of our communications and sharpen our risk management skills.

[redacted]

Copy:File/CGC [redacted]

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MISHAP INVESTIGATION OF GROUP [redacted] SAR CASE [redacted] S/V [redacted]R

Synopsis:

CGC [redacted] had a minor collision with a 42' S/V while attempting to take the vsl in tow during heavy weather. [redacted] arrived O/S late in the afternoon and was unable to take the S/V in tow. The S/V remained adrift overnight with [redacted] maintaining station 75 yds astern. A successful delivery of a drogue was completed the following morning. During the subsequent approach to deliver the tow, [redacted] and the S/V collided.

Factual Information:

(1) History:

(a) 15JUL95 0957(L)- S/V [redacted] hailed Group [redacted] and reported herself disabled & adrift ("lost rudder, on sea anchor") 60NM's southwest of [redacted] in 50kt winds & 15-20ft seas. [redacted]R also stated she had rigged an emergency tiller but wanted to the advise the Coast Guard of her position/situation and obtain 24-36hr Wx forecast.

(b) 1006- Group (SMC) placed CGC [redacted] on standby and relayed above information.

(c) 1027- Group advised [redacted] of forecast continued Gale Warnings in the area, and put [redacted] on a 1hr comm schedule.

(d) 1050- Group directed CGC [redacted] to get underway, in case assistance became necessary.

(e) 1105- Group notified [redacted] of worsening Wx forecasted, and advised that if tow would be required, should take advantage of daylight. [redacted] reported she was riding well on sea-anchor & 100ft anchor chain, and would determine if tow would be required.

(f) 1120- [redacted] requested CG assistance.

(g) 1149- [redacted] U/W.

(h) 1538- [redacted] O/S. 10ft swell, 8-10ft seas, 35-40kt winds. [redacted]'s sea-anchor and anchor chain were tangled/fouled, chaffing, and could not be hauled in. She was also unable to secure a towline to the bow with the anchor chain deployed.

(i) 1716- An approach to deliver a drogue was aborted due to sea conditions. Weather forecast predicted decrease in wind/sea state by early morning.

(j) 1720- [redacted] remained adrift, bow to wx, w/out chafing gear on sea anchor. [redacted] maintained station 75yds astern [redacted] throughout the night in case the sea-anchor parted, and waited for forecast improved conditions.

(k) 16JUL 0825- Winds 20kts. Successful approach & delivery of drogue made via a heaving line. [redacted] released sea anchor, deployed drogue, and surprised [redacted] by hoisting her jib in an effort to improve her ride. [redacted] advised [redacted] that she could not be taken in tow with the jib up. [redacted] lowered her jib.

(l) 0933- Winds 25-30kts. An approach to pass the tow was begun with [redacted] adrift (w/out sea-anchor), riding poorly in the trough, occasionally making way under bare poles & surfing down the face of waves. With [redacted] abeam [redacted]'s port side and at a normal distance to throw a heaving line(30-40ft), [redacted] was lifted by a wave and lunged forward. [redacted] attempted to abort the approach and even try to swing the stern away due to [redacted]'s rapid closure rate as she passed abeam [redacted]. [redacted]'s bow sprit collided with [redacted]'s port taff rail.

(m) [redacted] declined further attempts of assistance, got under sail, and arrived safely at her next port of call. [redacted] was released from the case and returned to port.

(2) Injuries: There were no injuries aboard either vessel.

(3) Damage to Coast Guard Equipment:

(a) [redacted] sustained an 8 inch long, 1 inch deep dent in her taffrail.

(4) Damage to non-Coast Guard property:

(a) The S/V sustained significant damage to the bow pulpit, bow anchor roller, bow anchor roller pedestal, forestay bracket. Claim for damage was received 01AUG95 for $9320.95.

(5) Personnel Information:

(a) LT [redacted], CO USCGC [redacted], was on the bridge during the collision with S/V [redacted]. Experienced in heavy weather, but not conning a 110 foot patrol boat. Aboard [redacted] 3 days.

(b) LTjg [redacted], XO, was the conning officer during the collision with S/V [redacted], was a fully qualified Deck Watch Officer, but inexperienced in heavy weather. Aboard [redacted] 15 months.

(c) MKC [redacted], Engineer, aboard [redacted] 11 months.
(d) QM1 [redacted], Operations, aboard [redacted] 1yr, 2 months.
(e) BM1 [redacted], First Lieutentant, aboard [redacted] 1yr, 3 mos.

6. Meteorological Information:

(a) Weather conditions are confirmed by enclosure (1).

7. Communications:

(a) No communication problems were experienced.

Analysis:

(a) GDO/SMC misinterpreted the S/V's initial report of having rigged an emergency tiller as a jury rigged device; vice the very capable, if less comfortable, steering mechanism it is.

(b) OSC/[redacted] did not confirm the status of the S/V's ability to effect repairs/make way on its own.

(c) Once O/S; [redacted]'s CO, XO, Engineer, Operations Officer, and First Lieutenant met to discuss methods of taking the S/V in tow.

(d) CO's preferred approach was to bow to bow, recover S/V's sea-anchor, pivot [redacted] 180 degrees, and result with S/V in astern tow. During risk assessment, the Engineer recommended against this type approach. [redacted] simulated the maneuver twice and developed significant leeway as they pivoted. The CO calculated that the deckforce might not be able to keep up with the slack developed in the tow line and didn't want to risk fouling [redacted]'s screws.

(e) CO decided the shoulder line throwing gun would not be safe (because of deck motion) nor appropriate (probability of the line becoming tangled in the S/V rigging).

(f) A conventional "crossing the T" approach was agreed upon as appropriate. It required [redacted] to cast off the sea-anchor prior to being taking in tow. In anticipation of towing across the bar, [redacted] wanted to pass a drogue to [redacted] while she was riding well on the sea-anchor.

(g) XO had more experience in the 110 and took the conn to attempt to deliver the drogue. The sea swell was over 20 feet, and winds were over 35 knots. CO determined the risk of collision too great and ordered the approach aborted. Because [redacted] was riding well and improved weather was forecasted, CO decided to wait until morning to attempt another approach.

(g) [redacted] rode poorly while maintaining station on [redacted] overnight, no one aboard was well rested.

(h) XO again had the conn and made a successful approach the following morning to deliver the drogue. The tow line was not be delivered during the same approach because [redacted]'s bow was still fouled.

(i) [redacted] did not fully understand what was expected of her and raised the jib after casting off the sea-anchor. [redacted] CO noted that [redacted] made "good way downwind" under sail. Had [redacted]'s brief been more detailed, or if [redacted]'s CO asked for a status update/intention, vice advising them to lower the jib before being taken in tow, [redacted] may have reevaluated their condition and declined the tow.

(j) [redacted] studied [redacted]'s drift rate for 20 minutes prior to attempting another approach and noted that she drifted rapidly both down and across the wind at unpredictable rates. [redacted]'s CO was uncomfortable but felt committed to taking [redacted] in tow, because she was now riding in the trough and risked capsize from the breaking sea waves.

(k) The approach to deliver the tow initially seemed adequate. XO had the conn, CO provided advisories when he perceived [redacted]'s closure rate to be excessive. XO adjusted the approach as directed but as [redacted] approached [redacted] beam, it was caught and accelerated by a wave. CO ordered the approach aborted. XO engaged both engines at greater than clutch speed and even attempted to move [redacted]'s stern by applying left full rudder just as CO ordered left full rudder. [redacted]'s bowsprit collided with [redacted]'s port taffrail. The hulls did not collide.

Recommendations:

(a) Provide heavy weather operation training for 110 foot patrol boats.

(b) Include risk management training during qualification for GDO & OOD.

(c) Modify/replace shoulder line throwing guns. Civilian industry standard line throwing devices can be braced against the deck when fired and do not require a projectile.

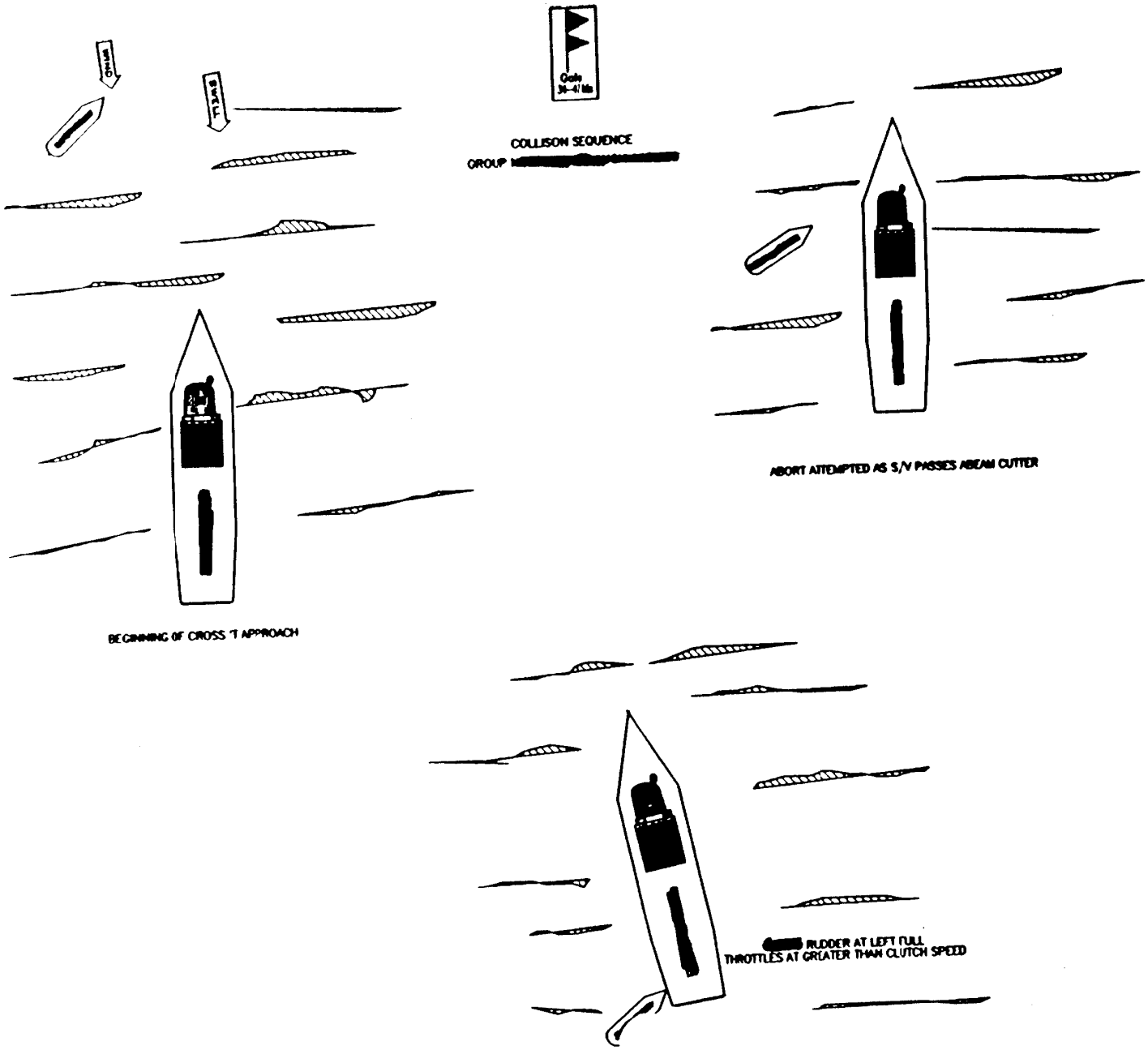
(d) Evaluate feasibility of delivering tow lines using floating line similar to delivery of a tow rope to a water skier, vice heaving line.

(e) OSC continuously evaluate all available information.

(f) SMC pass complete/accurate details to SRUs.

[redacted]

Investigation and Report Preparation Work Hours:
Thirty-Two Hours



Not to Scale

405

Department of Transportation
United States Coast Guard

Commanding Officer
USCGC [redacted] WPB [redacted]

[redacted]

16130
15 Sep 1995

From: Commanding Officer, USCGC [redacted] (WPB [redacted])
To: Commanding Officer, Coast Guard Group [redacted]

Subj: SUPPLEMENTAL MISHAP REPORT; S/V [redacted]

1. I indicated in my Mishap Report of [redacted]'s collision with the S/V [redacted] that the report format did not allow ample room to describe the incident, and that I would send a supplemental report. I have delayed sending this report due to two pending investigations of the incident. I conducted a safety debrief here immediately following the incident. The information provided here is consistent with that debrief.

2. At 1045 on [redacted], [redacted] was directed to assist the 42 ft sailing vessel [redacted] which had lost its steering 60 nautical miles South-West of [redacted]. At that time gale force conditions existed outside [redacted], and on scene, with Northwest winds exceeding 30 knots at [redacted], and reported exceeding 40 knots on scene.

3. At 1538 [redacted] arrived on scene, 60 miles offshore. Winds were from the Northwest at 30 - 35 knots, the seas were from the Northwest exceeding 6 feet and running on top of Northwest swells that exceeded 15 feet. The [redacted] had deployed a sea drogue and sea anchor off of their bow and were adrift, bow into the seas. The master of the [redacted] reported that the sea drogue and sea anchor were badly tangled and could not be hauled back aboard, and that he was concerned that the line to the sea anchor was chaffing. He reported that a tow line could not be lead through the bow and secured to the boat with this gear in place.

4. The CO, XO, Engineer, Operations Officer, and First Lieutenant met on the bridge to discuss alternatives. My preferred, lowest risk alternative was to approach the [redacted] bow to bow about 100 yards away, with my stern to the seas, recover the [redacted]'s sea anchor with a grapnel from my bow, bend the sea anchor line to my tow line, pivot [redacted] 180 degrees, and result with [redacted] in astern tow. The Engineer, the most experienced crew member in 110 WPB operations, felt that the maneuvering necessary to do this risked fouling the ship's towline in our screws. I was not convinced, and directed the XO to conn the ship into position to simulate this maneuver. We took station forward of [redacted], stern to the seas, and then pivoted 180 degrees as fast as possible twice. While pivoting we developed significant leeway. In my mind's eye it appeared that the crew on the rolling deck might be unable to keep up with the slack in the line fast enough to keep it out of [redacted]s screws. That plan was scrapped.

4/06

5. The remaining alternative was to have [redacted] cast off their sea anchor, and then to take them in tow with a conventional approach which would depend on how she rode in relation to the wind. Anticipating a need to cross the [redacted] bar with [redacted] in tow I wanted to pass [redacted]'s drogue to [redacted] while she was still riding well on the sea anchor. Once the drogue was safely aboard and ready to deploy off of the stern, [redacted] was going to cast off their sea anchor and drogue and drift until [redacted] could pass them a tow line. I considered using the shoulder line throwing gun to pass both the drogue and the towline, but that would involve two risks which I deemed unacceptable. First, [redacted]'s deck was quite lively. Proper control of the gun would run the risk of the operator loosing balance and getting hurt. Improper control might result in injury to someone aboard [redacted]. Second, the line throwing gun works by draping the shot line over the target, not by shooting the line into the target. When we draped the line over the sailboat it would not end up on deck, but rather in the rigging, forcing the people on [redacted] to go aloft to retrieve the line. This was unsafe under the circumstances.

6. At 1716 [redacted]O had conducted all necessary pre-briefs and began making the approach to pass the drogue. I had been in command for three days. Although I have more heavy weather experience than the XO, I felt that he was better qualified to conn the ship, since he had much more experience conning the 110, and it has some unique handling characteristics. The XO took the conn, and both of us were on the flying bridge. During the approach, with the winds gusting over 35 knots, and the sea swell combination over 20 feet, I became uncomfortable with the evolution and at 1720 I ordered the XO to abort the approach. I determined that the risk of our plan outweighed the risk of doing nothing, and waiting for the weather to subside. I was concerned that the sea anchor line might part during darkness, and complicate the situation, but I was more concerned that we might collide with [redacted] during our towing approach.

7. [redacted] maintained station approximately 75 yds astern of the [redacted] throughout the night. By 0825 the next morning the winds had subsided to 20kts. Another approach was made and [redacted]s drogue was successfully passed to [redacted] using a heaving line. The master of the [redacted] rigged the sea drogue on the stern so that it could easily be deployed. As [redacted] was setting up to tow, the master of the [redacted] released his sea anchor and drogue, and hoisted his jib. [redacted] began making good way downwind, as I would expect them to do without rudder control and only the jib hoisted. I called them on the radio, asking why the jib was up. I told them that I could not take them in tow with the jib up. They replied that they were trying to improve the ride, but would strike the jib. While [redacted] was releasing the sea anchor, and working with the sail time passed, and the wind increased.

8. After [redacted] lowered their sail the XO, who was conning, and I observed how the [redacted] was drifting for approximately

20 minutes. During this time, we noted that the [redacted] was riding with her port quarter into the seas, drifting rapidly both down and across the wind. [redacted]'s drift rate changed depending on it's position on the face or back of the seas. Winds had increased to between 25 and 30 knots, and I was again becoming uncomfortable with the plan to take the boat in tow, but I felt committed because [redacted] was now riding in the trough, and if weather deteriorated much more they ran the risk of capsizing from the breaking sea waves.

9. At 0933 the XO began making his approach. Initially, the approached appeared adequate for passing the tow. As the [redacted] approached [redacted]'s bow, it was apparent to me that we were not adequately compensating for [redacted]'s forward drift, and that there was a risk of collision. I told the XO to give [redacted] more room, and he did. As [redacted] approached [redacted]'s beam it had gone through the trough and had its port quarter on the face of the wave. Seeing the high rate of speed that the [redacted] was building, I ordered the XO to abort the approach intent on trying again. The XO engaged both engines at more that clutch speed. As the [redacted] approached [redacted]'s port quarter, it became apparent that even with the increased speed more room was needed between the two vessels. I ordered left full rudder at the same time that the XO was turning left full himself. Within moments the bow sprit of the [redacted] and [redacted]'s port taff rail collided.

10. [redacted] declined any further assistance, and to my surprise sailed south by herself. I had been told that [redacted] had no steering, and would be unable to rig any emergency steering. This was obviously not true.

11. The cause of the mishap was mistaking the relative drift rate of the [redacted] when making the towing approach. This resulted from my inexperience conning a 110 foot patrol boat, and the XO's inexperience conning a 110 foot patrol boat in heavy weather. Every decision, had it been made differently, might have averted the mishap....or might have caused a more severe mishap. I was pleased with the crew's team coordination, their skills, and their involvement in our risk management process. It would seem that more accurate information flow from [redacted] might have impacted our decisions to try to assist the vessel in any way under the circumstances, but it is my impression that the correct questions were asked and that they were adequately, if not accurately, answered.

GROUNDING OF 110' WPB

IN BOSTON HARBOR

ON 15JUN94

U.S. Department of Transportation

United States Coast Guard

Commanding Officer
USCGC THUNDER BAY (WTGB 108)

34 Tillson Avenue
Rockland, ME 04841-3498
Staff Symbol: co
Phone: (207) 596-6783

5830
24 June 1994

From: LT [redacted] USCG
To: Commander, Coast Guard Group Boston

Subj: INVESTIGATION OF THE GROUNDING OF USCGC [redacted]
(WPB [redacted] IN BOSTON HARBOR ON 15 JUNE 1994

Ref: (a) CG GP Boston ltr 5830 of 22 Jun 94
(b) Administrative Investigations Manual, COMDTINST M5830.1
(c) Coast Guard Regulations, COMDTINST M5000.3B
(d) Cutter Navigation Standards and Procedures, COMDTINST 3530.2
(e) Navigation Standards, [redacted]INST 3530.1B
(f) Standing Orders to the Officer of the Deck (OOD), [redacted]INST 1601.3B
(g) Cutter Training and Qualification Manual, COMDTINST M3502.4D

Preliminary Statement

1. At 12400 on Wednesday 15 June 1994, USCGC [redacted](WPB [redacted] -- A "C" class 110) ran aground in position 42-20'-14" N 071-00'-25"W(200 yards east of Castle Island, Boston Harbor).

2. In accordance with references (a), (b) and (c), a one-officer informal investigation was conducted to determine the circumstances surrounding the grounding of USCGC [redacted](WPB [redacted] in Boston Harbor on 15 June 1994.

3. Upon mooring at CG Support Center Boston following the grounding, LT [redacted] Commanding Officer of CGC [redacted] had key members of his crew and the bridge team prepare statements. These statements were completed with no corroboration. All statements were sealed in an envelope and presented to the Investigating Officer (IO). As a result, exact times and sequence of events varied to some degree. The Investigating Officer interviewed the key players after reading each statement in order to rectify discrepancies and to accurately reconstruct the events leading up to the grounding.

4. The officers and crew of CGC [redacted] were extremely cooperative in providing statements and information to the investigating officer.

Findings of Fact

That:

1. At 1220Q on Wednesday 15 June 1994 following a port visit to complete a load limit test on the ship's boom at CG Support Center Boston, USCGC [redacted] was underway in Boston Harbor bound for sea to conduct a First Coast Guard District Georges Banks patrol. (Enclosures 2 & 10)

2. Mooring stations were secured at 1220Q at which time the Special Sea Detail was set. (Enclosure 2)

3. Weather conditions at sailing time: Winds-Calm, Visibility-8 nm, Barometer-30.00(R), Temperature-Dry Bulb 77 degrees F / Wet Bulb 71 degrees F, Clouds-.02/Cumulus, Sea/Swell waves-none noted. (Enclosure 2)

FACTS #4 - #9 EXPLAIN NAVIGATION PRACTICES USED ABOARD CGC THE DAY OF THE INCIDENT. IN ACCORDANCE WITH REFERENCE (C), THE INVESTIGATING OFFICER CHOSE LTJG [redacted] USCG, EXECUTIVE OFFICER ABOARD USCGC BAY (WTGB), "A COMPETENT OFFICER, NOT ATTACHED TO THE SHIP INVOLVED AND NOT A MEMBER OF THE ADMINISTRATIVE INVESTIGATION, TO WORK UP THE RECKONING OF THE SHIP FROM THE DATA AVAILABLE TO ENABLE THE INVESTIGATIVE BODY TO FIX THE TRUE POSITION OF THE SHIP AT THE TIME OF TAKING THE GROUNDING."

