COAST GUARD

MARINE CASUALTY REPORT

USCGC CUYAHOGA, M/V SANTA CRUZ II (ARGENTINE); COLLISION IN CHESAPEAKE BAY ON 20 OCTOBER 1978 WITH LOSS OF LIFE

U.S. COAST GUARD
MARINE BOARD OF INVESTIGATION REPORT

AND

COMMANDANT'S ACTION

REPORT NO. USCG 16732/92368

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
USCG 16732/92368		

4. Title and Subtitle	5. Report Date
Marine Board Casualty Report USCGC CUYAHOGA, M/V SANTA CRUZ II (ARGENTINEAN): Collision in Chesapeake Bay on 20 October 1978 with subsequent sinking of USCGC CUYAHOGA with loss of life	31 July 1979
	6. Performing Organization Code G-MMI-1/TP24
7. Author(s)	8. Performing Organization Report No.
9. Performing Organization Name and Address U. S. Coast Guard Washington, D. C. 20590	10. Work Unit No.
	11. Contract or Grant No.
12. Sponsoring Agency Name and Address Commandant (G-MMI-1/TP24) U. S. Coast Guard Washington, D. C. 20590	13. Type of Report and Period Covered MARINE CASUALTY REPORT 20 October 1978
	14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

On 20 October 1978 at approximately 2107 the U. S. Coast Guard Cutter CUYAHOGA and the Argentinean general cargo vessel SANTA CRUZ II collided in Chesapeake Bay near the mouth of the Potomac River. The CUYAHOGA was struck on the starboard side and listing from 40 to 50 degrees to port, CUYAHOGA was pushed by the SANTA CRUZ II for 30 to 45 seconds. The CUYAHOGA flooded rapidly and sank in approximately 2 minutes. Eleven persons perished. Eighteen CUYAHOGA crew members were rescued by the crew of the SANTA CRUZ II.

This report contains the U. S. Coast Guard Marine Board of Investigation report and the Action taken by the Commandant to determine the proximate cause of the casualty and the recommendations to prevent recurrence.

The Commandant has determined that the proximate cause of the casualty was that the commanding officer of the USCGC CUYAHOGA failed to properly identify the navigation lights displayed by the M/V SANTA CRUZ II. As a result he did not comprehend that the vessels were in a meeting situation, and altered the CUYAHOGA's course to port taking his vessel into the path of the SANTA CRUZ II.

17. Key Words	18. Distribution Statement
Cargo vessel; foreign; public; underway; collision; flooding; sinking; danger signal; error; lights; radar; rules of the road; whistle signals; lighting; drowning; liferafts; night; bridge to bridge; radio; physical defects	This document is available to the public through the National Technical Information Service, Springfield, Virginia 22151

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
UNCLASSIFIED	UNCLASSIFIED		

Form DOT F 1700.7 (8-69)

USCGC CUYAHOGA, M/V SANTA CRUZ II (ARGENTINEAN);
COLLISION IN CHESAPEAKE BAY ON 20 OCTOBER 1978
WITH SUBSEQUENT SINKING OF USCGC CUYAHOGA WITH
LOSS OF LIFE

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DEPARTMENT OF TRANSPORTATION
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16732/USCGC CUYAHOGA -
SANTA CRUZ II

31 JUL 1979

Commandant's Action

on

The Marine Board of Investigation convened to investigate the circumstances surrounding the collision of the USCGC CUYAHOGA (WIX-157) with the M/V SANTA CRUZ II (Argentinean), with subsequent sinking of the USCGC CUYAHOGA in Chesapeake Bay on 20 October 1978 with multiple loss of life

The report of the Marine Board of Investigation convened to investigate the subject casualty has been reviewed; and the record, including the findings of fact, conclusions and recommendations, is approved subject to the following comments.

REMARKS

1. The part of finding of fact 11 that refers to the lights of SANTA CRUZ II as seen by OC-OOD Fairchild and CWO4 Robinson, i.e. ..."they could see a masthead light and a red sidelight" is in conflict with the testimony given before the Marine Board. Though CWO4 Robinson's statement indicates that he had seen one white light and one red, OC-OOD Fairchild testified that he saw two white lights and one red.

2. A re-examination of U. S. Coast Guard medical records pertaining to CWO4 Robinson's visual acuity was made in an effort to determine whether or not this factor had a causal relationship to the casualty. This review disclosed that CWO4 Robinson's visual acuity, as measured on 14 December 1977, would not have prevented him from properly discerning the lights of the M/V SANTA CRUZ II without binoculars or eyeglasses.