4. Chart 13272 was being used by the Conn and Nav plot and was corrected to date. (Enclosures 3 & 4)

5. Tracklines were labeled (the 129 degrees true course should have been marked 130 degrees true and the 130 degrees true course should have been marked 132 degrees true), turn bearings/ranges were not labeled, objects for fixing positions were not designated on the chart, advance and transfer were not used in turns and danger bearings/ranges were not used as required by reference (d). (Enclosures 3 & 4)

6. Two high quality visual fixes using three objects were obtained at 1234Q and 1236Q. However, radar ranges were not used in conjunction with the visual fixes as required by reference (d). Depth was not recorded for each fix, ship's head was not marked and objects were not designated by name in the Bearing Book. A DR plot was not maintained through a minimum of two planned fix intervals and set and drift was not determined every second fix as required by references (d) and (e). New tracklines were not drawn following fixes to bring the ship back to desired course. (Enclosures 3, 4, 5 & 6)

7. The 1236Q fix was originally labeled as 1238Q in the Bearing Book, but was plotted as 1236Q on the chart. An annotation was made at the top of the Bearing Book page. (Enclosures 3, 4 & 5)

8. The 1238Q fix was a radar fix. However the objects used were not accurately labeled on the chart and were not specifically identified in the Bearing Book. QM3 Miller showed LTJG [redacted] which objects were used: A=Governors Island Dike, B=Castle Island and C=Spectacle Island. (Enclosures 3, 4 & 5)

9. There is a discrepancy with the times between fixes and distance traveled. The plot shows that between the fix at 1234Q and the fix at 1238Q that the ship was making 18 knots. However, statements indicate that the ship was proceeding at approximately 9 knots. The ship got underway at 1220Q and ran aground at 1240Q. It is approximately 1.5 nm from CG Support Center Boston to the fix taken at 1234Q and approximately 1.2 nm from the 1234Q fix to the location of the grounding. (Enclosures 2, 3, 4, 5, 10, 12, 13 & 14)

10. A Nav brief was not conducted prior to sailing. (IO's interview w/CO)

11. Tides were correctly computed and posted on the bridge. Currents were computed and posted, but the designation of an Ebb current for 1337Q was incorrect and should have indicated a Flood. The tide state at the time of the grounding was +3 feet above MLLW. The current at the time of the grounding was flooding at .5 knots in the direction of 303 degrees true. (Enclosure 8)

12. Prior to sailing, Gyro error was determined to be 0 degrees by triangulation and radar error was determined to be 25 yards by triangulation. (Enclosure 2)

13. CG Group Boston ET's conducted PMS and tuned CGC [redacted] radar on 27 and 28 April 1994. (IO's interview w/CO)

14. The DC Closure Log was not being maintained. (IO's interview w/CO)

15. On 15 June 1994, Material Condition Yoke was set 0000Q-0510Q and that status was recorded in the ship's smooth log. Material Condition X-ray was set at 0510 and recorded in the ship's smooth log. Although not logged, Material Condition Yoke was set before sailing time on 15 June 1994. (Enclosure 2 & IO's interview w/CO)

16. CGC [redacted] had drafts recorded prior to sailing as follows: 5' 6" Forward and 6' 11" Aft. (Enclosure 2)

17. The navigational draft for CGC [redacted] is 12 (Enclosure 6)

413

18. LTJG [redacted] (PXO), who reported aboard 6 June 1994, was the Conning officer. This was his first opportunity to conn the CGC [redacted] He was unfamiliar with the Boston Harbor area. Prior to this assignment, he served one year as a DWO aboard CGC [redacted] and one year as a DWO aboard CGC [redacted] in Miami, FL. (Enclosures 2, 12 & IO's interview w/LTJG [redacted])

19. LTJG [redacted] (XO), who reported aboard 4 May 1992, had the Deck from 1220Q to 1228Q. At 1228Q, he assumed the duties of Radar Operator for navigation and shipping. His normal duty during Special Sea Detail and Low Vis Nav Detail is OOD/CONN. He was familiar with the Boston Harbor area. LTJG Schmitt was Acting Commanding Officer, CGC [redacted] during April 1994 as the past CO was receiving medical treatment. Prior to this assignment, he served as a DWO aboard CGC YOCONA in Alaska. (Enclosures 2, 9, 11, 23 & IO's interview w/LTJG Schmitt)

20. LT [redacted] (CO), who reported aboard 19 May 1994, assumed the Deck at 1228Q. His normal duty during Special Sea Detail and Low Vis Nav Detail is Bridge Command. Prior to this assignment, he served as a DWO aboard CGC [redacted] and CGC [redacted] (1988-1990) in Governor's Island, CO of CGC [redacted] (1990-1991) in Gloucester, MA and Group Operations Officer (1991-1994) at CG Group Moriches. He was familiar with the Boston Harbor area. (Enclosures 2, 9, 10, 23 & IO's interview w/[redacted])

21. QM3 [redacted] who reported aboard 17 April 1994 and was serving in his first ON billet following QM "A" school and change in rate from RD2. was QMOW/Nav Plot/Evaluator. This was his fifth time while aboard [redacted] that he assumed the duties of Nav Plot/Evaluator. His normal duty during Special Sea Detail and Low Vis Nav Detail is Radar Operator. He was not familiar with the Boston Harbor area. (Enclosures 9, 13, 23, 25 & IO's interview w/QM3 Miller)

22. SN [redacted] who reported aboard 5 October 1992, was the Bearing Recorder. His normal duty during Special Sea Detail is on the Anchor Detail. His normal duty during Low Vis Nav Detail is Leadsman. Approximately twelve months prior to this incident, SN [redacted] did fill the billet of Bearing Recorder for Special Sea Detail and Low Vis Nav Detail. (Enclosures 9, 14, 23 & 26)

23. SN [redacted] who reported aboard 24 September 1992, was the Bearing Taker. His normal duty during Special Sea Detail is Bridge Lookout. His normal duty listed on the WQSB during Low Vis Nav Detail is Helmsman, however this billet is not typically filled. (Enclosures 9, 15, 23 & Fact 25)

24. QM1 [redacted] the ship's Navigator, who reported aboard 18 October 1992, was on regular leave and did not make the trip. His normal duty during Special Sea Detail and Low Vis Nav Detail is Nav Plot/Evaluator. He is familiar with the Boston

Harbor area. RD3 [redacted] was on leave enroute PC3 orders. His duty during Special Sea Detail was Bearing Recorder. His duty during Low Vis Nav Detail was Focsle Lookout. GM2 [redacted] was TAD to CG Group Boston awaiting disciplinary action. His duty during Special Sea Detail was Bearing Taker. His duty during Low Vis Nav Detail was Bridge Recorder. (Enclosures 2, 4, 9, 23 & IO's interview w/CO)

25. Standard operating procedure aboard CGC [redacted] is that the conning officer also serves as Helmsman while maneuvering this ship and auto pilot is used all other times. It is also standard practice that before switching from manual steering on the flying bridge to auto pilot on the lower bridge, the Conning officer calls down to Nav Plot and gives a course to dial in and set steering to auto pilot before departing the flying bridge. (IO's interview w/CO & LTJG)

FACTS #26-#32 RECONSTRUCT THE EVENTS IMMEDIATELY PRECEDING THE GROUNDING. THEY ARE BASED ON THE WRITTEN STATEMENTS AND THE INVESTIGATING OFFICERS' INTERVIEWS.

26. A fog bank was detected by the bridge team and various other crew members approximately 1 nm ahead of the ship in the vicinity of Castle Island. Following the 1236Q fix, visibility rapidly decreased to approximately 100-200 yards when CGC [redacted] was abeam of the Reserved Channel. LTJG [redacted] energized the ship's fog signal and QM3 [redacted] energized the navigational lights. The Low Vis Nav Detail was not set. However, SN did switch roles from Bearing Taker to Flying Bridge Lookout and BM2 [redacted] assumed the Focsle Lookout. (Enclosures 2, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 & IO's interviews w/CO, LTJG [redacted] LTJG [redacted] & QM3 [redacted])

27. The 1236Q fix held the ship 100 yards right of track. At that time, LT [redacted] went up to the flying bridge where LTJG [redacted] was conning the ship. He was steering a course of 130 degrees true (base course was labeled 129 degrees true) and was at clutch speed ahead with both shafts turning which correlated to SOA of 9 knots. LT [redacted] was discussing the deteriorating visibility and the fact that the ship was right of intended track with LTJG [redacted] LTJG [redacted] asked permission to slow the ship and he and LT [redacted] agreed to 7 knots (clutch ahead on one shaft). LTJG [redacted] put the starboard engine in neutral. LT [redacted] believed the ship was still right of track, went below to check the radar on the lower bridge and confirmed his belief that the ship was right of track. LT [redacted] then yelled up to the flying bridge and instructed LTJG [redacted] to come left 10 degrees. LTJG [redacted] came to course 120 degrees true. LT [redacted] then checked the 1238Q fix. This was a radar fix and it held the ship 40 yards left of track. LT [redacted] and LTJG [redacted] did not concur with the fix as the ship's position was clearly right of track on the radar screen. LT [redacted] then went to the flying bridge and had LTJG [redacted] shift the conn to the lower bridge. LTJG [redacted] followed LT [redacted] to the bridge within approximately 10 seconds.

LT [redacted] went immediately to the radar and saw that the ship was considerably right of track nearing the edge of the channel. (Enclosures 3, 4, 5, 10, 11, 12, 13, 14, 15, 17, 19 & IO's interviews w/CO, LTJG [redacted] LTJG [redacted] & QM3 [redacted]

28. Upon reaching the lower bridge, LTJG [redacted] appeared flustered as he switched engine control to the lower bridge. The ship's head had swung to starboard somewhere between 145 and 150 degrees true. LTJG [redacted] realized the swing was caused by operating only on the port shaft. LTJG [redacted] recommended a course of 120 degrees true and when the ship would not respond, LTJG [redacted] realized the ship steering system was left in a manual remote steering mode for the flying bridge. LTJG [redacted] immediately switched the helm control on the lower bridge to automatic and dialed in 120 degrees true. (Enclosures 10, 11, 12 & IO's interviews w/CO, LTJG [redacted] & LTJG [redacted]

29. As the ship's head began swinging to the left, LTJG [redacted] saw what appeared to be two sailing vessels 200 yards off his port bow and stopped the course change to port. The Focsle Lookout reported these contacts as a sailing vessel and a lobster vessel. LTJG [redacted] also observed a tug boat in bound off the port bow. At 12400, as the vessels passed, LTJG [redacted] switched steering to manual on the bridge and put the rudder over to left full and as he was passing 125 degrees true, all hands felt the ship shudder. LT [redacted] ordered all stop. LT [redacted] observed that the fathometer read zero feet below the keel. LT [redacted] then gave the order back down. LTJG [redacted] took both throttles and applied astern turns. Four seconds later, there was another shudder throughout the ship and LT [redacted] realized the ship was aground. LT [redacted] ordered all stop. LT [redacted] then saw green buoy #7 off the port bow. Several other crew members saw the green buoy just before the grounding. (Enclosures 10, 11, 12, 15, 16, 17 18, 19 & IO's interviews w/CO, LTJG [redacted] & LTJG [redacted]

30. At 1[illegible]10, General Quarters was sounded and material condition Zebra set. Inspections of all spaces were conducted by members of the crew. The Damage Control Assistant, MKC [redacted] advised LT [redacted] that preliminary inspections of the ship revealed no apparent damage or flooding and that soundings were being taking to access damage to the fuel tanks. (Enclosures 2, 10, 11, 12 13, 14, 15, 16, 17 ,18, 19 & 20)

31. LT [redacted] believed the ship was aground by the bow and engaged the starboard shaft, clutch astern in troll mode, hoping to keep the stern from going into the shoal. At 12500 the anchor was let go. LTJG [redacted] ordered QM3 [redacted] to fix the ship's position. The position was recorded as 42-20'-14" N 071-00'-25", bottom type mud, charted depth 3 feet at MLLW. (Enclosures 3, 10, 11, 12, 14 & IO's interviews w/CO & LTJG [redacted]

32. LTJG [redacted] immediately informed CG Group Boston of the situation on Channel 81 VHF. The tug Miss Yvette was in the

immediate vicinity and offered assistance. LT [redacted] had the Miss Yvette pass a tow line to [redacted] towing bit to prevent the stern from going aground. LT [redacted] called the Deputy Group Commander, CDR [redacted] to get a second opinion on tug assistance. LT [redacted] was told to use the tug at his discretion. LT [redacted] decided to have the tug slowly pull [redacted] stern into the channel. The [redacted] was refloated at 1313Q. The Miss Yvette stood by while [redacted] tested shafts and rudders. At 1326Q, CGC [redacted] secured from General Quarters and set the Special Sea Detail in order to return to CG Support Center Boston. CGC [redacted] returned under its own power. MKC [redacted] detected a slight vibration in the starboard shaft. The engine was put in neutral until it was used to moor the ship at 1352Q. (Enclosures 2, 10, 11, 12, 13, 14, 15, 16, 18, 19 & IO's interview w/CO)

33. From the time LTJG [redacted] took his position as radar operator to the time of the grounding he had detected about 20 vessels visually and by radar. He used Automatic Radar Plotting Aid to monitor vessel movements. (IO's interview w/[redacted])

34. LTJG [redacted] stated to the investigating officer that he was not aware that he was supposed to tell Nav/Plot to take control of the helm/auto pilot before he departed the flying bridge. In addition, QM3 [redacted] stated to the investigating officer that he did not know that as Nav/Plot he was responsible for setting up the auto pilot on the lower bridge. (IO's interview w/LTJG [redacted] & QM3 [redacted])

35. LTJG [redacted] stated that he did not know that LTJG [redacted] had put the starboard engine in neutral and would have advised against it had he known. (Enclosure 11 & IO's interview w/LTJG [redacted])

36. The amount of rudder required to maintain course with 1 engine on line clutched ahead is 8 to 10 degrees of opposite rudder. This is also evident when auto pilot is used. (Enclosure 21 & IO's interview w/ [redacted] te (PCO/PXO Instructor, a former 110' CO) & LTJG [redacted])

37. At 1420Q, the Massachusetts State Police Marine Unit Dive Team assessed the damage to CGC [redacted] The divers reported that both propellers were severely damaged. The starboard side of the hull 2' above the keel had a 1/4" wide X 1/16" deep X 17' long scratch on the starboard side. The transducer appendage on the port side also sustained scratches. Sharp scratches were apparent along the keel. Vibration was evident on both shafts at clutch speed. Neither shaft could be rotated by hand with a strap wrench from inside the ship indicating binding from possible bent shafts or struts. There was no apparent damage to the rudders or fin stabilizers. (Enclosures 2 & 24)

38. CWO [redacted] of MLC (vr-3) indicated that the specification package will be ready for solicitation on 24 June 1994 and

emergency haul out would occur during the week beginning 30 June 1994. Actual dollar amounts will not be available until dry dock examination. CWO [redacted] stated that if the props need replacing, the cost would be $22K each, shaft replacement $19.8K each and dry dock cost approximately $80K. The figure that he quoted for a worst case scenario should not exceed $180K. (Enclosure 24)

39. No personnel were injured as a result of the grounding. (IO's interview w/CO)

40. A unit training level assessment based on reference (g) for the last twelve months was conducted on 22 June 1994 by LT [redacted] with the following outcome: CGC [redacted] was 100% complete in piloting, low visibility navigation, precision anchoring, magnetic piloting, mooring and man overboard drills. The ship was 50% complete in steering casualty drills and 0% complete in towing exercises. (Enclosure 27)

41. The Deputy Group Commander, CDR [redacted] examined bridge personnel PQS/JQRs and determined that all were complete for Bearing Taker, Bearing Recorder, QMOW and Lookout. LT [redacted] LTJG [redacted] and LTJG [redacted] had all completed DWO PQS. However, LTJG [redacted] was not a qualified underway OOD aboard CGC [redacted] (Enclosures 25, 26 & IO's interview w/CO)

42. All formal resident and pipeline training was completed in accordance with reference (g) with the following exceptions: the MKC had not received training in Small Cutter Damage Control (scheduled to attend 11 July 1994), the MK3 has not attended P250 school, LTJG [redacted] had not attended PCO/PXO school (presently attending the course 20 June - 1 July 1994) and no crew member has completed the Allied Visual Communications course. (Enclosure 27 & IO's interview w/CO)

43. Prior to relief of command in May 1994, LT [redacted] observed the operational readiness of CGC [redacted] crew underway performing an Abandon Ship drill, Man Over Board drill and Main Space Fire drill. He did not observe a Low Visibility Navigation drill. (IO's interview w/CO)

44. LT [redacted] did have the Low Visibility Navigation Detail set on 13 June 1994 upon departing Gloucester, MA and CGC [redacted] was on the Hague Line 23-30 May 1994 operating mostly in reduced visibility. (Enclosure 31 & IO's interview w/CO)

45. CGC [redacted] last complete Status of Resources and Training System report (SORTS) as of 18 April 1994, held CG Training at M1 (the highest attainable). (Enclosure 28)

46. CG Group Boston held a semiannual inspection of CGC [redacted] on 29-30 April 1993 with an overall satisfactory evaluation. Low visibility piloting was rated as outstanding. However, LTJG Schmitt, SN [redacted] and SN [redacted] were the only bridge personnel aboard during the grounding who were assigned during the Group

inspection. The next Group inspection is scheduled for 29-30 June 1994. (Enclosures 9, 29 & IO's interview w/CO)

47. The Atlantic Area Operations/Mobility (OPS/MOB) Training Team visited CGC [redacted] from 10-13 August 1992. However, LTJG [redacted] was the only member of the bridge team during the grounding who was assigned during the visit. The next OPS/MOB visit is scheduled for 18-21 July 1994. (Enclosures 9, 30 & IO's interview w/CO)

48. LTJG [redacted] is the only crew member who attended Human Error Accident Reduction Training (HEART). However, he attended this training over 3 years prior to the grounding while in Alaska. (IO's interview w/LTJG [redacted]

49. LT [redacted] has already prepared a "Lessons Learned" letter addressed to CG Group Boston. In this letter he addresses the inexperience of his bridge team at the time of the incident, lack of a helmsman at Special Sea Detail, ship maneuverability/ characteristics, use of the radar on the bridge, the need for HEART and the need for better administrative and navigation practices. (Enclosure 32)

Opinions

That:

1. The causes of CGC [redacted] grounding are:

(a) Navigation procedures outlined in references (d) and (e), and general practices of prudent seamanship were not followed. (Facts 5, 6, 7, 8, 10 & 11)

(b) Reduced visibility in Boston Harbor. (Facts 26, 27, 28 & 29)

(c) High marine traffic in Boston Harbor. (Facts 28 & 33)

(d) Newly assigned and inexperienced personnel were filling critical billets while underway. (Facts 18, 20, 21 & 22)

(e) Several key personnel were on leave, TAD and recently transferred. (Fact 24)

(f) Personnel were filling the wrong billets for the existing conditions. (Facts 18, 19, 20, 21, 22 & 23)

(g) The majority of the bridge personnel aboard at the time of the grounding were not well trained even though the unit training level for the twelve month period prior to the grounding could be considered adequate. (Facts 40, 41, 42 & 45)

(h) LTJG [redacted] had not attended PCO/PXO school. (Fact 42)

(i) Faulty standard operating procedures were followed in that a dedicated Helmsman was not posted during the transit. (Facts 18, 25, 28 & 29)

(j) LT [redacted] and LTJG [redacted] were not familiar with the handling characteristics of the ship operating on one engine. (Facts 27, 35, & 36)

(k) LTJG [redacted] was not familiar with the bridge equipment in that he failed to switch manual steering from the flying bridge to auto pilot on the lower bridge in a timely manner. (Facts 25, 27 & 28)

(l) CGC [redacted] was not being steered manually or by auto pilot for at least a period of ten seconds. (Fact 27 & 28)

(m) LT [redacted] failed to replace LTJG [redacted] with a qualified Conning Officer when the fog set in. (Facts 26, 27, 28 & 29)

2. Opinion Synopsis of the Conning Officer's actions and acts of nature just prior to the grounding: The 1236Q fix held CGC [redacted] right of track as did the radar picture. The starboard engine was placed in neutral to slow the ship's headway, the ship began swinging to starboard (this was not readily apparent by eye as visual landmarks were obscured by the fog). The flood current in the direction of 303 degrees true at .5 knots was now slightly off the port bow exacerbating the swing to starboard. LTJG [redacted] departed the flying bridge without having positive control of the ship's steering system. Once positive control of steering was regained on the lower bridge, LTJG [redacted] began bringing the ship to port. However, LTJG [redacted] stopped the turn to avoid two vessels off his port bow. Once these vessels passed, LTJG [redacted] put the rudder over to left full to continue his turn to port. This action was taken too late as the ship ran aground. (Facts 11, 18, 27, 28 & 29)

3. Although the current crew had operated in reduced visibility prior to the grounding, Low Visibility Navigation drills are essential to properly review and evaluate procedures in a training environment. (Facts 43 & 44)

4. Had the grounding caused flooding, the absence of a current DC Closure Log could have resulted in greater damage and even loss of the ship. (Fact 14)

5. The times of fixes are in question and in turn the speed of CGC [redacted] during the transit is not totally clear. Statements by LT [redacted] LTJG [redacted] and QM3 [redacted] indicate the ship was turning for 9 knots until approximately 1236Q at which time speed was reduced to 7 knots. The speed made good between

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the 1234Q and 1236Q fixes and between the 1236Q and 1238Q fixes is approximately 18 knots. The ship was underway at 1220Q. It is approximately 1.42nm from Support Center to the fix at 1234Q. It is also approximately 1.42nm from the 1234Q fix to the position of the grounding at 1240Q. (These distances were determined by the IO and differ slightly from LTJG [redacted] (the officer who worked up the reckoning of the ship for the investigation) calculations. It is not likely that CGC [redacted] was averaging 6.0 knots during the first 1.42nm then 14 knots upon seeing the fog for the next 1.42nm. The poor navigation practices of the bridge team combined with the inexperience of the QM3 on Nav/Plot and the SN as Bearing Recorder further cast doubt on the validity of any of the fixes or times of the fixes. The 9 knots speed followed by a reduction to 7 knots is much more likely (2.84nm travelled in 20 minutes = 8.4 knots). (Enclosures 3, 4, 5 & 13 / Facts 6, 7, 8, 9 & 27)

6. The actions taken by LT [redacted] immediately following the grounding were appropriate and kept the ship from going further aground. (Facts 29, 30, 31 & 32)

7. Considering LTJG [redacted] had served aboard for two years and was Acting Commanding Officer during April 1994, his experience, expertise and judgement should have been used in a role other than Radar Operator. Both he and LT [redacted] should have realized this. (Fact 19)

8. LT [redacted] has already made changes in his command that should improve its safe navigation and overall operational capability. (Fact 49)

9. The Low Visibility Navigation Detail was not set. However, when the fog rolled in, the Navigation detail was already set for Special Sea Detail, navigational lights were energized, fog signals were sounded and lookouts were posted. (Fact 26)

10. Given the damage estimates ($180K being a high estimate), it is economical to repair the ship. (Facts 37 & 38)

Recommendations

That:

1. No disciplinary action should be taken.

2. Navigation procedures aboard CGC [redacted] need immediate command attention. Reference (d) must be a guiding light. Classroom training and underway drills are essential and should begin now. Bridge team members should be sent TAD to other units to begin the underway training while CGC [redacted] is being repaired. Simulator training at the Coast Guard Academy is also recommended.

4/21

GROUNDING OF 110' WPB AT DRY PASS, PRINCE OF WHALES ISLAND, ALASKA ON 05DEC89

U.S. Department of Transportation
United States Coast Guard

Commander
U. S. Coast Guard
Group Ketchikan

Ketchikan, AK. 99901
907-228-0211

1650
28 Feb

From: Commander, Coast Guard Group Ketchikan
To: Commander, Seventeenth Coast Guard District (dl)

Subj: SUPPLEMENT TO INVESTIGATION OF USCGC GROUNDING AT DRY PASS, PRINCE OF WALES ISLAND, ALASKA ON 5 DECEMBER 19

Ref: (a) CCGD17(dl) letter 5830/17io-0002.00 of 21 Feb
(b) Administrative Investigation Report of USCGC Grounding 1650 of 11 Jan

1. SUPPLEMENTAL PRELIMINARY STATEMENT. The following information concerning the grounding of USCGC on 5 December 19... is provided in response to reference (a) and is supplemental to reference (b). Article 31 warnings were not given to any of the personnel interviewed by the investigating officers in the original administrative investigation or for this supplemental.

2. SUPPLEMENTAL FINDINGS OF FACT. The following Supplemental Facts are provided as additions to reference (b). The facts and enclosures are numbered in continuation of the original investigation. These facts parallel those items questioned in paragraphs 3 and 4 of reference (a).

Fact 95. As previously discussed in Fact 21, CWO discussed the transit through El Capitan Passage with EMCS , EM1 , and QM1 the day before grounding, covering previous transits made by personnel, currents, and general safe navigation practices. However, a formal pretransit briefing was not conducted. CWO further asked EM1 about his comfort level with the transit, his familiarity with the navigational charts, that the Coast Pilot was available with the appropriate sections marked by a paperclip, and the options of stopping and/or anchoring, if necessary, to reassess the transit when in the vicinity of Daybeacons 14 through 16. (Supplemental Enclosure 1A)

Fact 96. As previously discussed in Facts 22 and 25, CWO misunderstood the level of local knowledge possessed by personnel aboard . CWO did not know how the misunderstanding occurred but, in a re-interview with the investigating officer, again stated that he believed he had adequate local knowledge and felt comfortable with that. (Supplemental Enclosure 1A)

Fact 97. QM1 was not present on the bridge for the transit because he stood the previous midwatch. In light of the "ideal" weather conditions and the perceived level of local knowledge in EMCS and EM1 , CWO decided to allow QM1 to rest following his midwatch and not require his presence on the bridge for the El Capitan Passage transit. (Enclosure 1 and Supplemental Enclosure 1A)

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Fact 98. Fact 27 delineates those personnel who were members of the modified special sea detail, specifically from the time [redacted] completed the boarding until the time of grounding. BMCS statement included in the original investigation indicates he was not at his modified special sea detail station the entire period due to his serving as coxswain of the smallboat which transported personnel to conduct the boarding of a vessel. He returned and again assumed his position on the bridge soon after continued her transit into Dry Pass.

Fact 99. CWO considered utilizing a small boat to lead the way through El Capitan Passage, but decided that it would not be necessary due to his perceived level of local knowledge aboard [redacted]. (Supplemental Enclosure 1A)

Fact 100. Facts 39 and 40 provided the details on how BM2 , the JOOD at the time of grounding, obtained the incorrect course of 064T. BM2 said in his original statement that he failed to check the inset to the navigation chart, which clearly indicated a course of 066T, but rather utilized his own measurement of the unlabeled trackline plotted on the main body of the chart. BM1 , the OOD, indicated in his original statement that he was aware of the plotted track of 066T, but accepted the 064T course because that course "looked good on the radar with my EBL and also looked good visually." CWO had studied the charts prior to the transit, but had not memorized that specific course. (Enclosures 4, 6, and Supplemental Enclosure 1A)

Fact 101. In statements from personnel subsequent to the grounding, the CPA to Buoy 28 was stated as below. Based on those statements, it was previously estimated in Fact 54 that the CPA to Buoy 28 was approximately 25-30 yards.

CWO	30 yds
BMCS	25-30 yds; but did not see the buoy until some time after grounding.
BM1	75 feet (or 25 yds)
QM1	50-100 feet (or 17-33 yds); but did not see the buoy until approximately 3 minutes after grounding.
BM2	20-25 yds
SN	25-30 feet (or 8-10 yds)

(Enclosures 1, 2, 4, 5, 6, 9, 42)

Fact 102. A subsequent assessment of the CPA of Buoy #28 was made by CDR E. E. PAGE on 27 FEB 90 aboard at which time a reenactment of the buoy passing down the port side was conducted using a visual reference to small boat. Each person on the bridge at the time of the grounding individually directed the small boat to the same position and distance they recall Buoy 28's CPA was on 05 DEC 89. The results of this reenactment correspond closely with the statements of Fact 101 above. Photographs of when aground appear to place the buoy with a closer CPA than 25-30 yards; however, the photos are misleading in that heading at the time the pictures were taken was 10 degrees left of the heading when it first stranded. (Supplemental Enclosure 2A)

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28 Feb

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Fact 103. When contacted 28 FEB ., District Seventeen (oan) explained that the position of Buoy 28 is an anomaly to meet the needs of the primary users of Dry Pass. Tugs towing log booms frequently transit this area and oftentimes use the reef to bounce their log tows off and straighten them out when they make their turn exiting Dry Pass. On numerous occasions the tugs with log booms knocked down the daybeacon that previously marked the reef. The Commanding Officer of CGC , who serviced the daybeacon, recommended replacing it with a buoy that would be more durable and better survive being struck. Accordingly, a buoy (later to be known as Dry Pass Buoy 28) was shackled to the daymark foundation near the southern edge of the reef. When consideration was given to place the aid at the edge of the channel, the primary users complained that this would not serve their needs and would be readily struck and taken off station. As a result the buoy was never relocated. While a larger caisson type structure would survive in this position the costs of erecting the structure are considered prohibitive. (Supplemental Enclosure 3A)

3. SUPPLEMENTAL OPINIONS. The following Supplemental Opinions are provided as additions to reference (b) and are numbered in continuation of the original investigation. These Supplemental Opinions parallel the items questioned in paragraphs 5 and 6 of reference (a).

Opinion 43. (Delete Opinion 1 in it's entirety and replace with this opinion.) A single, primary cause of the grounding cannot be determined from the facts obtained. However, failure to proceed on the plotted trackline while standing into El Capitan Passage was a major contributing cause and was due to:

a. Failure to conduct a navigation plot. (Fact 35)

b. Failure to officially set the modified special sea detail. (Fact 98)

c. Failure to know and use and danger soundings. (Fact 36)

d. An incorrect course recommendation of 064T was passed from the JOOD/navplot to the OOD, which was accepted and utilized by the OOD. (Fact 39)

e. The helmsman incorrectly steadied up on a course of 061T, instead of the ordered course of 064T. (Fact 49)

f. The OOD maneuvered around the vessel just boarded and significantly shortened approach to the passage. This led to arrive at the next turn range in less than one minute, much quicker than anticipated by the OOD, and resulted in the OOD starting his next recommended course (064T) late. (Facts 38, 41)

g. being set to the northwest (left of track) by the ebb current was not taken into account by the OOD in making his turn to 064T. (Facts 41, 49)

Subj: SUPPLEMENT TO INVESTIGATION OF USCGC GROUNDING AT DRY PASS, PRINCE OF WALES ISLAND, ALASKA ON 5 DECEMBER 19

Opinion 43:

h. Dry Pass Buoy #28 was relocated off its proper position and provided misleading information to C.O. and bridge personnel that, while left of track, the vessel was still proceeding in sufficiently deep water.

Opinion 44. Coast Guard personnel were at fault for the grounding of as listed below. While each of the below errors were relatively minor in nature, cumulatively and in conjunction with the improper position of Buoy 28, all are considered contributing causes to the grounding of .

CWO (CO): For not taking appropriate corrective action when he sensed that was standing into danger. For not setting the modified special sea detain. For not requiring a navigation plot. For not using danger soundings.

BM1 (OOD): For starting his turn to the 066T approach course late.

BM2 (JOOD): For providing the OOD with an incorrect course of 064T vs 066T upon approach to El Capitan Passage.

SN (HELM): For steering an incorrect course of 061T vs the ordered course of 064T.

Opinion 45. All proper navigational procedures prescribed in Commanding Officer's Standing Orders were not followed. Note that Commandant Instruction 3530.1 (outdated) applies to cutters 180 feet and over). Specifically:

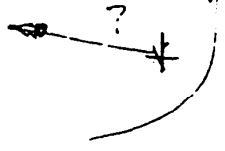
a. The Special Sea Detail was not set when the proposed track took NAUSHON within 1/2 mile of any shoal or two fathoms or less.

b. The OOD did not notify the C.O. when it appeared to him when he had a nagging doubt as to the vessel's safety.

c. Fixes of position while dead in the water conducting a boarding were not taken every 6 minutes as prescribed when underway in restricted waters, nor were they taken when the transit resumed.

Opinion 46. I continue to support Opinion 4 as stated in the original investigation. The numerous warnings in the Light List, Code of Federal Regulations and elsewhere notwithstanding, the assumption by the CO and OOD that sufficient water depth to navigate should be available up to the channel side of a buoy, and their belief that a 25 yard CPA was adequate for a safe transit (in a 160 yard wide channel) was valid. If Buoy 28 had been affixed to its proper, charted location, navigating with this assumption would not have resulted in a grounding, all other causes notwithstanding. (Facts 51, 52, 53, 83)

428 what position direction?



1650
28 Feb

Subj: SUPPLEMENT TO INVESTIGATION OF USCGC GROUNDING AT DRY PASS, PRINCE OF WALES ISLAND, ALASKA ON 5 DECEMBER 19

Opinion 47. I continue to support Opinion 20 as stated in the original investigation. Although the OOD should have reviewed the applicable sections of the U.S. Coast Pilot prior to conning through El Capitan Passage, his failure to review the Coast Pilot was not a contributing cause to the grounding. The Coast Pilot does not provide significant, additional navigational information applying to the specific area where ran aground that would have prevented the grounding. It merely states local knowledge is "desirable". (Facts 23, 24)

Opinion 48. Again, I continue to support Opinions 21 and 22 of the original investigation. As stated above, failure to set the modified special sea detail contributed to the grounding. (Fact 38)

Opinion 49. I continue to support Opinion 25 of the original investigation. The historical position of Dry Pass Buoy 28 is inconsistent with the standards outlined in applicable Coast Guard aids to navigation manuals. The buoy is set in an unorthodox manner, chained to a rock which bares at a plus 2 tide, set back on a reef, and not positioned on the channel side of the reef. (Enclosure 3A)

Opinion 50. Taking and plotting an initial fix following the boarding and during the transit to El Capitan Passage would have been helpful in setting up a proper approach. A running plot would also have been useful. (See Opinion 27)

4. SUPPLEMENTAL RECOMMENDATION.

Recommendation 2. Based on input received from D17 (oan) it is evident that moving Dry Pass Buoy #28 to the edge of the channel has been considered and ruled out as a viable option. Accordingly, recommendation 2.b is withdrawn. The fact the buoy has been reported missing twice since grounding indicates the Coast Guard's present means of marking Dry Pass reef is not providing a reliable aid to navigation.

Enclosures:

(1A) Summary of Conversation with CWO dtd 28 FEB 90
(2A) CDR memo "Distances from Buoy 28" dtd 27 FEB 90
(3A) Summary of Phonecon with Mr. (oan) dtd 28 FEB 90

28 FEB

From: CDR

To: Investigative File

Subj: SUMMARY OF CONVERSATION WITH ( ), REGARDING DRY PASS BUOY #28

1. I discussed the placement of Dry Pass #28 and the history of this aid with assistant branch chief, in response to the direction provided by (d1) ltr 5830 dtd 21 Feb .

2. relayed to me that over the last several years he has had the opportunity to talk with some of the users of the Dry Pass waterway and is aware of the history of this aid. In summary he stated:

- The reef Dry Pass Buoy #28 marks was previously marked with a day beacon that was serviced by the CGC LAUREL.

- The Dry Pass waterway is primarily used by tugs towing log rafts. They are the ones that have intimate local knowledge of the area and who cause the most problems with Buoy #28. Dry Pass is also used by fishing, recreational and tourist vessels who transit the area.

- That the daybeacon had a history of being knocked down by log tows passing through the area. The towing vessels have at times used the reef at low tides to bounce and straighten out their tows while making their turn upon leaving the Pass. On occasion the tows would end up knocking the beacon down.

- After the daybeacon was destroyed for the last time in the early 80's, D17 (oan) considered replacing it, but not necessarily with a larger beacon. The towboat operators preferred no beacon be installed as they felt nothing would survive. Accordingly, both the C.O. of the LAUREL and D17 (oan) felt a buoy would be more durable. Accordingly, a buoy was shackled to the daybeacon's base.

- Because of their local knowledge, the towboat operators don't really need either a shore structure or a buoy, however, they agreed that it is essential for those with less local knowledge that something mark the reef.

- Buoy #28 has also had a history of being removed from its moorings by tows. Rich Seagrave knows of no instance in which someone has attempted to reposition the buoy on their own as was done this past fall. Typically the buoy is either on station or missing...never off station.

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ENCLOSURE (3A)

- Consideration was also made to place the buoy in the channel near the edge, past the reef for the benefit of those who don't have local knowledge. Again, the users did not like this proposal as they would continually hit it in trying to bounce their tows off the reef. The buoy would not survive!

3. commented that while Dry Pass Buoy #28 is somewhat unorthodox in the way it is shackled to a reef and set back from the channel's edge this is the only feasible way of marking this reef and insuring its survivability. A large caisson type structure would probably survive, however, he questioned whether such a high expenditure is warranted. He also stated that generally he finds a higher level of response is warranted for bucys found off station than missing, stating that off station aids are much more dangerous. However, the CG had no knowledge that Dry Pass Buoy #28 was off station on 5 Dec 89.

4. During this conversation I proposed "oan" consider providing some notation on the charts and Coast Pilot about Buoy #28 being set differently than most buoys in that it is set back on the reef and chained to a rock which bares itself at plus 2 tide. This would alert mariners to the fact this aid is somewhat of an anomaly and possibly help avert a future grounding in the area.

U.S. Department of Transportation
United States Coast Guard

Commander
U. S. Coast Guard
Group Ketchikan

Ketchikan, AK. 99901
907-228-0211

1650
11 JAN

From: CDR , USCG
LT , USCG
To: Commander, Coast Guard Group Ketchikan

Subj: INVESTIGATION OF USCGC GROUNDING AT DRY PASS, PRINCE OF WALES ISLAND, ALASKA ON 5 DECEMBER 19

Ref: (a) Group Ketchikan's Appointing Letter 1650 dtd 12 DEC
(b) USCG Administrative Investigation Manual, COMDTINST M5830.1
(c) COGDSEVENTEEN S.O.P. NO.1- (YR), Appendix 8

PRELIMINARY STATEMENT

1. On the morning of 5 December 19 , USCGC ran aground on charted rocks at the entrance to El Capitan Passage in position 56-09-11N, 133-27-39.7W, sustaining considerable hull damage to the forward underbody. effected temporary repairs, refloated, and was safely towed back to Ketchikan by USCGC . On 09 DEC , entered the drydock at USCG Base Ketchikan and is currently undergoing repairs.

2. In accordance with references (a), (b), and (c), an Informal Board of Investigation was convened to investigate the facts and circumstances surrounding the grounding of on 05 DEC

3. Although statements were received from all members of crew, only those statements directly applying to the circumstances of the grounding or providing significant information concerning the damage control efforts following the grounding were included as enclosures to this investigation.

4. This investigation was not completed by the designated time of 2 January 19 . An extension of the completion time was needed because the Christmas holiday limited the time when personnel were available for interview, and to ensure all proper facts were obtained.

FINDINGS OF FACT

1. USCGC (WPB 13) is a 110 foot "A" series Island Class Coast Guard Patrol Boat (WPB) homeported at USCG
is under the operational and administrative control of Coast Guard Group

2. The Commanding Officer of USCGC is CWO2 , 005 46 2574 USCG, who assumed command of the vessel on 21 July 1989. CWO previous sea service experience has been comprised of assignment to 4 cutters for a total of 9 years of sea service: WHEC, 2 buoy tenders and one WPB. is CWO first command.

3. Up to the day of the grounding, CWO had commanded for 50 underway days, conducting 6 law enforcement patrols and 9 search and rescue missions throughout the waters of Southeast Alaska.

4. The assigned navigator aboard on the day of the grounding was BMCS R. S. , assigned to those duties on 17 APR . (Enclosure 18)

5. On 5 December 19--, was conducting a scheduled law enforcement (LE) patrol in the waters of Southeast Alaska. Specifically, was directed to patrol the vicinity of Prince of Wales Island, including the islands and inlets of the west side of Prince of Wales Island. was then to patrol in the vicinity of Admiralty Island. The patrol was scheduled to be conducted from 04 DEC through 10 DEC . . was under the operational control (OPCON) of USCG Group for the duration of the patrol. (Enclosure 27)

6. Prior to departing on patrol on 04 DEC , gyrocompass and radar range errors were both determined to be zero by assigned Assistant Navigator, QM1 . (Enclosures 5, 20, 22)

7. draft readings on 04 DEC --, prior to departing on patrol, were recorded as 5'9" forward and 7' aft. (Enclosure 20)

8. The following personnel were onboard upon her departure from USCG Base Ketchikan at 040804V DEC 89 for LE patrol. These same personnel subsequently remained onboard up to and including the time of grounding the following day:

CWO	005 46 2574	Commanding Officer
BMCS	294 46 8766	Executive Petty Officer, Navigator
MKC	521 92 8124	Engineering Petty Officer
QM1	489 76 8949	Assistant Navigator
BM1	283 54 3157	
BM2	393 82 5162	
ET2	574 70 2462	
EM2	425 06 2777	
GM2	470 78 7062	
SS2	253 25 9037	
MK2	300 74 4004	
SN	600 22 9282	
SN	461 29 5575	
FA	458 23 5541	
SA	507 02 3384	

9. From the outset of the patrol, bridge watch crewmembers were standing a three section watch of 4 hours on-watch, followed by 8 hours off-watch. (Enclosure 25)

10. The 0800-1200 bridge watch section aboard on 05 DEC consisted of the following personnel, with qualification and prior experience as follows:

a. BM1 : Officer of the Deck (OOD), certified as an underway OOD aboard on 27 OCT . BM1 prior Coast Guard experience includes: Aids to Navigation Team (ANT) Venice, 44'/41' small boat coxswain at USCG Station , and Executive Petty Officer aboard USCGC POINT (Enclosures 4, 15)

b. BM2 : Junior Officer of the Deck (JOOD), certified as an underway JOOD aboard on 05 APR . BM2 prior Coast Guard experience includes: USCG Base small boat crewmember and 44'/41' small boat coxswain at USCG Station (Enclosures 6, 16)

c. SN : helmsman/lookout, certified as a helmsman aboard on 10 MAR . is SN first Coast Guard unit. (Enclosures 9, 17)

11. On the morning of 05 DEC , SN was assigned to duties as both helmsman and lookout aboard . (Enclosures 9, 25)

12. With respect to the duties of the helmsman and lookout, Ships's Organization and Regulations Manual, dated 11 AUG 86, Chapter 2 provides the following conflicting statements:

> "The Helmsman shall...perform the duties of a lookout during routine watches... The sole job of the lookout shall be to maintain an alert watch over his assigned sector. At no time shall other tasks or duties be assigned to the lookout."

13. According to Farwell's Rules of the Nautical Road, Sixth Edition, Chapter 20:

> "It has been held in numerous cases that because the lookout must devote his attention to this duty, the officer of the deck or the helmsman cannot properly serve as the lookout."

14. The use of a crewmember to serve as both helmsman and lookout while underway in good visibility is standard operating procedure aboard . This policy is partially driven by the number of personnel available onboard to maintain a one in three watch rotation, and the fact that the helmsman almost exclusively utilizes the autopilot steering system. (Enclosures 1, 4, 5)

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15. The autopilot steering system was being utilized by the helmsman throughout the morning of 05 DEC . (Enclosures 4, 9)

16. At the time of relief by the 0800-1200 watch, the radar, autopilot, and all other navigational equipment were operating properly. The watch section had stood only one watch previously on the patrol, that being the 2000-2400 watch on 04 DEC 89. (Enclosures 2, 4)

17. On the morning of 05 DEC , CWO was taking medication prescribed by USCG Base Ketchikan Medical, specifically Sudafed and Humibid L.A., for treatment of a common cold with persistent dry cough. Side effects from Sudafed may include nervousness, sleeplessness, or dizziness. Side effects from Humibid L.A. may include nausea and vomiting. EM1 was not taking any medication on the morning of 05 DEC . Statements from all crewmembers on the bridge indicate there was no observed unusual behavior, condition, or sickness of any personnel in the watch section, the commanding officer, or executive petty officer. All members of the watch felt rested and alert. (Enclosures 1, 2, 4, 6, 9, 14)

18. Tides and currents for the transit through El Capitan Passage were computed and posted on the bridge by QM1 during his 0000-0400 watch on 05 DEC . Tides and currents were determined by QM1 utilizing the 19 Tide Tables and Tidal Current Tables. His computations, per enclosures (23) and (24), are as follows:

TIDES: (As computed off substation 1551, El Capitan Passage)

Time	Height
0546	10.0 feet (high)
1146	4.2 feet (low)
1713	9.2 feet (high)
2353	1.7 feet (low)

CURRENTS: (As computed off substation 2737, Dry Pass)

Time	Current	Direction
0450	1.8 flood	105T
0919	slack	—
1225	.82 ebb	285T
1508	slack	—

19. As computed by this investigating board, and according to the 1989 U. S. Department of Commerce Tide Tables and Tidal Current Tables, the tides and currents for 05 DEC in the vicinity of El Capitan Passage entrance were predicted as follows:

TIDES: (As computed off nearest substation 1549, Shakan Strait)

Time	Height
0542	11.0 feet (high)
1134	4.2 feet (low)
1709	10.2 feet (high)
2341	1.7 feet (low)

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CURRENTS: (As computed off nearest substation 2737, Dry Pass)

Time	Current	Direction
0450	1.75 flood	105T
0819	slack	--
1225	.81 ebb	285T
1508	slack	--

Note: The differences between the tidal computations prepared by and the investigating board are due to the use of different substations. The investigating board used the Shakan Straits substation for determination of the tides as this station is physically closer to the area of the grounding.

20. Visual observations of the ebb current flow in the vicinity of Dry Pass Buoy 28 have ranged from 2 to 3 knots. (Enclosures 10, 11, 13)

21. On 04 DEC , prior to the transit through El Capitan Passage, CWO consulted with BMCS , QM1 , and BM1 to discuss previous transits made by those crewmembers and safe navigation through the passage. (Enclosure 1)

22. At approximately 050600V DEC , CWO reviewed sections of U.S. Coast Pilot 8 referring to El Capitan Passage. He specifically noted a reference to local knowledge being desirable for safe navigation through the passage. CWO felt comfortable that he had local knowledge onboard , based on his belief that BMCS , QM1 , and BM1 had previously transited El Capitan Passage. CWO believed BM1 had twice previously conned through El Capitan. (Enclosure 1)

23. United States Coast Pilot 8, Pacific Coast Alaska: Dixon Entrance to Cape Spencer, dated 1988, provides the following excerpted information for El Capitan Passage:

> "The shore line should not be approached too closely, as numerous rocks, awash at various stages of the tide, are close-to. Local knowledge is desirable for safe navigation through the channels in El Capitan Passage. This applies in particular to the section between Aneskett Point and Shakan Strait, including Dry Pass."

24. BM1 did not review U.S. Coast Pilot 8 prior to the transit of through El Capitan Passage. (Enclosure 4)

25. In their statements for this investigation, BMCS commented that he had not previously made the transit through El Capitan; QM1 stated that he had made the transit twice before (once aboard CAPE CARTER as a seaman, once aboard as an observer), and was not involved with conning either vessel through the passage; BM1 stated that he had made the transit once before aboard , acting as the radar watch, but did not conn the vessel. In addition, GM2 and SN had previously transited El Capitan Passage as observers only. (Enclosures 2, 4, 5, 8, 9)

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26. Earlier on the morning of 05 DEC , CWO directed BMCS have the off-going bridge watch set an anchor detail and for BMCS to assist with navigation through El Capitan Passage. This type of manning requirement is informally known aboard as a "modified" special sea detail. CWO utilized the modified special sea detail manning for th El Capitan transit because: (1) of "ideal" weather conditions; (2) exceller visibility; and (3) to allow the remainder of the crew to get some rest, minimizing crew fatigue. (Enclosures 1, 2)

27. The modified special sea detail set by the Commanding Officer that morning was comprised of the following personnel: (NOTE: The below personnel were at the same assigned duties and locations at the time grounded.) (Enclosures 1, 2, 4)

Name	Duties	Location
CWO	CO/safety observer	bridge
BM1	OOD, deck and conn	bridge
BM2	JOOD, navigation plot	bridge
BMCS	navigation plot assistance	bridge
SN	helmsman/lookout	bridge
MKC	Engineer of the watch (EOW)	messdeck
EM2	Break-in EOW	messdeck
GM2	anchor detail	forecastle
SA	anchor detail	forecastle

28. According to Watch, Quarter, and Station Bill, a full Specia Sea Detail consists of the following manning requirements:

Name	Duties	Location
CWO	CO/safety observer	bridge
BMCS	OOD, conning officer	bridge
QM1	navigation plot	bridge
BM1	radar operator	bridge
SN	helmsman/lookout	bridge
ET3	recorder/sound powered phones	bridge
SA	helmsman	bridge
GM2	bearing taker/lookout	bridgewing
BM2	in-charge forward/leadline	forecastle
EM2	phone talker	forecastle
FA	bow lookout	forecastle
SA	stern lookout	fantail
SS2	phone talker	fantail
MKC	Engineer of the watch (EOW)	engineroom
MK2	phone talker	engineroom
MK3	after steering	after steering

(NOTE: MK3 had not reported aboard at the time of grounding.)

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29. Having been properly relieved of the deck and conn by BM1 at 0745V, BMCS lay below, ate breakfast, and returned to the bridge to assist with navigation through Shakan Strait, as a member of the "modified" special sea detail. Upon returning to the bridge, BMCS asked BM1 if he wanted him ( ) to assist on the radar. BM1 declined, saying he ( ) liked to see the radar in tight waters and use it for turn ranges. BM1 stated that in the daytime, when the hood has to be on the radar, he preferred to be on the radar to navigate the vessel. BM1 stated that the hood prevented him from looking over someone's shoulder to see the radar presentation. (Enclosures 2, 4)

30. While transiting through Shakan Strait enroute to El Capitan Passage, all aspects of bridge watch and navigation detail were functioning properly. Fixes were taken and plotted every 15 minutes, and there was a good dialogue of navigational information being passed between the conn and navplot. BM1 was using optimum "trackspacing" to navigate the vessel through Shakan Staits. By using "trackspacing", he was monitoring the radar presentation to ensure that stayed on track in the center of the Straits by maintaining safe distance from the shoreline off the port side. (Enclosures 1, 4)

31. At 0840V, #1 main diesel engine (MDE) high lube oil temperature alarm sounded. BM1 , the OOD, immediately brought the #1 MDE to neutral, notified the engineer of the watch, and continued on the #2 MDE and his transit to El Capitan. At approximately 0845V, CWO decided not to attempt a transit of El Capitan Passage unless both MDE's were on the line and operational. In order to provide time for the engineers to repair the #1 MDE, and observing a small vessel nearby, he ordered the OOD to maneuver to identify the vessel. The vessel was moored to a log raft in Shakan Strait, approximately 1000 yards south of the entrance to El Capitan Passage. Upon investigation, it was observed that the vessel had no numbers or name and was in apparent poor condition. CWO ordered the boarding bill set, and a boarding was conducted. drifted and utilized engines as needed to maintain position throughout the boarding. The boarding concluded at 0920V. (Enclosures 1, 4, 19, 20, 21, 26)

32. During the boarding of the vessel in Shakan Strait, the #1 MDE was repaired. Cause of the casualty was determined to be a broken connector to the #1 MDE thermostat. (Enclosures 3, 21)

33. During the boarding, BM1 was relieved of the deck and conn by CWO for a head call. While he had the conn, CWO took a fix using radar and fathometer, which showed to be in the vicinity of the log boom (shown on the chart), but did not plot his fix on the chart. Upon returning to the bridge after approximately 10 minutes, BM1 and CWO spent the remainder of the boarding time reviewing the impending transit through El Capitan Passage. BM1 set out radar turn ranges for his expected track through the passage, and visually sighted physical

references for the transit, including Dry Pass Buoy 28 and Daybeacon 26. In comparing radar and visual observations, both CWO and BM1 observed that Dry Pass Buoy 28 appeared to be in the proper location on station in relation to the nearby land masses. (Enclosures 1, 4)

34. Throughout the morning of 05 DEC , the bridge watch aboard was navigating off NOAA Chart 17387, which is the largest scale chart available for the Shakan Strait/El Capitan area. The navigation plot utilized a copy of the chart with all tracklines plotted and labeled; BM1 was utilizing a copy of the chart with no tracklines or intended courses plotted. Both the navplot and conning charts were checked by the investigating board and determined that all proper chart corrections were entered and up-to-date. (Enclosures 4, 6, 19)

35. A plotted fix of the position was not made during or after the boarding, or prior to getting underway again for El Capitan Passage. The last recorded fix taken by the crew prior to the grounding was at 0830V while in Shakan Strait. No subsequent fixes were taken until 1138V, approximately two hours after the grounding. (Enclosures 6, 4, 22)

36. CWO stated that fixes were not being plotted on approach to El Capitan Passage due to the close proximity of land, the high speed of advance, and numerous course changes. He believed those factors would make fix information "history", and the information passed on from the previous position would be of no significance. CWO felt confident of position due to the steady flow of information being passed from the navplot to the OOD, i.e. courses, safety ranges, turn ranges, etc. (Enclosures 1, 2, 4, 6)

37. Paragraph 6.1 of Instruction 1600.1, Commanding Officer's Standing Orders states that fixes will be taken every six (6) minutes when operating in restricted waters and, in all other cases, at least every 15 minutes. With regard to fix intervals, the Cutter Navigation Standards and Procedures, COMDTINST 3530.1, dated 24 APR 85 states:

> "Standard fix intervals shall be determined by the navigator based on the command navigation standards."

38. Following the boarding and setting of modified special sea detail, proceeded ahead on the #2 MDE at clutch speed of 9 knots (300 yards per minute) enroute the entrance to El Capitan Passage. The #1 MDE was on the line, but not engaged. The recently boarded vessel proceeded south through Shakan Strait, crossing in front of . As was the give-way vessel, BM1 turned to the right to pass astern of the vessel and regain the original intended track of 031 degrees true (031T), as indicated on the chart, to line up for his approach to El Capitan Passage. In doing so, he unintentionally shortened the length of his 031T course to less than 300 yards before requiring the next turn to the approach course into El Capitan Passage. (Enclosure 4)

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39. Prior to regaining his 031T course, BM1 requested the next recommended course and the JOOD, BM2 , passed the course as 064 degrees true (064T). BM1 was aware of the plotted course of 066T, but believed he should use the recommended course from his JOOD at that time. BM2 obtained the 064T course by utilizing the parallel rule to check the unlabeled course line drawn on the main portion, not the inset, of chart 17387. (Enclosures 4, 6)

40. The inset to chart 17387 utilized by the bridge watch shows a plotted course entering El Capitan Passage of 066T. The main portion of the same chart shows an unlabeled, plotted track line entering El Capitan Passage which, when measured, indicates a course of 066.5T. The 066T course, as plotted by Assistant Navigator, places the vessels track left of the center of the channel, reducing the safe distance to the reef marked by Dry Pass Buoy 28 to 65 yards. The Assistant Navigator intentionally placed the track to the left of the channel to help minimize course changes entering El Capitan Passage. (Enclosures 5, 19)

41. Upon steadying on his 031T course, BM1 observed the radar presentation showed that the had almost immediately reached the next turn range and directed the helmsman to come right to the recommended course of 064T. BM1 felt that, at his minimum speed of 9 knots, "things were moving pretty fast". From his previous experience aboard an 82 foot WPB, BM1 would have preferred to have both engines engaged, with a sustained speed of advance of no more than 5 knots. (Enclosure 4)

42. For , minimum clutch speed ahead on a single engine is 9 knots; minimum clutch speed ahead for twin engine operations is 12 knots. (Enclosures 1, 4)

43. Both CWO and BM1 agreed that single shaft operation was necessary to keep to the slowest possible speed during the transit through El Capitan Passage. The option of clutching in and out on the single shaft, in an effort to decrease speed, was discarded because it causes an intense oversteering reaction, lunges the vessel forward, and kicks the stern to one side, greatly impeding control of the vessel. Twin shaft operation was also not considered because of the minimum speed of 12 knots. Clutching in and out on both shafts was also not considered a viable alternative because of the throttle lag time which results in the engines engaging at different times. In addition, it causes to lunge forward and squat, again making control of the vessel difficult. (Enclosures 1, 4)

44. BM1 did not apply advance and transfer to his turns upon entering El Capitan Passage because that data, while operating on a single engine, is not computed for "A" series Island Class 110 foot WPB's such as (Enclosures 4, 5)

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45. SN , the helmsman aboard on the morning of 05 DEC , was utilizing the autopilot steering system throughout the morning. Because only the #2 MDE was engaged, approximately 10 degrees left rudder was being maintained by the autopilot to keep the proper heading. (Enclosures 4, 5)

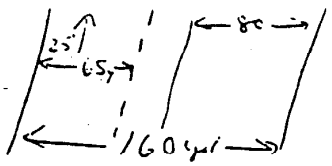
46. The approach and western section of El Capitan Passage is detailed on the inset portion of chart 17387. BM1 was having difficulty "jumping" between the main portion and inset of the chart. Although he did not "feel comfortable" with that arrangement and the situation was "moving pretty fast", he did not verbalize his discomfort to the Commanding Officer because his radar and visual observations still indicated he was on the proper approach. (Enclosures 4, 19)

47. BM1 was utilizing both visual observations and radar ranges to set up approach to El Capitan Passage. Because of the narrow channel and confined waters, he was utilizing a radar range scale of .25 NM, causing an unclear radar presentation. BM1 then shifted up to the .5NM range scale, causing the radar's electronic bearing line (EBL) to completely fill the channel ahead, again resulting in an unclear radar presentation. BM1 had previously established a radar turn range on the shore north of Dry Pass Buoy 28. He used the turn range to determine when to make his turn to the course set for the approach to El Capitan Passage. (Enclosure 4)

48. BM1 stated that at this point he felt a little rushed, had that "nagging feeling" that something wasn't right, and knew he was "losing time" on his approach. Again, he did not verbalize his concerns to the Commanding Officer. (Enclosure 4)

49. Before BM1 could take any further corrective action on the radar, the helmsman passed that he was steady on course 061T. Upon hearing the helmsman's course of 061T, BM1 looked up from the radar and observed Dry Pass Buoy 28 bearing 000 degrees relative, indicating the vessel was further left of track than anticipated. BM1 immediately reached over and personally put on 5 degrees right rudder to correct to the ordered course of 064T. With the port engine engaged, BM1 stated he knew he would have good steering response with only 5 degrees rudder. He then eased off the rudder to regain track and to avoid oversteering. His objective was to steer approximately 068T to regain course. He continued to bring the vessel right as he observed that was to the left of track. He ordered the helmsman to report the change in heading as the vessel came right. In coming right, BM1 was intent on adjusting course visually in relation to two islands ahead, as indicated on the chart enclosure. (Enclosures 4, 9, 19)

50. BM1 was intently watching ahead for Daybeacon 26, which was the next charted aid to navigation past Dry Pass Buoy 28. He believed that if he was on proper track, he would be able to observe Daybeacon 26 visually during his approach. Ultimately, BM1 DAVIES never did see Daybeacon 26 prior to the grounding. (Enclosure 4)



51. Observing that was being set to the northwest and aware that he was left of his intended track, EM1 decided that, to pass Buoy 28 safely, he would keep a closest point of approach (CPA) of no less than 25 yards. He determined his CPA to the buoy by using visual observations. The plotted trackline on the inset of chart 17387 provides for a CPA to Buoy 28 of 65 yards. The measured width of the channel between Dry Pass Buoy 28 and the southern shoreline of El Capitan Passage is approximately 160 yards. (Enclosures 4, 19)

52. EM1 stated that he was not overly concerned with Buoy 28 or the rocks it marked since he believed the buoy was at the edge of the channel marking good water. From his previous aids to navigation experience, he believed channel buoys were always placed in good water and that a vessel should be able to come close aboard and "strike a match on it" without running aground. He therefore believed that a 25 yard CPA would be safe. (Enclosure 4)

53. In his statement to this investigating board, CWO stated that he understood not to rely on floating aids to navigation as the primary means to determine a cutter's position. Based on his previous aids to navigation experience, he believed that a vessel should be able to come close aboard a buoy to "read it's serial number" and not run aground. He further stated that he prefers to give buoys a "wide berth" and does not like "to get too close to them". Although he was not aware of how Buoy 28 was anchored, he assumed that the buoy was most likely secured by 1/2" chain to a 250 lb sinker in good water at the edge of the channel. (Enclosure 1)

54. While continuing to turn to the right, passed Dry Pass Buoy 28 to port with a CPA of approximately 25-30 yards. The exact distance cannot be specifically determined, but was ascertained from statements of crewmembers. (Enclosures 1, 4, 6)

55. After observing Buoy 28 pass down the port side of , EM1 continued to apply right rudder to correct course and again focused his attention forward, looking for Daybeacon 26 and the passage through the islands ahead. Once again, he stated that he was uncomfortable and his "anxiety increased" because he believed he should have definitely seen the daybeacon by this point. Again, he did not verbalize his discomfort to the commanding officer because: (1) Buoy 28 had been successfully passed, and (2) visual observation of the channel gave him confidence that he was still on a proper approach. CWO stated that he was relieved that Buoy 28 had passed safely down the port side and began looking to the islands ahead and the next portion of the transit through the passage. (Enclosures 1, 4)

56. Paragraph 6.r of Instruction 1600.1, Commanding Officer's Standing Orders, dated 28 DEC 87, states:

"Whenever the ship appears to be approaching any danger, or when it is apparent that danger exists, notify me immediately. If you are in doubt about anything, this is sufficient cause to call me. By this I mean unexpected rising depth, unable to obtain a fix, a constant bearing situation, or anytime you have that nagging doubt as to our safety." (Emphasis added)

57. Throughout the approach to El Capitan Passage, CWO was not intently following the conn, but was on the bridge to insure the overall safe transit of the vessel. On approach to Buoy 28, he observed that was "too far" left of track and travelling "too fast for such a tight place". However, CWO took no corrective action and made no comment as he felt confident that BM1 was aware of the situation and observed him ( ) making course corrections to the right. He was aware that while the speed appeared fast, it was in fact the minimum safe speed could make. (Enclosure 1) NO.

58. According to section 4-2-2 of Coast Guard Regulations, COMDTINST M5000.3A, the commanding officer shall be responsible for the safe navigation of his vessel.

59. At 0930V, BM2 observed and called out a fathometer reading of 10 feet. The fathometer quickly jumped to 5 feet. BM1 immediately brought both MDE throttles to clutch astern. Prior to the report of depth from BM2 , neither BM2 nor BM1 had been aware that the fathometer was switched from the fathom to the foot scale. CWO stated that he switched the fathometer to the foot scale sometime after the boarding (exact time could not be recalled) and informed the bridge watch that he was doing so. He does not recall whether there was any acknowledgment to his statement. (Enclosures 1, 4, 6, 9)

60. BM1 did not use the fathometer or set up a danger depth to his approach because he felt he had good water all around and he wanted to concentrate on conning the vessel into El Capitan Passage. In addition, he stated that when he was standing at the radar, he physically could not just look up and view the fathometer because of the mounted position of the fathometer. Instead, he had to move move behind the helmsman in order to view the fathometer reading. "Cutter Navigation Standards and Procedures", COMDTINST 3530.1 dtd 24 APR 1985, states cutters less than 180 feet shall use the instruction's Navigation Plan as general guidance. The Navigation Plan prescribes that shoal water/danger soundings shall be utilized by bridge navigation teams. (Enclosure 4)

61. At 0930V on 05 DEC , before the astern throttles could engage, grounded on rocks at the entrance to El Capitan Passage, Prince of Wales Island, in position 56-09-11N 133-27-39.7W. (Enclosures 4, 5, 20, 28, 40)

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62. Two fixes of the grounded position were taken by the assistant navigator, QM1 . The first fix, annotated on the chart as "1138", was taken through use of radar ranges to nearby land and placed the vessel approximately 100 yards west of the charted position of Dry Pass Buoy 28. QM1 considered this fix to be "poor" due to the lack of good radar range objects to shoot which would still plot on the inset to Chart 17387. The second fix, annotated on the chart as "1403", was taken through use of visual bearings and sextant angles to land object tangents. The visual fix positioned approximately 25 yards southeast of the buoy's charted position. QM1 considered that second fix to be an "excellent" quality fix. The difference between the two fixes taken by QM1 totaled 125 yards. (Enclosures 5, 19)

63. At the time and location of the grounding, the weather was observed to be: winds calm, visibility 8 miles, 8/10 cloud coverage with broken skies, barometer 1012 mb, dry bulb temperature 45 degrees, sea calm, swell calm. (Enclosures 1, 4, 20)

64. Upon grounding, CWO . immediately sounded the collision alarm and piped all hands to their general quarters stations. CWO attempted to call COMMSTA Kodiak and Group Ketchikan on 2182Mhz with negative results. He next broadcast a MAYDAY on 2182Mhz, also with negative results. Upon review by this investigating board, Group Ketchikan's channel recorder indicated that MAYDAY was received faintly, but was not heard by the common watchstander. CWO then established communications with Group Ketchikan on VHF-FM Channel 16 and requested immediate assistance. (Enclosure 1)

65. Group Ketchikan notified COGD17 Operations Center, who assumed SAR Mission Coordinator (SMC) responsibilities. USCGC's WOODRUSH, PLANETREE, LIBERTY, CAPE CARTER, and an Air Station Sitka helo were directed to proceed and assist. An Urgent Marine Information Broadcast (UMIB) was issued requesting any vessels in the area to proceed and assist (Enclosure 28)

66. crewmembers immediately responded to the grounding and lay to their collision billets. MKC . located flooding in the forward machinery space, compartment 3-13-0-E, and quickly called for plugs and patches. MKC was joined by BM1 , who jumped down into the flooded space and began plugging the holes. Within 2-3 minutes of the grounding, the flooding in the forward machinery space was 90 per cent controlled. Additional damage was located in adjacent compartments and the crew worked to plug all holes, stem the flooding, and plan for a safe refloat. (Enclosures 1, 3, 4)

67. At 1042V, Tug HYAK responded to the UMIB, anchored her barge tow, and proceeded to to assist. HYAK arrived on scene at 1438V and stood by until refloated. At 1104V, an Air Station Sitka helo arrived on scene to assist , providing ASM1 P. K. WEAVER 417 66 9640, USCG and three dewatering pumps. ASM1 WEAVER made numerous free dives over the next

two days to determine how was positioned on the rocks and provide a better assessment of hull damage. At 1505V, CGC LIBERTY arrived on scene to provide assistance, including transporting CDR USCG as on scene commander (OSC) and DC1 USCG from Group Ketchikan to assist with damage control. At 060300V, CGC WOODRUSH arrived on scene to assist. At 051705V and 1730V respectively, CGC CAPE CARTER and PLANETREE were directed to stand down from providing assistance. Subsequent flights on 05-07 DEC by Air Station Sitka provided additional support, including transport of CWO USCG from Group Ketchikan as damage control expert, commercial divers from Sitka to assess underwater damage, and essential plugging/shoring materials. (Enclosure 28)

68. The following is a summary by compartment of the damage sustained by upon grounding, as well as repairs effected on scene. Enclosures (28) and (37) provide more detailed damage reports.

a. 3-11-2-V: Port void: Ripples between all frames (11-13), each frame buckled up 1-2 inches; 12 inch by 1/2 inch tear by frame 11; tear could not be plugged; the void was left flooded and sealed.

b. 3-11-1-V: Starboard void: Ripples between all frames (11-13), each frame buckled up 1-2 inches; 12 inch crease by frame 11, 8 inches from the keel; crease could not be plugged; the void was left flooded and sealed.

c. 3-13-0-E: Forward machinery space: Ripples between all frames (11-13), each frame buckled up 1-2 inches; two 3 inch holes between frames 13-14 plugged, cement covered, supported by shoring from the skin of the ship to the overhead.

d. 3-14-1-W: Starboard water tank: 2 inch tear, 3 feet from the keel near frame 14; J-bolt patch installed by divers.

e. 3-17-1-F: Starboard fuel oil day tank (2,000 gallon capacity): 1 inch hole, 3 feet from the keel near frame 19; J-bolt patch installed by divers; ripples between all frames 17-21.

69. Subsequent to the grounding, observed leaking oil from the starboard fuel oil day tank. immediately reported this to Group Ketchikan and requested oil recovery materials be provided on scene. A total of 520 gallons of oil was estimated to be released. A portable pump, delivered to the scene by an AIRSTA Sitka helo, was used to remove the remaining oil through the damaged tank's deck vent line. The oil removed was transferred to an intact centerline fuel tank aboard to minimize the amount of oil released. CGC LIBERTY and AIRSTA Sitka delivered 300 feet of sorbent boom and several bags of sorbent pads to the scene. The sorbent boom and pads were deployed around to recover any remaining oil leaking from the tank. The spilled oil readily evaporated and dissipated due to tidal, wind, and wave action. No additional clean up was feasible. (Enclosure 29)

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70. After the grounding, CWO directed his crew to set anchors astern of to hold the vessel's position and deployed a small boat to take soundings to determine the location of the reef. At 071530V DEC , refloated on the high tide on its own by manually taking in the slack of the anchor lines set astern. then proceeded under its own power to LIBERTY, anchored nearby, and moored alongside. (Enclosures 1, 2, 28)

71. At 070823V DEC , after determination was made by the OSC, MLCPAC and COGD17 that it was safe to do so, CGC WOODRUSH took under tow enroute Ketchikan. At 080838V, was safely moored at Base Ketchikan. On the morning of 09 DEC , was put in Base Ketchikan drydock for repairs. (Enclosures 28, 30)

72. On the morning of 05 DEC and specifically at the time of grounding, material condition yoke was set throughout the ship aboard (Enclosures 3, 20)

73. Dry Pass Buoy 28 (LLNR 24890) is a red, unlit, 6FNPR (fast water nun plastic radar reflective) buoy affixed in position 56-09-12N, 133-27-36W. The buoy is historically anchored by 20 feet of 1/2 inch chain, shackled directly to a steel base plate of a former daybeacon foundation. (Enclosure 31)

74. did not strike Dry Pass Buoy 28 prior to or during its grounding, or move it from its secured position subsequent to the grounding. (Enclosures 1, 4)

75. The position where grounded was immediately atop the steel base plate of the former daybeacon foundation. Once grounded, Dry Pass Buoy 28 was observed to be approximately 20-25 yards off the port quarter of (Enclosures 1, 13, 28)

76. Chapter 7 of the Aids to Navigation Administration Manual, COMDTINST M16500.7, requires that aids to navigation servicing units must visit buoys annually for a position check and inspection.

77. USCGC is the primary servicing unit for Dry Pass Buoy 28. Prior to grounding, last serviced Buoy 28 on 09 MAY 89, in response to a report that the buoy had been observed off station. ELDERBERRY located the buoy on the beach in Shakan Straits and secured it to the daybeacon foundation at the assigned position with 20 feet of 1/2" chain. (Enclosures 11, 12, 31, 32, 33)

78. A position check of Dry Pass Buoy 28 on 06 DEC 89 by USCGC revealed the buoy was not affixed to its historical position, i.e. not chained to the former daybeacon foundation. Dry Pass Buoy 28 was measured to be 101 feet from the steel base plate of the former daybeacon foundation, on a bearing of 095T from the buoy to the foundation. The buoy was secured by 41 feet of 3/8 inch polypropylene line to a 130 lb. bundle of chain comprised

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of two 7' log chain bridles. The buoy also had a short length of 1/2" chain attached to its underbody which was elongated and broken. After obtaining a positioning check, moved Dry Pass Buoy 28 and reaffixed it to the original steel base plate on the rocks with 20 feet of chain. (Enclosure 13

79. Subpart 70.01 - Interference With Aids to Navigation, of Title 33 of the Code of Federal Regulations states:

> "70.01-1 General Provisions: No person, excluding the Armed Forces, shall obstruct or interfere with any aid to navigation established and maintained by the Coast Guard, or any private aid to navigation established and maintained in accordance with Part 64, 66, 67 and 68 of this subchapter."

80. In response to the ---------- grounding, USCGC checked the position and mooring of Dry Pass Buoy 28 on 11 DEC 89 and found it in the correct location and properly secured by WOODRUSH. (Enclosures 10, 32, 33)

81. The absence of NOS marks in the area of Dry Pass Buoy 28 requires positioning the buoy through use of tangents to nearby land masses. This has resulted in the aid's latitude and longitude being of low accuracy. However, the buoy has historically been affixed to the exact same position through anchoring it directly to the former daybeacon foundation. (Enclosures 10, 13)

82. El Capitan Passage is primarily transited by fishing vessels and tugs towing log booms. Dry Pass Buoy 28 had previously been reported off station or missing, and subsequently reset or replaced, on numerous occasions, including the following: NOV 87, JAN 88, OCT 88, and MAY 89. (Enclosures 10, 36)

83. When properly affixed to the former daybeacon base, Buoy 28 is surrounded by a reef. The reef and the base are exposed at 1 1/2 feet above MLLW. Rocks extend 10 to 15 feet southward into the navigation channel at the entrance to El Capitan Passage from the base plate to which the buoy is affixed. (Enclosures 10, 11, 12, 13, 40)

84. With respect to the proper depth of water in which buoys should be set, Chapter 2-89 of the Coast Guard Aids to Navigation Technical Manual, COMDTINST M16500.3, specifies FNPR buoys should be set in a minimum mooring depth of 3 feet at MLW.

85. With respect to buoy placement, Change 9 to Chapter 4, paragraph C.4.d., of the Aids to Navigation Manual Administration, COMDTINST M16500.7, states:

> "Place buoys inside the channel edge, as near the channel edge as possible. For buoys marking obstructions, place buoys on the channel or navigable side of the obstruction."

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86. Chart 17387, which was used by the . crew while navigating Shakan Strait, has the following notation:

"WARNING"

"The prudent mariner will not rely solely on any single navigational aid to navigation, particularly on floating aids. See U.S. Coast Guard Light List and U.S. Coast Pilot for details."

87. Chapter 1-5 of the Aids to Navigation Administration Manual, COMDTINST M16500.7, states:

"Aids to navigation systems are developed, established, operated and maintained by the United States Coast Guard to accomplish the following:

(1) Assist navigators in determining their position.

(2) Assist the navigator in determining a safe course.

(3) Warn the navigator of dangers and obstructions.

(4) Promote the safe and economic movement of commercial vessel traffic."

88. The original daybeacon tower at the entrance to El Capitan Passage was replaced by a buoy (later to be named and numbered as Dry Pass Buoy 28) in April 1972, after the tower was apparently destroyed by a log boom being towed through the passage. A buoy was substituted for the tower and was expected to survive the impact of log booms being towed through the area. (Enclosures 10, 11, 34, 35)

89. With respect to positioning daybeacons, the Aids to Navigation Manual Administration, COMDTINST M16500.7, states:

"Strictly defined, a beacon is any fixed aid to navigation. Fixed aids provide immobile, stable signals. Floating aids do not... Beacons may be set back from the channel edge to protect them from damage. However, the mariner must be informed by notations on charts and in light lists of the distances involved."

90. The only injury resulting from the grounding of was a small laceration to the hand of BM1 , received while initially plugging the holes in the forward machinery space. The injury was treated on scene, with no follow up treatment required. (Enclosure 4)

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91. Urinalysis tests for detection of substance abuse were conducted 11 D for CWO ., BMCS , BM1 ., BM2 , and SN Environmental Health Research and Testing, Inc. (EHRT) letter 9363-38 date 29 DEC , indicates that the urinalysis testing proved negative. (Enclosure 38)

92. During the last quarterly Group Ketchikan Operational Inspection of conducted on 23 OCT , only one discrepancy item was noted under "Low Visibility Piloting". That discrepancy concerned additional training required in the proper use of the leadline. No other navigational discrepancies were noted. (Enclosure 39)

93. training records indicate that required training, in accordance with the Cutter Training and Qualifications Manual, COMDTINST M3502.4, is being properly conducted. All hands navigation and piloting exercises (i.e low visibility piloting, magnetic piloting, gyro piloting) have been conducted on seven separate occasions since CWO relieved as Commanding Officer of in JUL 89.

94. According to the General Foreman of USCG Base Ketchikan, where was drydocked for repairs following the grounding, the total cost of repairs to resulting from this incident is estimated to be $69,000.00. A total of 232 square feet of steel hull plate required replacement was used for the repairs. (Enclosure 41)

OPINIONS

1. failure to proceed on the plotted trackline while standing in El Capitan Passage was a contributing cause of the grounding. The vessel did not maintain track due to:

a. An incorrect course recommendation of 064T was passed from the JOOD/navplot to the OOD, which was accepted and utilized by the OOD. (Fact 39)

b. The helmsman incorrectly steadied up on a course of 061T, instead of the ordered course of 064T. (Fact 49)

c. The OOD maneuvered around the vessel just boarded and significantly shortened approach to the passage. This led to arrive at the next turn range in less than one minute, much quicker than anticipated by the OOD, and resulted in the OOD starting his next recommended course (064T) late. (Facts 38, 41)

d. being set to the northwest (left of track) by the ebb current was not taken into account by the OOD in making his turn to 064T. (Facts 41, 49)

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2. minimum speed of 9 knots made it difficult to safely transit through the tight confines of El Capitan Passage and was a contributing cause of the grounding. (Facts 41, 42, 43, 57)

3. The improper position of Dry Pass Buoy 28 provided Commanding Officer and OOD erroneous navigational information and a false sense of security that the vessel was proceeding in the channel in sufficiently deep water. Had the buoy been affixed to its assigned position the grounding would not have occurred. The improper position of Dry Pass Buoy 28 was a contributing cause to the grounding. (Facts 33, 51, 52, 53,75, 78)

4. The assumption by both Commanding Officer and OOD that sufficient water depth to navigate should be available up to the channel side of a buoy was valid, based on their familiarity and involvement with the Coast Guard aids to navigation program. Accordingly, transit past Dry Pass Buoy 28 with a CPA of 25 yards should not have endangered the vessel. (Facts 51, 52, 53, 83)

5. While conducting the boarding, the Commanding Officer and OOD made adequate preparations for entering El Capitan Passage by evaluating the approach and the position of Dry Pass Buoy 28 through use of radar ranges and visual observations. (Fact 33)

6. The OOD or Commanding Officer of could not have discerned that Dry Pass Buoy 28 was improperly located, either by radar or visual observation, due to the proximity of the buoy (101 feet) to its assigned position. (Facts 78, 81)

7. The OOD and Commanding Officer's use of Dry Pass Buoy 28 in conjunction with other navigational aids, i.e. radar ranges and visual observations, to navigate into El Capitan Passage was consistent with accepted seamanship practices. (Facts 33, 47, 53)

8. The OOD's maintaining the radar observer watch into El Capitan Passage distracted his attention from conning and delayed his recognition that the vessel was to the left of track. (Fact 29)

9. The OOD's preoccupation with Dry Pass Daybeacon 26, and his focused efforts to locate it took his attention away from the safe navigation of approach to El Capitan Passage. (Facts 50, 55)

10. The OOD's difficulty in making the transition to the chart inset, i.e. "jumping" between the main portion and inset of the chart, distracted his attention away from the safe navigation of approach to El Capitan Passage. (Fact 46)

11. The casualty to the #1 MDE while transiting Shakan Strait, as well as the boarding that immediately followed, caused the OOD to lose his readine and concentration for the tight transit through El Capitan Passage. (Facts 30, 31, and Enclosure 4)

12. The Commanding Officer erred by not taking any action or, at a minimum verbalizing his apprehensions to the OOD, when he observed and felt that was too far left of track and moving too fast for the confined waters. (Fact 57)

13. The OOD erred by not advising the Commanding Officer of his repeated apprehensions upon approach to El Capitan Passage, i.e. that he was feeling "uncomfortable", things were "moving pretty fast", that his "anxiety increased", or that he had a "nagging feeling" that things were not right. Had either the OOD or Commanding Officer verbalized their apprehensions as approached El Capitan Passage, it is likely that would have been stopped and their position and approach reassessed. (Facts 41, 46, 50, 55)

14. The Commanding Officer's decision to transit through El Capitan Passage was consistent with the direction and latitude provided by Group Ketchikan's patrol orders. (Fact 5)

15. All members of bridge watch at the time of grounding were properly certified and adequately trained for their positions. (Facts 4, 10, 92, 93)

16. Although tides and currents calculated by for El Capitan Passag showed differences from those predicted by the Tide Tables and Tidal Current Tables, the differences between the calculated and predicted tides and currents were minor and did not contribute to grounding. (Facts 18, 19)

17. The observed ebb current in the entrance to El Capitan Passage were greater than those predicted by the Tidal Current Tables. (Facts 18, 19, 2(

18. Organization and Regulations Manual provides conflicting information on the duties of the helmsman/lookout position. (Fact 12)

19. In restricted waters, the helmsman should not perform the simultaneous duties of a lookout. However, SN standing a consolidated helmsman/lookout watch on the morning of 05 DEC was not a contributing cause to the grounding. (Facts 11, 12, 13, 14, 15)

20. The OOD should have reviewed the applicable sections of the U.S. Coast Pilot prior to conning through El Capitan Passage. However, his failure to review the Coast Pilot was not a contributing cause to the grounding. (Facts 23, 24)

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21. The Commanding Officer properly exercised his command prerogative to set a modified special sea detail, vice a full special sea detail, during transit of Shakan Strait and El Capitan Passage. (Facts 26, 27, 28)

22. Considering personnel compliment, favorable weather conditions, daylight transit, and excellent visibility, a modified special sea detail was adequate to ensure a safe transit. The setting of a modified special sea detail was not a contributing cause to the grounding. (Facts 26, 30, 36)

23. The Commanding Officer had some "local knowledge" of El Capitan Passage by having BM1 serving as OOD. However, he incorrectly understood the amount of local knowledge on the bridge. Regardless of the Commanding Officer's perception of what local knowledge his crew possessed, the amount of local knowledge "desirable" to safely transit through El Capitan Passage, and the waters of Southeast Alaska, is unspecified and cannot be determined. (Facts 22, 23, 25)

24. Although it cannot be proven conclusively, Dry Pass Buoy 28 was most likely repositioned by a non-Coast Guard party in violation of 33 CFR 70.01. (Facts 78, 79, 82)

25. The historical position of Dry Pass Buoy 28 is inconsistent with the standards outlined in applicable Coast Guard aids to navigation manuals, as follows:

a. It is not positioned inside the edge of the safe, navigable channel. (Facts 83, 85)

b. It is not secured in the proper depth of water, i.e. 3 feet above MLW. (Facts 83, 84)

c. It served the purpose of a fixed aid, which it replaced, and was set back onto the reef 10-15 feet. (Facts 88, 89)

26. An evaluation of the El Capitan Passage approach area should be conducted to determine the needs of the users and the utility of reinstalling a fixed structure or establish navigational ranges to better ensure aid reliability. (Facts 82, 87, 88)

27. The entrance to El Capitan Passage is a difficult area to accurately affix a vessel's position due to the close proximity of land, poor objects from which to take bearings, and the difficulty of moving from the chart to the chart inset to plot bearing lines and radar ranges. For the this situation was further aggravated by its minimum sustained speed of 9 knots. However, should not have discontinued taking and plotting fixes during the transit of Shakan Strait and El Capitan Passage. This omission was not a contributing cause of the grounding. (Facts 35, 36, 37, 42, 62, 78, 81)

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28. The OOD should have used the fathometer as a navigation tool to help determine position. A close watch of the fathometer may have alerted the OOD that was proceeding from 7 fathoms past the 5 fathom and 3 fathom curves, indicating the vessel was coming up on a reef. Further, the fathometer aboard should be relocated or, at a minimum, turned as it cannot be quickly viewed by the radar operator (frequently also the OOD) without moving to the center of the bridge. (Facts 59, 60, and Enclosure 4)

29. The Commanding Officer's timely notification to CPOON and passing of information through radio communications and message traffic (SITREPS and POLREPS) ensured that needed damage control equipment, shoring, pollution response materials, and assistance were provided to . His actions prevented further damage to the vessel and ensured its safe return to home port. (Facts 64, 65, 67, 70)

30. All efforts by responding Coast Guard resources were timely and proper. (Facts 65, 67)

31. The efforts to stop the flow of oil leakage from and recover the oil that had already escaped were effective and proper. (Fact 69)

32. Gyrocompass error, radar error, navigational equipment malfunction, or propulsion machinery failures were not contributing causes to the grounding. (Facts 6, 16, 32)

33. Weather conditions and visibility were not contributing causes to the grounding. (Facts 26, 63)

34. Fatigue, substance abuse, or illness of any of bridge personnel were not contributing causes to the grounding. (Facts 16, 17)

35. If it had been developed and available, information on the advance and transfer of when operating on one engine may have assisted the Commanding Officer and OOD better anticipate these effects when turning into El Capitan Passage entrance. (Facts 41, 44)

36. An error in judgment was made by the Commanding Officer by not intervening when he observed and felt that was too far left of track and moving too fast for the confined waters. (Fact 57)

37. An error in judgment was made by the OOD by: (1) not being more attentive to his conning of (2) not maintaining the vessel on the plotted track, considering the tight waters; and (3) not advising the Commanding Officer of his apprehensions upon approach to El Capitan Passage. (Facts 41, 46, 47, 48, 49, 50, 51, 55, 56)

38. The Commanding Officer's decision to stop the transit of to effect repairs to the #1 MDE and conduct a boarding was prudent. (Fact 31)

39. The damage control efforts of the crew of subsequent to the grounding were effective and commendable. The efforts of BM1 and the leadership displayed by MKC as on scene leader are especially worthy of recognition. (Facts 66, 68, 69, 70)

40. The response of the tug HYAK, in anchoring his barge tow and proceeding to assist, is commendable and worthy of recognition. (Fact 67)

41. The diving assistance provided by ASM1 WEAVER significantly aided damage control efforts and is worthy of recognition. (Fact 67)

42. No disciplinary action for Commanding Officer, OOD, or any of the crew is warranted.

RECOMMENDATIONS

1. Commander, Seventeenth Coast Guard District, Aids to Navigation Branch (oan), should ensure a Waterways Analysis Management Study (WAMS) of the El Capitan Passage area is conducted. (Opinions 24, 25, 26)

2. Commander, Seventeenth Coast Guard District, Aids to Navigation Branch (oan), should consider taking one or more of the following actions: (Opinions 24, 25, 26)

a. Replace Dry Pass Buoy 28 with a large structure capable of withstanding impact from log booms, similar to structures prevalent in Wrangell Narrows. A notation of the set back of the structure should be included in the Light List, Navigational Charts, and Coast Pilot.

or

b. Reposition Dry Pass Buoy 28 at the edge of the channel? and issue a Notice to Mariners for inclusion in the Coast Pilot and navigational charts that Dry Pass Buoy 28 has a history of being off station and mariners should carefully position check the buoy before relying on it as a navigational aid.

or

c. If the buoy remains in the present position as a replacement for the previous daybeacon, a notation of the buoy's set back from good water should be made in the Light List, Navigational Charts, and Coast Pilot.

or

d. Establish fixed ranges to assist navigation at the entrance to El Capitan Passage.

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3. Commander, Seventeenth Coast Guard District, Aids to Navigation Branch (oan), should review the position of all floating aids in Alaska to insure they are set in appropriate water depths. (Opinion 25)

4. Consideration should be given to repositioning the fathometer aboard so that it can be more readily viewed by the radar operator/OOD on the starboard side of the bridge. (Opinion 28)

5. The error in judgment of CWO2 T. A. , Commanding Officer of USCGC , should result in a non-punitive censure from Commander, Coast Guard Group Ketchikan, for not intervening to insure the safe navigation of in El Capitan Passage. (Opinion 36)

6. Commander, Coast Guard Group Ketchikan should make an entry into the service record of BM1 W. E. , the OOD of at the time of the grounding, admonishing his error in judgment in not properly navigating in El Capitan Passage. (Opinions 1, 37)

7. A copy of this investigation should be provided to Commandant naval engineering staff with a recommendation that engineering modification be made to Island Class cutters to allow variable, reduced speeds with both engines engaged. (Opinion 2)

8. A copy of this investigation should be provided to PCO/PXO school and used as an example of the difficulties encountered in conning Island Class cutters in restricted waters.

9. Advance and transfer data for Island Class cutters should be computed for single engine operations and posted on the vessels' bridges. (Opinion 35)

10. Appropriate recognition should be made to commanding officer and crew for their effective damage control response. (Opinion 39)

11. Appropriate recognition should be made to ASM1 WEAVER for the diving assistance he provided. (Opinion 41)

12. Appropriate recognition should be made to the skipper of the tug HYAK for his response. (Opinion 40)

Commander, U.S. Coast Guard
Senior Member

Lieutenant, U.S. Coast Guard
Member

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Copy: CCGD17 (o, m, dl(2)) w/enclosures
CCGD17 (oan, osr, dpa) w/o enclosures
PACAREA (poc) w/enclosures
CGC w/enclosures
CGC w/o enclosures
CGC w/o enclosures
CGC w/o enclosures
CGC w/o enclosures
MSO Juneau w/o enclosures
AIRSTA Sitka w/o enclosures

Enclosures: See attached listing

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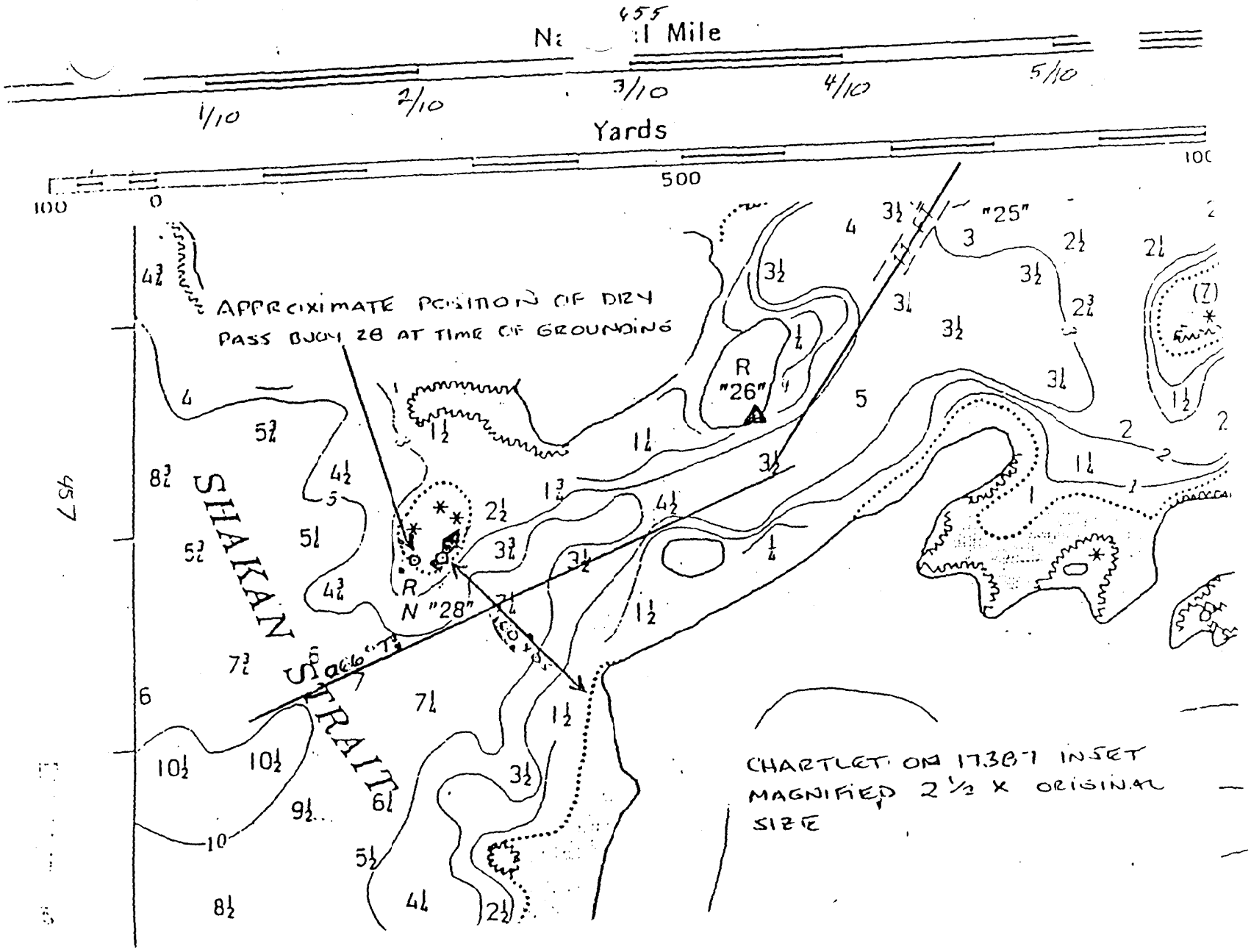
Nautical Mile
1/10
2/10
3/10
4/10
5/10
Yards
100
0
500
100
APPROXIMATE POSITION OF DRY
PASS BUOY 28 AT TIME OF GROUNDING
R
"26"
"25"
R
N "28"
SHAKAN STRAIT
CHARTLET ON 17307 INSET
MAGNIFIED 2½ X ORIGINAL
SIZE

U.S. Department of Transportation
United States Coast Guard

Commanding Officer
U. S. Coast Guard
Base Ketchikan

Ketchikan, AK 99901
907-228-0210

5830
18 Jan

INVESTIGATION OF USCGC GROUNDING AT DRY PASS, PRINCE OF WALES ISLAND, ALASKA ON 5 DECEMBER 1989

ACTION OF CONVENING AUTHORITY

I concur with the opinions subject to the following exceptions or comments:

a. Opinion 4: A CPA of 25 yards would not have endangered the vessel--if the buoy was on station, and set in accordance with the Aids to Navigation Manual. Too much faith may have been put in the buoy being accurately positioned at the expense of other proven navigation practices.

b. Opinion 7: I agree in principle that use of buoy 28 with radar ranges and visual observations was consistent with accepted seamanship practices. However, danger soundings, and radar danger ranges to the opposite shore from the buoy should have been in use, and were not.

c. Opinion 21: I have no objection to the use of the modified special sea detail. But, I believe this detail, modified or not, must be set; and it was not set before started her approach to Dry Pass. Nor were members of the detail assigned specific duties. These factors also contributed to the grounding.

d. Opinion 27: I disagree that taking and plotting fixes did not contribute to the grounding. A fix at the beginning of the approach would have been very helpful. While plotting fixes thereafter may have been impractical, a constant flow of soundings and radar ranges to the shore line from a navigation team would have been beneficial.

I concur with the recommendations subject to the following comments:

a. Recommendations 5 and 6: CWO2 and BM1 showed errors in judgement, not negligence during this grounding. I concur with the recommendations of a non-punitive censure and service record entry for CWO Dickey and BM1 Davies respectively.

b. Recommendations 10, 11, and 12: Group Ketchikan will prepare correspondence for appropriate recognition.

Subject to the foregoing comments, the proceedings, findings of fact, opinions, and recommendations of the investigative report are approved.

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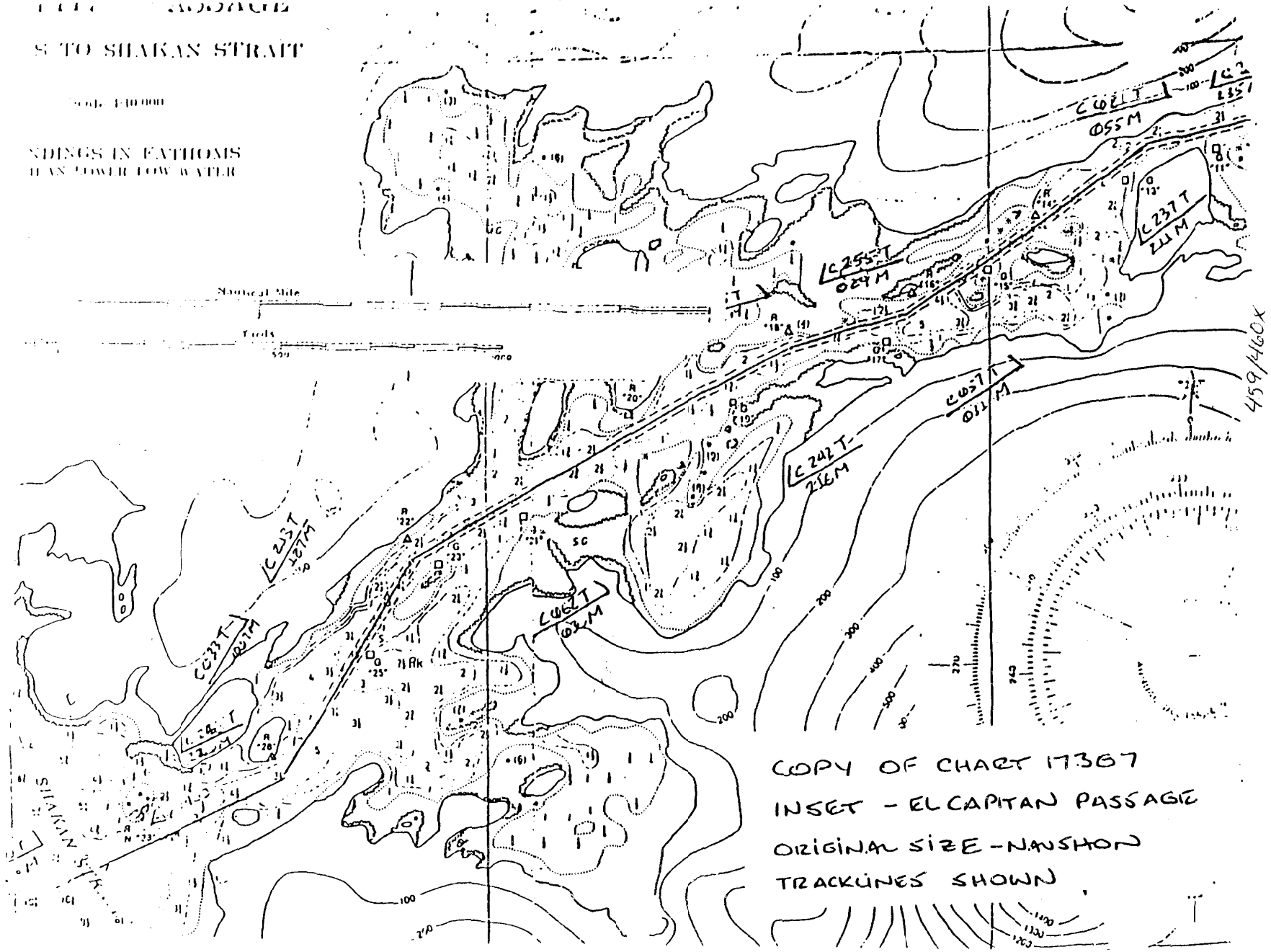

COPY OF CHART 17367
INSET - EL CAPITAN PASSAGE
ORIGINAL SIZE - NAUSHON
TRACKLINES SHOWN

CGC HAMMERHEAD

SMALLBOAT CAPSIZING

8 DECEMBER 1998

U.S. Department of Transportation
United States Coast Guard

Commander
United States Coast Guard
Group woods Hole

Little Harbor Rd
Woods Hole, MA 02543
Staff Symbol: Eng
Phone: (508)457-3310
FAX: (508)457-3313

FILE COPY

5830
01/15/99

From: LCDR [redacted]
To: Commander, Coast Guard Group Woods Hole

Subj: INVESTIGATION INTO THE CAPSIZING OF THE AMBAR 5.4 METER SMALL BOAT DEPLOYED FROM USCGC HAMMERHEAD (WPB 87302)

Ref: (a) CG Administrative Investigations Manual, COMDTINST M5830.1

1. **Preliminary Statement**: In accordance with reference (a), an informal investigation was conducted into the circumstances surrounding the capsizing of the AMBAR 5.4 meter small boat (HAMMER 1) deployed from USCGC HAMMERHEAD (WPB 87302) on 08 December 1998. All reasonably available evidence has been collected and all directives of the convening authority have been met. Samples of the paint residue surrounding the scratches on the hull of HAMMER 1 are being analyzed for similarities with samples taken from the bow stem of the USCGC HAMMERHEAD. The results of the analysis are pending.

2. **Findings of Fact**:

a. On 08 December 1998 USCGC HAMMERHEAD (WPB-87302) was underway in approximate position 41° 11.95' N 069° 20.35' W at Nantucket shoals - Davis Banks conducting fishing boat boardings under the OPCON and ADCON of Commander Coast Guard Group Woods Hole. The following list describes the individuals involved in the circumstances surrounding the capsizing of HAMMER 1: See enclosure (2).

Name	Position
BMCM [redacted]	Officer in Charge USCGC
MKC [redacted]	Engineering Petty Officer USCGC
BM1 [redacted]	Executive Petty Officer USCGC
QM2 [redacted]	Quartermaster
MK2 [redacted]	Boarding team member
FS2 [redacted]	Boarding team member
SN [redacted]	Small boat coxswain

b. At 2320 the USCGC HAMMERHEAD crew commenced preparations for boarding the F/V LIBERTY. The F/V LIBERTY is a 108' (LOA), 166 Gross Ton scallop boat homeported in New Bedford, MA. The F/V LIBERTY's hull is black and the underwater body coating is red. The F/V LIBERTY did have its dredging gear deployed, including a 1 1/8" diameter dredge cable. The cable entered the water approximately 8' aft of the stern and angled away from the starboard side of the hull. The aft section of the hull has a sharp inward angle. There is a ½" to 1" chime running along the waterline of the hull. See enclosure (2), (3), (5), (21), (24).

c. At 2328 the USCGC HAMMERHEAD made preparations for boarding the F/V LIBERTY and maneuvered accordingly. See enclosures (2), (4).

d. At 2330 the USCGC HAMMERHEAD's boarding team consisting of, BM1 [redacted] (Boarding Officer); MK2 [redacted] (Boarding Team Member); FS2 [redacted] (Boarding Team Member); and SN [redacted] (Small Boat Coxswain), boarded Hammer 1 in the sternwell. See enclosure (2).

e. At 2332 HAMMER 1 was away en route the F/V LIBERTY. BMCM [redacted] radioed HAMMER 1 and asked if they wanted the F/V LIBERTY to slow down. The speed of the F/V LIBERTY was approximately 4 to 7 knots. The crew of HAMMER 1 replied that they did not need the F/V LIBERTY to reduce speed. See enclosure (2), (8), (10), (12).

f. The weather during the boarding evolution consisted of 25-27 knot winds from 033 true and 4'-6' seas from 030 true. Visibility was approximately 6 miles, but extremely dark. See enclosure (2).

g. At 2337 HAMMER 1 was alongside the F/V LIBERTY. In preparation for boarding the F/V LIBERTY SN [redacted] positioned HAMMER 1 on the port side of the F/V LIBERTY between the bow wake and stern wake clear of all fishing gear. The master of the F/V LIBERTY stated that HAMMER 1 was further aft alongside his vessel then past boardings by other Coast Guard units. SN [redacted] maneuvered HAMMER 1 along side the F/V LIBERTY by matching the speed of the fishing boat and then placed the forward starboard quarter of HAMMER 1 into the hull of the F/V LIBERTY. To ensure the boat would stay in position SN [redacted] turned the wheel to starboard and applied forward propulsion. HAMMER 1 and the F/V LIBERTY were heading down sea. The boarding team did notice a dredge cable protruding from the stern of the F/V LIBERTY. See enclosures (2), (5), (8), (10), (11), (12), (21).

h. A static stability analysis conducted by the USCG Engineering Logistics Center concluded that HAMMER 1 is a stable boat. See enclosure (23).

i. HAMMER 1's coxswain, SN [redacted] conducted approximately 75 boarding maneuvers with a small boat. *For this purpose a boarding maneuver is defined as coming alongside a boat to disembark a boarding team.* This total includes training and actual boardings on the USCGC POINT TURNER and USCGC HAMMERHEAD. SN [redacted] did not have a USCGC HAMMERHEAD small boat coxswain qualification letter in his training record. See enclosure (14), (21).

j. At 2338 HAMMER 1 capsized in position 41° 10.54'N 069°19.44' W while along side the F/V LIBERTY. Due to its high freeboard the boarding team agreed that the best method of boarding the F/V LIBERTY would be to use the vessel's scuppers as a foot hold. See Enclosure (15) for the boarding team's location on HAMMER 1 immediately prior to the capsizing. Once alongside, the F/V LIBERTY rolled to starboard making it difficult for the boarding team to board the boat. MK2 [redacted] was the first member of the boarding team to board. He decided to wait until the F/V LIBERTY rolled to port, so that he would have a better profile to climb aboard. As the F/V LIBERTY started its roll to port the boarding team members noticed water coming over the bow of HAMMER 1, as if the bow was plowing into the sea. MK2 [redacted] and FS2 [redacted] recalls the water predominately coming in from the port bow of

HAMMER 1, while BM1 [redacted] recalls the water coming over the starboard bow and then the port bow. MK2 [redacted] immediately notified SN [redacted] to back down, as did BM1 [redacted] SN [redacted] did back down on the throttle, but to no avail. HAMMER 1 capsized to port in a pitch-poll manner with the stern lifting vertically. See enclosures (8), (10), (11), (12), (15).

k. AT 2338 all four crewmembers of HAMMER 1 were in the water. MK2 [redacted] was able to get a distress call out stating man overboard before his radio malfunctioned. MK2 [redacted] and FS2 [redacted] were thrown to port and clear of HAMMER 1. SN [redacted] was initially under HAMMER 1 when it capsized but was able to free himself immediately. MK2 [redacted] FS2 [redacted] and SN [redacted] held onto HAMMER 1. BM1 [redacted] was thrown into the water on the port side of HAMMER 1 and when she surfaced was trapped beneath HAMMER 1 in an air pocket. While in the water she felt an object pass by her legs, possibly the dredge cable. BM1 [redacted] attempted to swim under HAMMER 1 to free herself, but was unable to do so because of her floatation device. As BM1 [redacted] moved to the bow of HAMMER 1 she saw legs dangling from the side of HAMMER 1 in the light of the F/V LIBERTY. She grabbed the leg of MK2 [redacted] to notify him of her position. MK2 [redacted] grabbed BM1 [redacted] arm and with assistance from SN [redacted] pulled her out from under HAMMER 1. The four members clung to the side of HAMMER 1 awaiting assistance. FS2 [redacted] was losing feeling in his hands due to the cold and had difficulty maintaining his hold on HAMMER 1. BM1 [redacted] locked arms with FS2 [redacted] to keep him close to the group and prevent him from drifting away. See enclosures (2), (9), (10), (21).

l. During the USCGC HAMMERHEAD's maneuver to the capsized HAMMER 1 BMCM [redacted] released a distress call on the HF radio. The USCGC BEAR replied and relayed the distress. See enclosures (6), (9), (21).

m. At approximately 2340 –2342 the USCGC HAMMERHEAD was alongside HAMMER 1 to assist the crewmembers of HAMMER 1. The first several attempts to heave life rings and lines were unsuccessful due to the strong winds. On a third attempt BMCM [redacted] maneuvered the USCGC HAMMERHEAD close enough to HAMMER 1, so the crew could get the lines to the people in the water. See enclosures (2), (6), (7), (8), (9), (10), (11), (12).

n. At 2350 the crew of HAMMER 1 were safely aboard the USCGC HAMMERHEAD. See enclosure (2).

o. At 2352 Group Woods Hole received a radio call on frequency 8294 from the USCGC HAMMERHEAD notifying them that the crewmembers of HAMMER 1 were recovered. Communications on frequency 8294 and 156.8 were weak and barely readable. Group Woods Hole attempted several other frequencies for better reception, but without success. Radio communications between the USCGC HAMMERHEAD and Group Woods Hole continued on frequency 2670 for the remained of the night readable but still weak. See enclosure (22).

p. Once the crew of HAMMER 1 were aboard, the USCGC HAMMERHEAD commenced a search for HAMMER 1. Due to the darkness and swift currents USCGC HAMMERHEAD lost sight of HAMMER 1 during the rescue. They spent the remainder of the night searching for HAMMER 1 with negative results. See enclosures (2), (6).

q. At 0847 on 09 December H6001 from Air Station Cape Cod located HAMMER 1 in position 41° 05.25'N 069° 16.36'W. At 0904 the USCGC HAMMERHEAD visually sighted HAMMER 1. See enclosures (2), (7).

r. Between 0920 and 1023 the USCGC HAMMERHEAD, with assistance from H6001's rescue swimmer, worked to attach a line to HAMMER 1. See enclosures (2), (7).

s. With a line attached to the bow of HAMMER 1 BMCM[redacted] attempted to right the small boat. He first tried to tow HAMMER 1, hoping that the water pressure on the bow of HAMMER 1 would be enough to right the boat. This proved to be ineffective. He tried several other methods to right the boat and in doing so the USCGC HAMMERHEAD made contact with HAMMER 1's hull. The USCGC HAMMERHEAD hit the starboard side of HAMMER 1 head on. Not being able to right it, the USCGC HAMMERHEAD continued to tow HAMMER 1 while capsized at approximately 2 knots en route Nantucket Sound. See enclosure (2), (7), (21).

t. At 1709 on 09 December 1998 CG-55107 from Aids to Navigation Team Woods Hole rendezvoused with the USCGC HAMMERHEAD to assist in righting HAMMER 1. While being towed, CG-55107 approached the capsized HAMMER 1 on its starboard side and heaved a grappling hook over its hull. The grappling hook caught the port side grab line on HAMMER 1. CG-55107 came ahead and turned to port tensioning the line and pulling HAMMER 1 over, righting it. Once upright, HAMMER 1 was retrieved and moored in the sternwell of the USCGC HAMMERHEAD. See enclosures (2), (7), (13).

u. At 2045 the USCGC HAMMERHEAD was moored at Group Woods Hole. See enclosure (2).

v. Damages to HAMMER 1 and the USCGC HAMMERHEAD are described in the following figures:

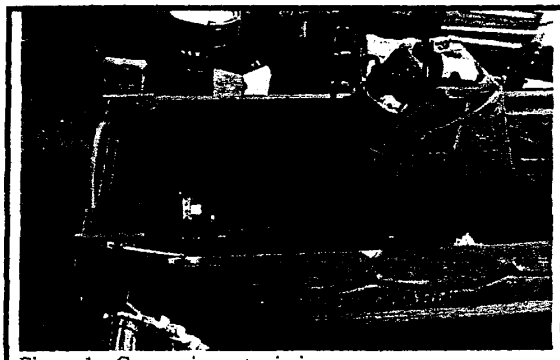

Figure 1 - Coxswain seat missing.

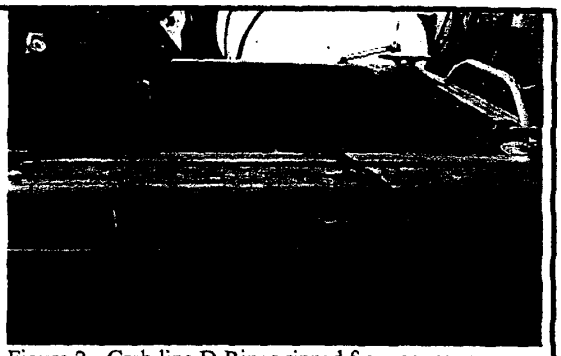

Figure 2 - Grab line D-Rings ripped from sponson.

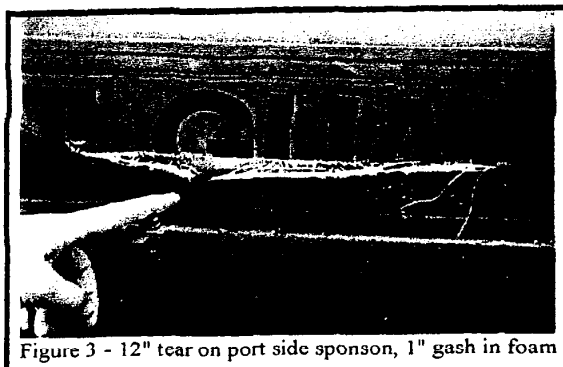

Figure 3 - 12" tear on port side sponson, 1" gash in foam

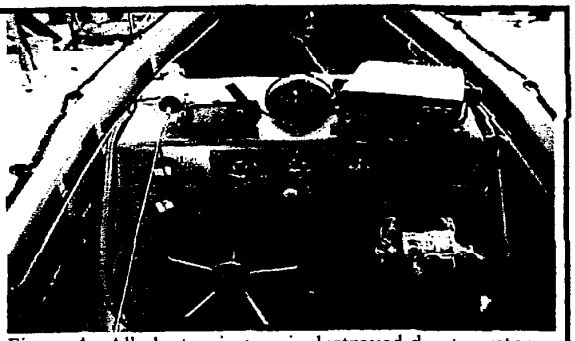

Figure 4 - All electronic gear is destroyed due to water damage.

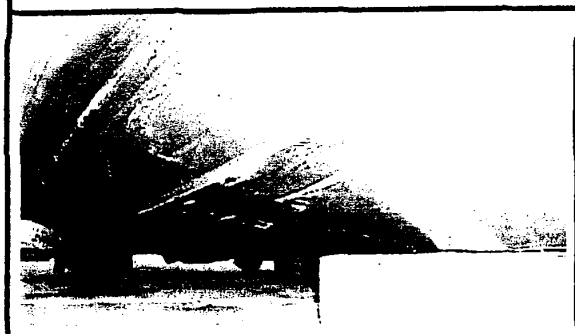

Figure 5 - Scratches on STBD side of hull. Depth of gouges 1-2 mm.

Figure 6 - Scratches STBD side of hull.

Figure 7 - Scratch/gouge STDB side AFT of hull. Gouge 1mm deep.

Figure 8 - Scratches STBD side AFT of hull.

Figure 9 - Scratches on bow stem of CGC Hammerhead picture taken from STBD side.

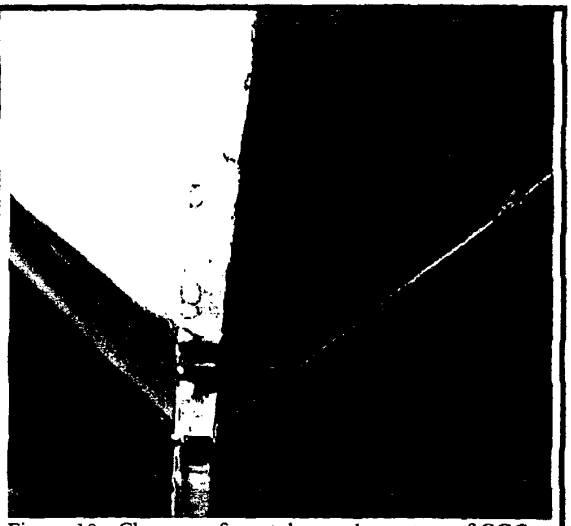

Figure 10 - Close up of scratches on bow stem of CGC Hammerhead. Picture taken head on.

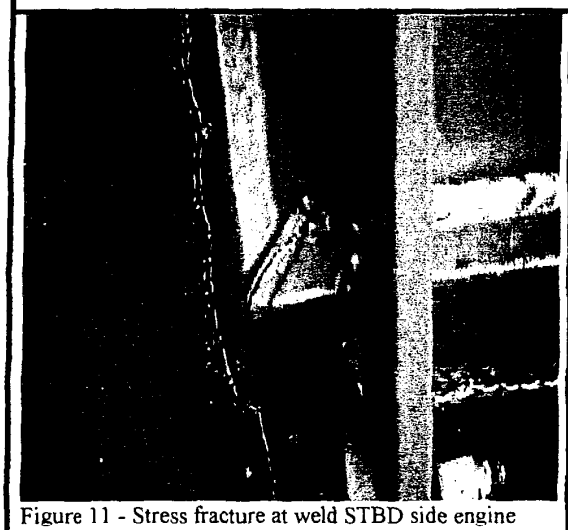

Figure 11 - Stress fracture at weld STBD side engine cover hinge. Port side Similar. Fractures were through the entire weld.

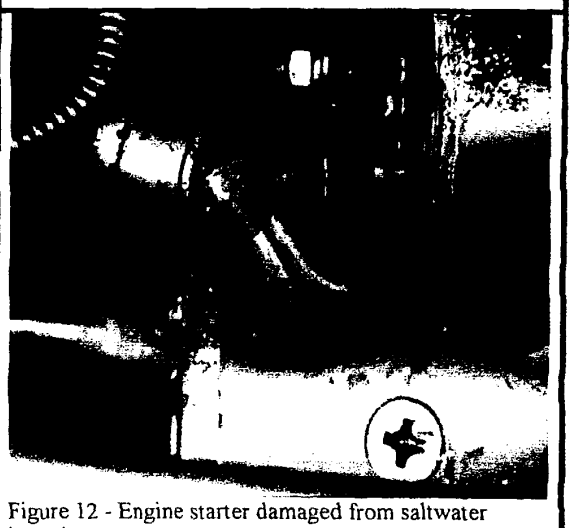

Figure 12 - Engine starter damaged from saltwater intrusion.

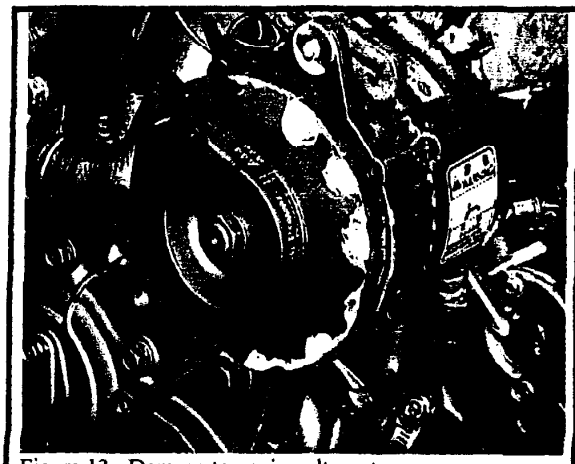

Figure 13 - Damage to engine alternator.

Figure 14 – Scratches on engine cover - interior port side.

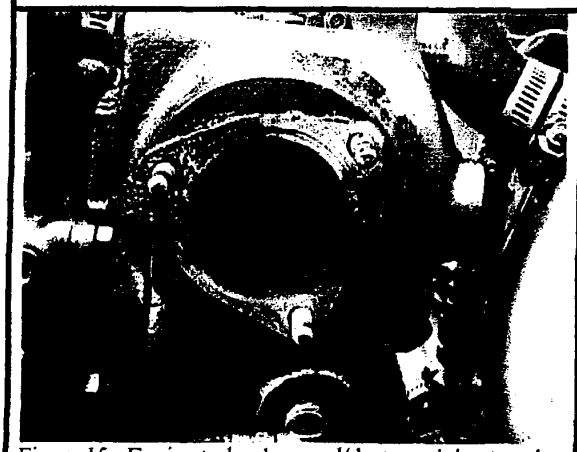

Figure 15 - Engine turbo damaged/destroyed due to salt-water intrusion.

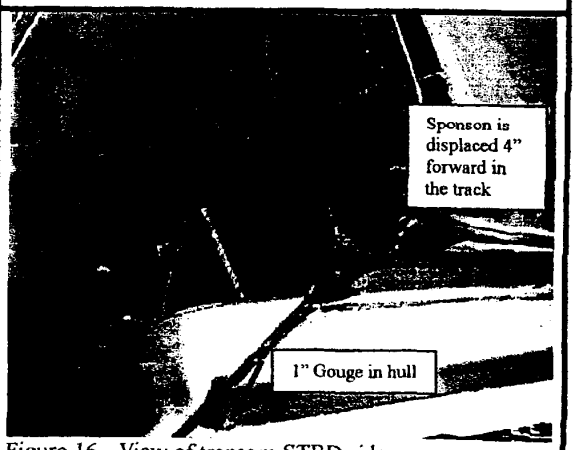

Figure 16 - View of transom STBD side

3. Opinions:

a. That there is no direct or circumstantial evidence that any individual's fault or negligence was the proximate cause of the capsizing and subsequent damaged sustained to HAMMER 1 on the night of 08 December 1998. Reference – findings of fact j.

b. That HAMMER 1 capsized due to a string of events while alongside the F/V LIBERTY. The initial cause was that the forward section of the starboard sponson was caught by the F/V LIBERTY's chime during its roll to port, forcing HAMMER 1's bow into the water. The pressure generated from the water coming over the bow and a strong opposing current forced HAMMER 1 backwards rapidly in respect to the F/V LIBERTY's headway. This force pushed HAMMER 1 into the F/V LIBERTY's port dredge cable. The dredge cable contacted HAMMER 1 on the starboard side transom creating an upward force. In their statements the

crew of HAMMER 1 claimed that they felt as if something lifted HAMMER 1 over from the starboard aft quarter. Contact between the starboard transom and the dredge cable explains the gouge in the transom and the fact that the starboard sponson was pushed forward approximately 4" in its track, as shown in figure 16 above. The force of the cable lifting the starboard stern section in conjunction with the opposing downward force on the bow, created by the F/V LIBERTY, caused HAMMER 1 to capsize and pitch-poll to port. It is also reasonable to assume that the downward force from the F/V LIBERTY and the uplift force from the cable were acting at the same time. Enclosure (24) describes the location of the F/V LIBERTY's dredge cable in relation to its stern and the location of the scuppers. HAMMER 1 is 17.7' long. When initially alongside, the bow of HAMMER 1 was lined up with scupper number 5 providing a distance of 15' between HAMMER 1's stern and the dredge cable. At this point HAMMER 1 was initially clear of the dredge cable. If the bow of HAMMER 1 was pushed down at this location and then slide back while still caught beneath the chime it could have made contact with the cable before being released from beneath the chime. Enclosure (25) diagrammatically shows the events described above. These opposing forces acting at the same time exceeded HAMMER 1's righting moment and capsized the boat. Reference – findings of fact j.

c. That the darkness and weather on the night of 08 December 1998 contributed to the boarding teams poor judgement in positioning HAMMER 1 alongside the F/V LIBERTY. Reference – findings of fact f and g.

d. That the sponson design of HAMMER 1 contributed to it's capsizing. The squared off configuration of the sponson develops a high coefficient of friction when alongside other hulls. This lends itself to getting caught or hung up on other hulls and/or hull protrusions. Reference – findings of fact b and enclosures (25), (26).

e. That the boarding team and coxswain were qualified but not experienced coming alongside and boarding fishing vessels at night with a 5.4 meter AMBAR RIB. SN[redacted] was a qualified small boat coxswain on the USCGC POINT TURNER. The small boat on the USCGC POINT TURNER was a 14' hurricane/zodiac. His qualifications were carried over to the USCGC HAMMERHEAD and revalidated by BMCM[redacted]. SN[redacted] experience handling HAMMER 1 included 25 training missions initiated by the cutter's training program, 2 actual fishing boat boardings and some very limited training from the Bollingers Shipyard during the acceptance period. SN[redacted] used the same methods for coming alongside the F/V LIBERTY as he was trained to do throughout his performance as a qualified small boat coxswain. This method is a Coast Guard standard maneuvering procedure for coming along side a boat for boarding purposes. Reference - findings of fact i.

f. That HAMMER 1 is a seaworthy small boat. Reference – findings of fact h.

g. That the decision to conduct a boarding on the night of 08 December 1998 was sound given that the crew of the USCGC HAMMERHEAD were basing their risk analysis on limited experience with HAMMER 1 and the operational parameters of other small boats. There is no specific guidance on the operational parameters, including environmental conditions, of a 5.4-meter AMBAR rigid inflatable boat (RIB). AMBAR Marine provides the only written guidance on HAMMER 1 in the AM 550 CPB RIB Operation and Maintenance Manual. In terms of

operating procedures this manual is very general and only specifies that the capacity of HAMMER 1 is 6 persons. Reference - finding of facts f and enclosure (18).

h. That the speed of HAMMER 1 and the F/V LIBERTY was appropriate for a boarding given the environmental conditions, and did not contribute to the capsizing of HAMMER 1. Reference - finding of fact e and g.

i. That the scratches on the hull of HAMMER 1, as shown in figures 5 through 8, were caused by the USCGC HAMMERHEAD in their attempts to right the boat. See figures 9 and 10 for the scratches on the bow stem of the USCGC HAMMERHEAD. Paint samples from the USCGC HAMMERHEAD's bow stem and the paint residue from the scratches on the hull of HAMMER 1 are being analyzed by a lab but were not available during this investigation. Although, a visual inspection of the paint shows that they are similar. Of particular note was a blue layer of paint on HAMMER 1's scratches, which matched the third coat of paint on the underwater body paint system of the USCGC HAMMERHEAD. Reference - findings of fact s and enclosure (19).

j. That:

(1) The damages described in figures 2 and 3 were caused by a grappling hook from CG-55107 in an effort to right HAMMER 1. Reference – findings of fact v and enclosure (13).

(2) The damages on the hull of HAMMER 1, as described in figures 5 through 8, were caused by contact with the USCGC HAMMERHEAD. Reference – findings of fact v and enclosure (21).

(3) The remainder of damages and missing parts were a result of the capsizing. Reference – findings of fact v and enclosure (20).

The total cost estimate for replacement of parts or repair of the damages described in figures 1-8 and 11-15 is $12,900. Reference - findings of fact v and enclosure (20).

l. In relation to this investigation but not directly pertaining to the capsizing, it is the investigating officer's opinion that there are several features of the 87' Coastal Patrol Boat, which require design evaluation. These include the bridge spotlight, location of the alarm buttons, and communications. Reference – findings of fact o and enclosure (9), (21).

3. Recommendations:

a. That administrative or disciplinary action is not appropriate and should not be pursued for any of the USCGC HAMMERHEAD crew. Reference – opinion a.

b. That small boat coxswains on the USCGC HAMMERHEAD should receive training to better understand the limitations and operating parameters of the AMBAR 5.4 M RIB. Due to the differences in hull design of the 5.4 meter AMBAR RIB, one cannot assume that it can be brought alongside a vessel in the same manner as a Hurricane/Zodiac style Rigid Hull Inflatable Boat. Caution must be taken while alongside a vessel to prevent the squared off sponson from being caught on the hull of a ship. Reference – opinion b, d, e.

c. That fenders should be used when coming alongside a vessel with a AMBAR RIB. This procedure should be implemented as a standard operating procedure. Reference – opinion b and d.

d. That operating parameters for the 5.4 meter AMBAR RIB should be established using the information learned form this accident. Parameters should include environmental conditions, and hull type of the vessel being boarded. Reference – opinion b, g.

e. That small boat coxswains should receive more training on the 5.4 meter AMBAR RIB during the acceptance period at Bollingers shipyard. Reference – opinion e and enclosure (14).

f. The USCGC HAMMERHEAD should establish a more formal training and qualification documentation process for small boat coxswains. Reference – findings of fact i and opinion e.

g. That the following features of the 87' Coastal Patrol Boat class be evaluated:

(1) The spotlight should be evaluated for proper operation and possibly change of lamp type for faster reaction time. QM2[redacted] had difficulty operating the bridge spotlight during the rescue attempt. The spotlight took a long time to warm up and illuminate HAMMER 1, hindering rescue efforts. Reference – opinion l and enclosure (21).

(2) Alarm location and buttons should be evaluated to improve accessibility and identification. BMCM[redacted] had difficulty locating the general alarm button on the bridge when notified of the capsizing and activated the chemical attack alarm by accident. The alarm buttons on the bridge are small and in very close proximity to each other. Reference – opinion l and enclosure (21).

(3) The ship should be outfitted with radio headsets or hand helds to enable communications between the bridge and deck during evolutions. BMCM[redacted] had difficulty relaying information to the deck crew on the USCGC HAMMERHEAD during the rescue operations because all of the ship's hand held radios were with the boarding team. Also, boarding team members should be outfitted with waterproof radios to enable communications in the event of a capsizing or man overboard. Reference – opinion l and enclosure (10), (21).

(4) USCGC HAMMERHEAD and Group Woods Hole's HF radios should be evaluated. During the events following the capsizing the Group and the ship could not establish adequate radio communications. Reference – opinion l and findings of fact o.

[redacted]
Investigating Officer

[redacted]
Assistant Investigating Officer

Encl: (1) Investigating officer's appointing order.
(2) USCGC HAMMERHEAD OOD Log and Weather Log.
(3) Printout of F/V LIBERTY description from the Group Woods Hole database.

CGC SPENCER

MSB CAPSIZING

4 APRIL 1999

R 120329Z APR 99
FM USCGC WMEC 270
TO ZEN/COMLANTAREA COGARD PORTSMOUTH VA//AOFC//
INFO ZEN/COMDT COGARD WASHINGTON DC//G-WKS/G-OCU//
ZEN/COMCOGARD MLC NORFOLK VA//KSE//
BT
UNCLAS FOUO//N05100//
SUBJ: LESSONS LEARNED CAPSIZING AND RIGHTING MSB
A. MY 050624Z APR 99 (NOTAL)
B. MY 062307Z APR 99 (NOTAL)
C. MY 120021Z APR 99 (NOTAL)
1. REFS A AND B (SITREPS) AND C (MISHAP RPT) DESCRIBE MSB CAPSIZING WITH NO SERIOUS INJURIES, 225NM WNW OF BERMUDA, ON THE EVENING OF 4APR99. A MORE COMPREHENSIVE DISCUSSION OF THE INCIDENT AND LESSONS LEARNED FOLLOWS:
2. CAPSIZING: WHILE ON SAR STANDBY FOR HH-60, CUTTER DECIDED TO CONDUCT FFV BOARDING. WX WAS FAIRLY ROUGH (7 FT SEAS), BUT CONSIDERED ACCEPTABLE BASED ON PREVIOUS EXPERIENCE. SMALLBOAT SELECTION WAS LIMITED BY EARLIER MDE CASUALTY WHICH RESULTED IN SINGLE SHAFT OPS (PORT ONLY). WHEN LAUNCHING DOWNSWELL, CUTTER NORMALLY WOULD LAUNCH THE RHI (LOCATED ON PORT QTR) -- DECLUTCH PORT SHAFT AND RUN ON STBD SHAFT. HOWEVER, SINCE PORT SHAFT WAS ONLY MEANS OF PROPULSION, DECIDED TO LAUNCH MSB (LOCATED STBD SIDE AMIDSHIPS). DOWNSWELL MSB LAUNCH (INSTEAD OF NORMAL UPSWELL) WAS DUE TO RELATIVE POSITIONING OF F/V AND CUTTER. BOTH VSLS WERE RUNNING DOWNSWELL WITH F/V FWD OF THE BEAM ON CUTTERS STBD SIDE. DECIDED NOT TO SPRINT OUT AHEAD OF F/V AND COME ABOUT FOR UPSWELL LAUNCH BECAUSE CUTTER DID NOT WANT TO INCREASE RELATIVE SPEED (CLOSER RATE) WITH F/V ON A RECIPROCAL CRS. A LANGUAGE BARRIER EXISTED W/ TAIWANESE CREW AND THE F/V HAD BEEN MANEUVERING ERRATICALLY. GIVEN CUTTERS SINGLE SHAFT LIMITATION, DECIDED TO KEEP A GOOD DISTANCE. FINAL LAUNCH POSITION RESULTED IN A LONG (1NM), CROSS-SEA (BEAM TO) RUN FOR MSB. COXN HAD SITUATIONAL AWARENESS AND WAS "TACKING" TO F/V INITIALLY WITH SEAS OFF STBD BOW. MSB CAME ABOUT, PLACING SEAS OFF STBD QTR. W/ DARKNESS APPROACHING AND A LONG WAY TO GO, COXN TRIED TO MAKE BETTER PROGRESS TOWARD F/V BY COMING TO STBD (A MORE DIRECT CRS). UNFORTUNATELY, COMING TO STBD PLACED SWELLS MORE ON THE BEAM. BY KEEPING AN EYE ON ONCOMING SWELLS OVER HIS RIGHT SHOULDER, COXN LOOKED FOR OPPORTUNITIES TO CHEAT TO STBD. BUT W/ EACH LARGE SWELL, COXN WOULD QUICKLY FALL OFF TO PORT AND RIDE DOWN SWELL. A VERY LARGE SWELL (ESTIMATED AT 10-12 FT) QUICKLY APPROACHED AND COXN CAME HARD TO PORT, BUT COULD NOT FALL OFF THE SIDE OF THE WAVE IN TIME, AND MSB WENT OVER TO PORT. ALL POB JUMPED CLEAR OF THE MSB, ALTHOUGH ONE HAD TO SWIM DOWN AND OUT TO GET TOTALLY CLEAR. EVEN AFTER THE MSB CAPSIZED, THE PROP CONTINUED TO SPIN WILDLY FOR SEVERAL SECONDS UNTIL SALTWATER KILLED THE ENGINE. ONCE THE PROP STOPPED, ALL PIW QUICKLY CLIMBED ON TOP OF OVERTURNED MSB HULL.
3. CUTTER RESPONSE: IMMEDIATE AND PROFESSIONAL. CUTTER LOOKOUT SAW THE ORANGE FLOAT COATS ON TOP OF THE MSB HULL AND SHOUTED "THE MSB FLIPPED OVER!" CUTTER IMMEDIATELY SOUNDED "MAN OVERBOARD," WENT TO MOB STATIONS AND LAUNCHED RHI WITH MINIMUM CREW (COXN, BOAT ENG, CREWMAN AND ONE RESCUE SWIMMER). RHI MADE THREE TRIPS TO RECOVER ALL NINE POB W/O INCIDENT. NO ONE WAS SERIOUSLY INJURED.

4. CAUSES: MAIN CAUSE WAS A "FREAK" WAVE WHICH HIT MSB NEAR BROADSIDE AS COXN WAS ATTEMPTING MORE DIRECT CRS TO F/V. WAVE CAUGHT COXN BY SURPRISE. THERE WAS A CHAIN OF EVENTS WHICH LED TO THIS CAPSIZING. THIS WAS FIRST BOAT OPS OF PATROL IN FAIRLY ROUGH WX CONDITIONS W/ DARKNESS APPROACHING. THERE WERE NINE POB (VICE NORMAL SEVEN) -- THREE PERSON BOAT CREW, ONE BREAK-IN BOAT ENG AND FIVE PERSON BOARDING TEAM. SINGLE SHAFT LIMITATION OF CUTTER REDUCED BOAT SELECTION/LAUNCH CRS OPTIONS. COXN WAS NOT PRESENT WHEN BOAT SELECTION/LAUNCH CRS WAS DECIDED (AND NORMALLY DOES NOT ATTEND). LANGUAGE BARRIER WITH TAIWANESE CREW ON F/V COMPLICATED EVOLUTION AND DID NOT ALLOW CUTTER TO ASK F/V TO CHANGE CRS/SPEED TO FACILITATE MSB LAUNCH/APPROACH. END RESULT WAS DIFFICULT CROSS-SEA RUN FOR MSB.

5. LESSONS LEARNED:

A. EARLY BOAT OPS: ALWAYS DEVOTE SOME TIME (EVEN W/ A TIGHT TRANSIT SKED) TO CONDUCT PRACTICE MSB OPS SOON AFTER GETTING U/W.

B. RISK ASSESSMENT: ALWAYS INCLUDE PERTINENT PLAYERS (EG, COXN) IN BOAT LAUNCH DECISIONS (WE SHOULD HAVE INSISTED ON THE COXN BEING ON BRIDGE NOT JUST 1LT AND BMC). TO EXTENT OPS ALLOW, ALWAYS CONDUCT A "SYSTEMATIC" RISK ASSESSMENT BEFORE ALL BOAT OPS OR CERTAINLY WHEN CONDITIONS ARE MARGINAL. WE CURRENTLY USE A GREEN-AMBER-RED (GAR) RISK ASSESSMENT MODEL FOR ALL MOORINGS, UNMOORINGS, ETC. WILL CONSIDER USING FOR BOAT OPS.

C. LOCAL LIMITS: IT GOES W/O SAYING TO ALWAYS LAUNCH MSB AS CLOSE AS PRACTICAL TO SUBJ VSL AND AVOID A CROSS-SEA RUN. CUTTER CMDS SHOULD DISCUSS THIS CASE AND CONSIDER ESTABLISHING INTERNAL OPERATING PARAMETERS (DAY/NIGHT) FOR CUTTER MSB AND RHI (SIMILAR TO PITCH/ROLL LIMITS FOR HELOS).

D. ORANGE FLOAT COATS: ALL POB WERE WEARING ORANGE FLOAT COATS (WHICH WORKED GREAT EVEN W/ FULL GUNBELTS, STEEL-TOED BOOTS, AND BODY ARMOR). THE BRIGHT ORANGE FLOAT COATS AND RED BOARDING HELMETS MADE SIGHTING THE OVERTURNED MSB EASIER FOR THE CUTTER LOOKOUT AND OOD.

E. STAY WITH THE BOAT: ALL NINE POB IMMEDIATELY CLIMBED ON TOP OF THE MSB HULL, TOOK MUSTER, AND STAYED WITH THE MSB HULL.

F. DEDICATED LOOKOUT: ALWAYS ASSIGN A LOOKOUT TO WATCH MSB WHILE ENR SUBJ VSL (ESPECIALLY WHEN CUTTER IS MANEUVERING).

G. SECURE THE GEAR: LUCKILY COXN HAD SECURED THE PORTABLE RADIO TO THE STEERING CONSOLE AND THE SHOTGUN WAS IN ITS CASE (WHICH FLOATS). AFTER WE RIGHTED THE MSB, WE WERE ABLE TO RECOVER BOTH ITEMS SAVING US LOTS OF PAPERWORK AND MONEY.

H. KILL-SWITCH: CG SHOULD INSTALL A KILL-SWITCH ON MSB ENGINE SIMILAR TO THE RHI.

I. CONSIDER MORE STABLE BOAT: DESPITE RECENT STABILITY TEST WHICH CONCLUDED THAT MSB IS BASICALLY STABLE, OUR BOSUNS CONSIDER IT TOP HEAVY AND "TIPPY" (ESP. DOWNSWELL) AS DO MANY OTHER MSB DRIVERS AND SOME CUTTER COS. IN LIGHT OF RECENT MISHAPS, CG SHOULD CONSIDER REEXAMINING THE SEAWORTHINESS OF CURRENT MSB AND CONSIDER PROTOTYPING A MORE STABLE PLATFORM.

6. RIGHTING (PARBUCKLING) THE MSB: NIGHT OF CAPSIZING, WORSENING WX AND DARKNESS CAUSED US TO ABORT RIGHTING MSB AFTER A BRIEF ATTEMPT TO TOW OVERTURNED MSB HULL BACK TO THE CUTTER USING RHI (IT DIDN T WORK). INSTEAD, WE RECOVERED ALL POB SAFELY, DEBRIEFED THE ENTIRE CREW AND THEN STARTED TO DEVELOP OUR PLAN FOR RIGHTING THE MSB IN THE MORNING. IT TOOK 36 HRS BEFORE WX CONDITIONS LAID DOWN ENOUGH TO ALLOW US TO ATTEMPT RIGHTING THE MSB. OUR SINGLE SHAFT LIMITATION DIDN T HELP MATTERS, BUT THE REAL LIMITATION WAS THE SAFETY OF OUR RESCUE SWIMMERS. "PARBUCKLING" IS THE RIGHTING OF A SMALLBOAT BY ATTACHING ONE OR MORE LINES AND USING THE POWER

OF ANOTHER VSL TO TAKE A STRAIN AND ROLL THE SMALLBOAT BACK OVER; OFTEN DONE BY SAR STA 41 FOOTERS, BUT RARELY BY LARGE CUTTERS. OUR 1LT HAD THE GREAT IDEA OF USING THE MSB BELLY GRIPE STRAPS TO SERVE AS THE ATTACHMENT LINES (BRIDLE). PLAN WAS TO HAVE SWIMMERS ATTACH EACH END OF THE BELLY GRIPE TO THE ROTTMER RELEASE GEAR LOCATED FWD AND AFT IN MSB. OTHER END OF BELLY GRIPE WOULD BE ATTACHED TO A TOWING HAWSER. CUTTER WOULD MAKE AN UP SEA APPROACH (FOR BETTER MANEUVERABILITY) AND TAKE POSITION UP SWELL. RHI WOULD DRIVE THE HAWSER TO THE CUTTER. CUTTER WOULD THEN COME AHEAD SLOWLY (INTO THE SEAS, PERPENDICULAR TO MSB), TAKE A STRAIN ON THE HAWSER, AND ROLL THE MSB BACK OVER. WE HAD TO MAKE SEVERAL ATTEMPTS. ON THE FIRST ATTEMPT, THE SWIMMERS COULD NOT ATTACH THE BELLY GRIPES TO THE ROTTMER RELEASE GEARS BECAUSE THE GEARS WERE TOTALLY UNDERWATER. SWIMMERS WOULD HAVE HAD TO DIVE DIRECTLY UNDER THE MSB HULL WHICH WE WOULD NOT ALLOW. WITH THE MSB HEAVING IN 6 FOOT SEAS, THE GRIPES WERE ATTACHED TO THE MSB GUNWALE CLEATS INSTEAD. ONCE ATTACHED, THE BITTER END OF THE BELLY GRIPE WAS DRAPED OVER THE OVERTURNED HULL AND LED UP SEA. THE SWIMMERS THEN ATTACHED THE BELLY GRIPE LINE TO THE TOWING HAWSER (FAKED OUT IN THE RHI). BY THE TIME WE WERE READY FOR OUR APPROACH THE MSB HAD REORIENTED ITSELF IN THE SEAWAY AND WE HAD TO MAKE A DOWN SEA RUN INSTEAD. CUTTER MADE APPROACH AND HELD POSITION ONLY 75 YARDS DOWNSWELL FROM MSB (DIFFICULT WITH JUST ONE SHAFT). RHI DROVE HAWSER OVER TO CUTTER. WE TOSSED A HEAVING LINE DOWN TO RHI WHICH WAS QUICKLY ATTACHED TO HAWSER. CUTTER PULLED HAWSER O/B AND MADE IT FAST ON OUR AFTERMOST BITT AMIDSHIPS. CUTTER SLOWLY CAME UP TO SPEED. ONCE THE HAWSER TOOK A STRAIN, MSB CAME RIGHT OVER AND THE TOW LINE WAS IMMEDIATELY RELEASED FROM THE CUTTER.

7. LESSONS LEARNED:

A. REFERENCES: WE FOUND CHAPTER 18-J OF CG BOAT CREW SEAMANSHIP MANUAL (COMDTINST M16114.5B) TO BE A GOOD SOURCE (SPECIFICALLY THE PARBUCKLING DESCRIPTION/DIAGRAM ON PAGES 18-81 THRU 18-83).

B. BELLY GRIPES: OUR BIGGEST STROKE OF GENIUS WAS TO USE THE EXISTING BELLY GRIPE AS THE PARBUCKLING LINES (THIS AVOIDED THE NEED FOR OUR BOSUNS TO DESIGN/FABRICATE A MAKESHIFT BRIDLE).

C. TOWING HAWSER: WE USED 300 FOOT OF 2 AND 3/4 INCH PLAITED COTTON LINE (UNREP INHAUL/OUTHAUL MESSENGER). PLAITED COTTON LINE WAS USED TO AVOID SYNTHETIC LINE SNAP-BACK. IT WORKED WELL.

D. SWIMMER SAFETY: AS BRIEFED, ATTACHING THE BELLY GRIPE WAS THE MOST DANGEROUS, DIFFICULT PART OF THE EVOLUTION. IT TOOK TWO SWIMMERS WORKING TOGETHER TO GET IT DONE WITH A THIRD SWIMMER IN THE RHI AS SAFETY OBSERVER AND A FOURTH ON THE CUTTER AS BACKUP. BEING CAUTIOUS, IT TOOK SEVERAL HOURS TO GET EVERYTHING SET UP.

E. USE THE CLEATS: AS DESCRIBED ABOVE, WE HAD TO ATTACH THE BELLY GRIPE WITH LINE (1 INCH DOUBLE-BRAIDED NYLON WORKED WELL) TO THE MSB CLEATS ON THE GUNWALES VICE THE ROTTMER RELEASE GEARS. THE ROTTMER RELEASE GEARS MAY BE STRONGER, BUT THEY ARE INACCESSIBLE ON AN OVERTURNED MSB WITHOUT ENDANGERING THE SWIMMERS.

F. CUTTERS APPROACH: THE FACT THAT WE HAD TO EVENTUALLY MAKE A DOWN SEA RUN DIDN T SEEM TO MATTER -- IN THE END, WE WERE ABLE TO GET IN POSITION AND WE HAD PLENTY OF POWER TO GET THE MSB OVER. DESPITE HAVING ONLY ONE SHAFT, AT HANDLE POSITION FOUR ON THE PORT SHAFT (MAKING TURNS FOR 5.2 KTS), THE MSB CAME RIGHT OVER. WE CAME UP IN SPEED SLOWLY -- HALF HANDLE POSITION AT A TIME, SIMILAR TO TOW OPS.

G. CONNING FROM CUTTER FLT DECK: AFTER OUR INITIAL APPROACH, WE SHIFTED THE CONN FROM THE BRIDGE TO THE FLIGHT DECK. NOTE: BECAUSE FANTAIL/TRANSOM IS OBSCURED FROM THE BRIDGE ON A 270, WE OFTEN CONN THE ACTUAL TOW HOOK-UP FROM THE FLT DECK (WITH EITHER XO OR OPS USING PORTABLE RADIOS TO RELAY HELM & ENG COMMANDS TO

THE BRIDGE). CONN HAD EXCELLENT VISIBILITY FROM THE FLT DECK OF ENTIRE EVOLUTION (OVERTURNED MSB, TOW BITT ON FANTAIL, THE RHI STANDING BY AND, MOST IMPORTANTLY, TOW LINE IN THE WATER).
H. ACTIONS AFTER MSB IS RIGHTED: IMMEDIATELY AFTER ITS UPRIGHT, THE TOWING HAWSER MUST BE SLACKENED/CAST OFF SO THAT THE CUTTER DOESN T DRAG THE MSB SIDEWAYS. ALSO ONCE ITS UPRIGHT, MSB WILL BE FULL OF WATER AND VERY UNSTABLE. RHI MUST MOVE IN ASAP WITH TWO RESCUE SWIMMERS, P-5 PUMPS (EVEN BUCKETS) TO QUICKLY BAILOUT THE WATER AND INCREASE THE MSB FREEBOARD! THIS IS PARTICULARLY IMPORTANT IN ANYTHING MORE THAN CALM SEAS. IT TOOK US SEVERAL ATTEMPTS TO GET THIS RIGHT. ITS POSSIBLE, BUT DIFFICULT, FOR THE RHI TO TAKE THE MSB IN TOW AND HOLD HER INTO THE SEAS SO SHE DOESN T LAY BEAM TO THE SEAS. BUT, THE FIRST PRIORITY NEEDS BE TO GET THE DEWATERING GEAR O/B AND OPERATING.
8. POC: WE VIDEOTAPED THE ENTIRE EVOLUTION. COPIES WILL BE AVAILABLE AFTER OUR RETURN TO PORT. POC IS MY EXECUTIVE OFFICER, AT (617) 223-3071.
9. DAMAGE: THE MSB HULL APPEARS INTACT, THERE WAS HOWEVER EXTENSIVE SALTWATER DAMAGE TO THE ENGINE AND ELECTRICAL WIRING. EXACT COST OF DAMAGE IS UNKNOWN ATT, BUT WE FELT GOOD ABOUT SAVING THE HULL, ANYWAY. NEW MSB WAS OBTAINED THANKS TO LANTAREA (AOFC) AT APPROX. COST OF $133,000.
10. FINAL THOUGHTS: REMEMBER, SAFETY FIRST! ITS JUST A BOAT (ALBEIT AN EXPENSIVE ONE). ITS NOT WORTH LIFE OR LIMB. OF COURSE, YOUR INSTINCT AT THE TIME IS TO GET THE BOAT BACK O/B, THAT NIGHT, AT ALL COST. BUT DESPITE THE BRUISED EGOS, WE TOOK A VERY CAUTIOUS APPROACH THROUGHOUT THE ENTIRE ORDEAL AND DID EVERYTHING IN PHASES. ALSO, WE FELT ALL ALONE AT THE TIME AND THAT THIS WAS OUR PROBLEM TO SOLVE. NEVERTHELESS, IT DAWNED ON US THAT OTHER CUTTERS MUST HAVE FLIPPED BOATS BEFORE, SO WE ASKED LANTAREA COMMAND CENTER FOR ANY SUGGESTIONS ON HOW BEST TO RIGHT AN MSB. UNFORTUNATELY, THE NIGHT WATCHSTANDER HAD NO SUGGESTIONS READILY AVAILABLE FOR US. IN PART BECAUSE OF THAT EXPERIENCE, WE HAVE DRAFTED THIS LESSONS LEARNED MSG TO ASSIST OTHER CUTTERS.
FINALLY, NO CUTTER WANTS TO FIND ITSELF IN A SITUATION LIKE THIS. BUT, GOING TO SEA IS INHERENTLY DANGEROUS. WHEN IT HAPPENS AGAIN (AND IT PROBABLY WILL), ITS IMPORTANT TO REMEMBER THAT YOU RE NOT ALONE. WE HAD NO LESS THAN SEVEN CG CUTTERS AND ONE NAVY SHIP CALL TO OFFER ASSISTANCE. IT WAS VERY COMFORTING TO KNOW HELP WAS OUT THERE.
11. CDR WMEC, USCG (CO) SENDS
BT
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MISCELLANEOUS

CUTTER SMALLBOAT

MISHAP REPORTS

R 172030Z NOV 00
FM USCGC WPB 110
TO ZEN/COMCOGARD GANTSEC SAN JUAN PR
AIG FOUR NINE TWO THREE
INFO ZEN/USCGC CONFIDENCE
BT
UNCLAS FOUO //N05100//
SUBJ: CLASS D HIPO, WPB 110 OPERATIONAL MISHAP
A. SAFETY AND ENVIRONMENTAL HEALTH MANUAL, COMTINST M5100.47
1. UNIT: USCGC WPB 110 WPB 13XX, UNIT MISHAP REPORT 001/01
2. BOAT TYPE: RIBM 18FT, BOAT ID CG1825519
3. **MISHAP DESCRIPTION: MAN OVERBOARD**
4. OPMODE: UNDERWAY
5. DATE, LOCAL TIME, PERIOD OF DAY: 11/17/00, 1343Q, DAY
6. LOCATION OF MISHAP: 17-29.0N/066-36.5W
7. WEATHER AT TIME/PLACE OF MISHAP: WINDS 045/11KTS, VIS 8NM, BAR 31.11, AIR TEMP 85F, SEAS 110/6FT, WAVES 045/2FT
8. **UNDERWAY INFORMATION:**
   A. MISSION: LAW ENFORCEMENT
   B. PHASE OF EVOLUTION AT TIME OF MISHAP: PERSONNEL TRANSFER
   C. SPEED: 9KTS
9. **CREW INFORMATION:**
   A. LTJG, OOD
   B. BM2, COXSWAIN
   C. FA, B/I COXSWAIN
   D. MK1, USCGC CONFIDENCE, PASSENGER
   E. NARRATIVE: WPB 110 WAS CONDUCTING SMALL BOAT TRAINING USING OWN RIMB WHILE PROCEEDING DOWNSWELL IN 8FT SEAS. MK1 WAS ONBOARD WPB 110 ASSISTING IN TROUBLE SHOOT OF REEFER SYSTEM. UPON COMPLETION OF WORK, RIMB CAME ALONGSIDE TO TRANSFER MBR TO CUTTER CONFIDENCE, W/ B/I COXSWAIN DRIVING. AFTER TAKING THE SEA PAINTER, B/I COXSWAIN SWITCHED OUT W/ THE QUALIFIED COXSWAIN. PAX TRANSFER WAS BEGUN W/ RIMB RIDING THE SEA PAINTER W/OUT THE USE OF FRAPPING LINES. THE MK1 EMBARKED THE RIMB W/OUT INCIDENT, BUT DID NOT USE A HANDHOLD TO STEADY HIMSELF ONCE ONBOARD. THE RIMB THEN SURFED DOWN THE FRONT OF A SWELL, CAUSING THE SEA PAINTER TO SLACK AS THE BOAT SURGED FORWARD. AT THE SAME TIME, THE ENGINE STALLED, LEAVING THE COXSWAIN NO MEANS OF CONTROLLING THE SLACK IN THE SEA PAINTER. AFTER THE RIMB CRESTED THE TOP OF THE WAVE, THE BOAT FELL BACK, CREATING A SHOCK LOAD ON THE SEA PAINTER AND CAUSING IT TO SNAP THE BOAT FORWARD. AS THE THE BOAT SNAPPED FORWARD, THE MK1 STOOD UP AND WAS THROWN OVER THE PORT QUARTER. MAN OVERBOARD WAS IMMEDIATELY SOUNDED AND TWO LIFERINGS WERE THROWN OVER. THE OOD CAME TO ALL STOP, AND SOUNDED SIX SHORT BLASTS ON THE SHIP'S WHISTLE. THE MAN OVERBOARD WAS PICKED UP USING THE RIMB ONCE THE ENGINE WAS STARTED. THE MAN WAS IN THE WATER APPROX TWO MINUTES, NO INJURIES TO REPORT.

10. **CAUSAL FACTORS AND CORRECTIVE ACTIONS:**

A. CAUSAL FACTORS:

1. DEVIATION FROM STANDARD PROCEDURES: WHEN CONDUCTING SMALL BOAT TRAINING, IT IS COMMON PRACTICE FOR THE COXSWAIN TO COME ALONGSIDE AND RIDE THE SEA PAINTER W/OUT THE USE OF FRAPPING LINES. HOWEVER, WHEN TRANSFERRING PERSONNEL, FRAPPING LINES ARE USED IN CONJUNCTION W/ THE SEA PAINTER TO CONTROL THE FORE AND AFT MOTION OF THE RIMB. IN THIS CASE, THE CUTTER AND RIMB DID NOT BREAK FM SMALL BOAT TRAINING PROCEDURES TO TRANSFER PERSONNEL, AND FAILED TO PASS OVER FORE AND AFT FRAPPING LINES. IF FRAPPING LINES HAD BEEN USED, THE SURFING MOTION OF THE RIMB WOULD HAVE BEEN REDUCED SIGNIFICANTLY.

2. INATTENTIVENESS TO SURROUNDINGS: THE MK1 FAILED TO GRAB AHOLD OF THE RIMB WHEN ONBOARD, LEAVING HIM UNABLE TO STEADY HIMSELF IN THE ROUGH SEAS.

B. RECOMMENDATIONS AND CORRECTIVE ACTIONS: THE CUTTER HELD TRAINING ON THE IMPORTANCE OF RECOG THE DIFFERENCE BETWN TRAINING EVOLUTIONS AND SMALL BOAT OPERATIONS, AND THE NEED TO APPLY PROPER PROCEDURES TO CHANGING SITUATIONS. THE IMPORTANCE OF THE PHRASE 'ONE HAND FOR YOU, ONE FOR THE SHIP' WAS ALSO ADDRESSED.

11. ADDITIONAL INFORMATION: THE RIMB ENGINE IS BELIEVED TO HAVE STALLED WHEN THE COXSWAIN'S KNEE CAME INTO CONTACT W/ THE IGNITION KEY. NO MALFUNCTION OF THE ENGINE WAS EVIDENT.

12. POC: EXECUTIVE OFFICER

13. CO/OINC ENDORSEMENT/COMMENTS: NONE

BT

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R 261300Z JUL 00
FM USCGC 87 WPB
TO ZEN/COMCOGARDGRU MIAMI FL
INFO AIG FOUR NINE TWO THREE
BT
UNCLAS //N05100//
SUBJ: CLASS C, CUTTER RHIB U/W OPERATIONAL MARINE MISHAP
A. SAFETY AND ENVIRONMENTAL HEALTH MANUAL, COMDTINST M5100.47
1. *UNIT: USCGC 87 WPB (WPB 87XXX)*, MISHAP REPORT NUMBER 01-00
2. BOAT TYPE AND ID NUMBER: RHIB 172636
3. **MISHAP DISCRIPTION: SMALL BOAT CAPSIZING/PIW**
4. OPMODE: UNDERWAY L/E
5. DATE, LOCAL TIME, PERIOD OF DAY: 07/25/00, 1205R, DAY
6. LOCATION OF MISHAP: 27-15N/079-49W
7. WEATHER AT TIME/PLACE OF MISHAP: SEAS 060T, 2 FT, WIND 107T, 04 KTS, TEMP 84F
8. UNDERWAY INFORMATION:
A. MISSION: LAW ENFORCEMENT
B. *PHASE OF EVOLUTION AT TIME OF MISHAP: TRANSFER OF BOARDING* TEAM
C. SPEED: 06 KTS
9. CREW INFORMATION:
A. RATE/RANK: BM1/E-6, COXSWAIN
B. NARRATIVE: WHILE TRANSFERRING BOARDING TEAM ABOARD SAILING VESSEL'S STARBOARD SIDE, S/V ROLLED TO PORT ALLOWING RHIB TO MOVE PARTLY UNDER CURVE OF HULL. WHEN S/V ROLLED BACK TO STARBOARD IT FORCED PORT BOW OF RHIB UNDERWATER, COXN ATTEMPTED TO TURN AWAY WITH NEG RESULTS. BOW FILLED WITH WATER CAUSING THE RIB TO *TAKE A SLOW ROLE TO STBD, CAPSIZING AND SENDING COXN INTO THE* WATER. LAST MEMBER OF BOARDING TEAM ABLE TO BOARD S/V JUST BEFORE CAPSIZING. ORIG SOUNDED GENERAL QUARTERS AND SET R-&-A BILL. COXN SIGNALED ORIG HE WAS OK AND REMAINED IN THE WATER TO HOOK UP MOORING LINE TO RIGHT THE RIB. RIB WAS RIGHTED, DEWATERED AND PLACED IN NOTCH WITH-IN 30 MIN.
10. CASUAL FACTORS AND CORRECTIVE ACTIONS:
A. CASUAL FACTORS: ANGLE USED TO HOLD RIB NEXT TO S/V TO SHARP, BOARDING TEAM MEMBERS ALL MOVED FORWARD SHIFTING WEIGHT TO FORWARD AREA OF RHIB AND BLOCKING COXN'S VIEW OF BOW AREA.
B. RECOMMENDATIONS AND CORRECTIVE ACTIONS: USE MINIMUM ANGLE NECESSARY TO KEEP RHIB ALONGSIDE SUBJ VSL, ONLY ALLOW ONE B/T MEMBER AT A TIME TO MOVE FORWARD TO BOARD. IF POSSIBLE HAVE VSL BEING BOARDED RUN DOWN SWELL EVEN IN NEAR CALM CONDITIONS.
11. ADDITIONAL INFORMATION: NONE
12. POC: XPO
13. OINC ENDORSEMENT/COMMENTS: CONCURE WITH RECOMMENDATIONS ABOVE. THE COMBANATION OF TO MUCH ANGLE USED TO HOLD RIB IN, TO MUCH WEIGHT FORWARD AND ROUNDED SHAPE OF THE S/V'S HULL ALL *CONTRIBUTED TO THE CAPSIZING.* UPON SETTING R-&-A BILL CREW RESPONDED QUICKLY TO GET RIB RIGHTED DEWATERED AND BACK IN THE NOTCH.
BT
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P 101659Z JAN 00
FM USCGC WHEC 378
TO ZEN/COMMANDANT COGARD WASHINGTON DC//G-KSE//
ZEN/COMCOGARD MLC LANT NORFOLK VA//K//
ZEN/CCGDSEVEN MIAMI FL//O//
AIG FOUR NINE TWO THREE
INFO ZEN/COMLANTAREA COGARD PORTSMOUTH VA//AOF//
ZEN/DIRJIATF EAST//J2/J3//
BT
UNCLAS FOUO //N05100//
MSGID/GENADMIN/WHEC 378/-/JAN//
SUBJ/CLASS C MISHAP, WHEC LAW ENFORCEMENT: OPERATIONAL MISHAP//
REF/A/SAFETY AND ENVIRONMENTAL HEALTH MANUAL, COMDTINST M5100.47//
RMKS/1. UNIT: USCGC WHEC 378 (WHEC-7XX), OPFAC XX-XXXXX, MISHAP REPORT 00-002
2. SMALL BOAT: RHIB, ID NUMBER XDC64821G696
3. DESCRIPTION: PIW DURING LE BOARDING.
4. OPMODE: UNDERWAY.
5. DATE, LOCAL TIME, PERIOD OF DAY: 01/09/00, 1644R, AFTERNOON.
6. LOCATION OF MISHAP: 020-19.28N, 073-49.05W.
7. WEATHER: SCATTERED, SEAS 075/3, SWELLS 085/3, WIND 076/20, BAROMETER 30.00, VIS 10 NM, AIR TEMP. 80F, WATER TEMP. 80F.
8. UNDERWAY INFORMATION:
A. MISSION: LAW ENFORCEMENT.
B. PHASE OF EVOLUTION: RECOVERING BOARDING TEAM FROM BOARDING.
C. SPEED: 4 KTS.
9. CREW INFORMATION:
A. RATE/RANK: RD3/E-4, BOARDING TEAM MEMBER, MALE, AGE 20
B. NARRATIVE: WHEC 378 BOARDING TEAM HAD FINISHED BOARDING AND WAS DISEMBARKING VESSEL. RHIB WAS ON THE PORT QUARTER OF THE VESSEL, DUE TO THE OUTRIGGERS CREATING A HAZARD FOR RHIB TO COME ALONG SIDE TO PICK UP BOARDING TEAM MEMBERS. SEAS WERE SLIGHTLY OFF THE STARBOARD BOW. A LARGE SWELL CAME AND CAUSED THE RHIB AND F/V TO PITCH OUT OF SYNCH. AS A RESULT, THE RHIB WAS PUSHED AWAY FROM THE F/V AS THE BTM WAS TRYING TO CLIMB ON BOARD. THE COXSWAIN S SWIFT ACTIONS TO TURN AWAY FROM THE F/V AND BACK DOWN CREATED ENOUGH ROOM FOR THE BTM TO GO IN THE WATER UNHARMED. AS THE COXSWAIN RECOVERED FROM THE MANEUVER, HE QUICKLY APPROACHED THE PIW AND BOAT CREW PICKED HIM UP AND INTO THE RHIB. BTM SUFFERED NO INJURIES OR TRAUMA FROM THE FALL. F/V SLOWED DOWN TO MAKE APPROACH AND PICK UP OF THE REST OF BOARDING TEAM MEMBERS EASIER. THE EVOLUTION FINISHED WITHOUT FURTHER INCIDENTS AND THE BOARDING TEAM WAS TRANSFERRED TO WHEC 378 SAFELY.
10. CAUSAL FACTORS AND CORRECTIVE ACTIONS:
A. CAUSAL FACTORS: SEA STATE AND SWELLS CAUSED THE RHIB TO BE PUSHED AWAY FROM F/V AT THE SAME TIME BTM WAS MAKING TRANSITION.

B. RECOMMENDATIONS AND CORRECTIVE ACTIONS: WHEN SEA STATES MIGHT CREATE SUCH A HAZARD TO THE DROP OFF/PICK UP OF THE BOARDING TEAM, FIND AN ALTERNATE COURSE OR SPEED TO CREATE A BETTER LEE FOR THE SMALL BOAT TO USE.

11. ADDITIONAL INFORMATION: NTR.

12. CO COMMENTS: INCIDENT DEMONSTRATES IMPORTANCE OF SHIP S PRACTICE OF UTILIZING OPERATIONAL RISK ANALYSIS PRIOR TO ANY EVOLUTION, ESPECIALLY THOSE EVOLUTIONS INVOLVING THE TRANSFER OF PERSONNEL AT SEA. ONCE IT IS DETERMINED TO PROCEED WITH THE EVOLUTION, PROVIDING THE SAFEST COURSE OF ACTION SHOULD BE SOUGHT OUT VICE THE QUICKEST OR MOST EXPEDITIOUS. THE SEA STATE AND THE MOTION OF THE 50 FT. F/V BEING BOARDED WERE CONCERNS FROM THE OUTSET OF THIS EVOLUTION. PRIOR TO BOARDING, I HAD CONSIDERED ASKING THE F/V MASTER TO REVERSE COURSE AND RIDE DOWNSWELL, BUT DID NOT, AND THE BOARDING TEAM BOARDED WITHOUT DIFFICULTY. IN HINDSIGHT, I WISH I HAD GONE WITH MY INSTINCT AND DIRECTED THAT THIS BE A DOWNSWELL EVOLUTION, ESPECIALLY DURING RECOVERING, WHEN BOARDING TEAM MEMBERS WERE MORE FATIGUED. QUICK THINKING AND ACTION BY THE BOARDING TEAM, BOAT CREWMAN/ENGINEER, AND ESPECIALLY THE COXSWAIN PREVENTED THIS FROM BECOMING A PERSONAL INJURY MISHAP.

BT

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R 262100Z APR 99
FM USCGC WPB 87
TO ZEN/COMDT COGARD WASHINGTON DC//G-KSE/G-OCU//
BT
UNCLAS FOUO //N05100//
SUBJ: MISHAP REPORT
A. SAFETY AND ENVIRONMENTAL HEALTH MANUAL, COMDTINST M5100.47
1. DISCLOSURE OF INFO IN THIS MSG MUST BE IAW ENCL (2) TO REF A.
2. THIS INFO IS REPORTED IAW ENCL (6) TO REF A.
3. GENERAL DATA
DT: 04/17/99
TME: 2000
OPFAC: XXXXX
ATMI: SAR
LOC: NOAA CHART #11360, POSIT 28-36.74N 087-33.45W, APPROX. 110NM S OF MOBILE BAY ENTRANCE
WIND: 330/25
AIR: 65
WAVE: 08/06
SEA: 70
VIS: 06
LITE: NITE
PRECIP: NONE
NAR: CUTTER WAS INVOLVED IN A SAR CASE WHICH REQUIRED A PERSONNEL TRANSFER BETWEEN CUTTER AND A MERCHANT VESSEL THAT WAS APPROXIMATELY 600 FT IN LENGTH. M/V MANEUVERED TO CREATE A LEE FOR CUTTER AND MAINTAINED A SPEED OF 4 KTS. AFTER CONDUCTING A RISK ASSESSMENT OF SITUATION, CO DECIDED ON CUTTER CONDUCTING TRANSFER VICE CUTTER'S SMALL BOAT BECAUSE OF SEA CONDITIONS, VISIBILITY, CREW FATIGUE, AND LIMITED SMALL BOAT TRAINING IN SIMILAR CONDITIONS. CREW WAS BRIEFED AND FENDER DETAIL CAUTIONED TO MOVE IMMEDIATELY TO OUTBOARD SIDE OF CUTTER IF CONTACT BETWEEN CUTTER AND M/V BECAME IMMINENT OR SEVERE. CO WAS OOD AND MADE APPROACH TO M/V. NO PROBLEMS ENCOUNTERED DURING APPROACH TO M/V OR TRANSFER OF PERSON. WHILE DEPARTING FROM ALONGSIDE M/V, CUTTER BEGAN TO FEEL EFFECTS OF LARGE SEA SWELLS AND SUCTION BETWEEN CUTTER'S STERN AND M/V. FENDERS ON CUTTER RODE UP AND CONTACT WAS MADE BETWEEN AFT RAILS ON CUTTER AND SIDE OF M/V. DIRECT CONTACT RESULTED IN THREE LIFELINE STANCHIONS BENT, A BRACED LIFELINE STANCHION CRACKED, AND THREE TOWRAIL SUPPORTS CRACKED AT THEIR WELDS. THROUGH INDIRECT CONTACT, THE PRESSURE OF A FENDER ON A TOWRAIL HORIZONTAL SUPPORT CAUSED THE RAIL TO BREAK OFF AND HIT A FA IN THE SHIN RESULTING IN A CUT AND BRUISING. CUTTER THEN REPOSITIONED FENDERS ON QUARTER AND BROKE AWAY FROM M/V WITHOUT FURTHER INCIDENT.
CAU: (1) ENVIRONMENT/SEAS. LARGE SWELLS RESULTED IN DIRECT CONTACT BETWEEN CUTTER RAILS AND MERCHANT VESSEL.
CAU: (2) FATIGUE. CUTTER HAD BEEN U/W FOR APPROX. 94 HOURS IN FIVE DAYS PRECEEDING INCIDENT. DAY OF INCIDENT CREW HAD BEEN UP SINCE 0500 TO CONDUCT SEARCH PATTERNS ON A PREVIOUS SAR CASE (TIME OF INCIDENT WAS 2000). CUTTER HAD A CREW OF NINE, WHICH INCLUDED TWO UNQUALIFIED TAD PERSONNEL.
ACT: (1) REPAIRS BEING MADE BY LOCAL WELDER.
ACT: (2) IN A SIMILAR SITUATION (DISTANCE OFFSHORE, WINDS, WAVES, AND AFTER SUNSET), RECOMMEND A HELO HOIST TO REMOVE PERSONNEL.
ACT: (3) DURING INCIDENT DEBRIEF WITH CREW, CONCLUDED THAT THIS TRANSFER WOULD BE MADE WITH THE SAME PROCEDURES USED. I FEEL THAT IF THE CUTTER'S SMALL BOAT HAD ATTEMPTED TO COME ALONGSIDE THE MERCHANT VESSEL WITH THE WEATHER AS DESCRIBED ABOVE, THERE WOULD HAVE BEEN A VERY HIGH RISK OF CAPSIZING BECAUSE OF THE SEA STATE AND SUCTION ENCOUNTERED BY THE CUTTER. ONE OF THE OTHER FACTORS FIGURING INTO THE RISK ASSESSMENT OF NOT USING SMALL BOAT WAS THAT THE CUTTER HAD RECOVERED THE SMALL BOAT THREE NIGHTS PRIOR TO INCIDENT IN 4 FOOT SEAS AND FOUND THAT THE SMALL BOAT WELL HAD REPEATEDLY FILLED UP TO THE LEVEL OF THE CUTTER'S DECK.

4. INVOLVED PROPERTY DATA.
GOV: 87' WPB
GID: 3 ALUMINUM LIFELINE STANCHIONS BENT, 1 BRACED LIFELINE STANCHION CRACKED, 3 ALUMINUM TOWRAIL SUPPORT WELDS CRACKED, 1 TOWRAIL HORIZONTAL SUPPORT BROKEN AT BOTH ENDS
ADPRO: NONE
CGOV: $2100.00
CADD: NONE
OPDL: NONE
5. INVOLVED PERSONNEL AND INJURY/ILLNESS DATA.
AGE: 20
SEX: M
GRADE: E-2
RATE: FA
STAT: ON DUTY/CG
POS: STERN
JOB: LINEHANDLER (FENDER)
ETYP: 01
PRO: PFD/FEET
NAT/BOD: BRUISE/CUT LEG
SEV: NO LOST WORK
DIS: NONE
HOS: 00
OFF: 00
RES: 00
CA: N
6. CAUSAL ANALYSIS AND REVIEW.
COM1: CREW IS NOW AWARE THAT ALUMINUM STANCHIONS AND SUPPORT RAILS UNDER DIRECT CONTACT WILL NOT BEND LIKE MORE COMMON STEEL RAILS, BUT THEY WILL BREAK, CRACK, OR SNAP OFF SUDDENLY. THIS INCIDENT STRESSES THE NEED FOR FENDER HANDLERS TO "BAIL OUT" WHEN FENDERS ARE NOT ENOUGH TO KEEP THE CUTTER OFF OF A LARGER OBJECT.
CAU1: (1) WAVE.
CAU1: (2) FATIGUE
CAU1: (3) WORKLOAD
CL: D
TLE1: LTJG/0-2 CO
BT
NNNN