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3. Subsequent to the submission of the Marine Board's report it was discovered that CWO4 Robinson was afflicted with a chronic respiratory disease determined to be asthma complicated by aspergillosis. The examining physician CDR D. R. Foreman, MC, USN of the Naval Regional Medical Center, Portsmouth, Virginia, called the condition to the attention of the Coast Guard because of his conclusion that the condition probably pre-existed the date of the casualty and because the nature of the disease may have impaired CWO4 Robinson's performance on that date. Aspergillosis may interfere with the transfer of oxygen in the lungs. Inadequate oxygen to the brain can, of course, cause visual disturbances, confusion, and lack of coordination. All pertinent medical and clinical records were also examined by Captain P. K. Roberts, USPHS. Doctor Roberts confirmed Doctor Foreman's diagnosis but was unable to offer any conclusions concerning CWO4 Robinson's health condition at the time or the possibility of impairment immediately before or during the casualty. The complete medical and clinical records and the testimony of experts questioned in connection therewith have been made available in the courts-martial process.

COMMENTS ON CONCLUSIONS

1. The relevant facts indicate that the proximate cause of the casualty was that CWO4 Robinson failed to properly identify the navigation lights displayed by the M/V SANTA CRUZ II. As a result he did not comprehend that the CUYAHOGA and the M/V SANTA CRUZ II were in a meeting situation subject to 33 USC 203 (Article 18, Rule I, Inland Rules of the Road) and 33 USC 157 (33 CFR 80.4). Subsequent to his initial erroneous conclusion as to the heading of the M/V SANTA CRUZ II, CWO4 Robinson altered his course to port which eventually placed the CUYAHOGA directly in the path of the oncoming M/V SANTA CRUZ II. The reason why CWO4 Robinson failed to properly identify the navigation lights of the M/V SANTA CRUZ II or comprehend that both vessels were in a meeting situation can not be positively determined. While medical opinions indicate that CWO4 Robinson was probably afflicted to some degree with aspergillosis at the time of the casualty, the effect of his medical condition upon his performance can not be established.

2. With regard to conclusion 4, the failure of the Pilot Hamill to sound the danger signal when the CUYAHOGA's green sidelight came into sight is evidence of violation of 33 USC 203 (Article 18, Rule III). 33 USC 203, Rule III states "if, when steam vessels are approaching each other, either vessel fails to understand the course or intention of the other, from any cause, the vessel so in doubt shall immediately signify the same by giving several short and rapid blasts, not less than four, of the steam whistle. Pilot Hamill's sounding of a single blast of the whistle on two separate occasions when no answer was heard is also evidence of violation of 33 USC 203.

ACTION CONCERNING THE RECOMMENDATIONS

1. Recommendation 1: Violation of Article 110, Uniform Code of Military Justice, is a serious offense. In the case of negligent hazarding of a vessel, punishment may include dishonorable discharge and confinement at hard labor for two years; a general court-martial is the only forum empowered to consider such punishments. Despite the gravity of this case, the Board is mindful of the contributing causes which have been identified and which may act in mitigation when consideration is given to the appropriate action to be taken with regard to the conduct of CWO4 Robinson.

A charge sheet has been prepared in accordance with Paragraph 0302 d(11)(c), Coast Guard Supplement to the Manual for Courts-Martial, and is forwarded herewith. The Board recommends referral to an appropriate court-martial convening authority for such further investigation and action under the Uniform Code of Military Justice as he may consider appropriate.

Action: Court-martial process under the Uniform Code of Military Justice has been initiated.

2. Recommendation 2: It is recommended that the Commandant consider the need to amend existing regulations by defining specific and objective parameters for those situations where exchange of navigational information between vessels by bridge-to-bridge radio is necessary.

Action: This recommendation is not concurred with. To develop a regulation accounting for all of the variable factors that must be considered in setting specific and objective parameters for the exchange of navigational information would result in a ponderous regulation that would be impractical in its application. However, it may be possible to amend the Vessel Bridge-to-Bridge Regulation (33 CFR 26) to more fully emphasize the need for compliance and to provide further guidance in its application.

3. Recommendation 3: It is recommended that further investigation under the civil penalty procedures be initiated with regard to Pilot John P. Hamill for his part in this casualty.

Action: The Commander, Fifth Coast Guard District has been directed to initiate further action under the civil penalty procedures with regard to Pilot John P. Hamill for his delay in sounding the danger signal as required by 33 CFR 80.1, 33 USC 157 and 33 USC 203.

4. Recommendation 4: It is recommended that the Commandant consider the need to require appropriate Coast Guard personnel to demonstrate the professional knowledge required for vessel command and deck watch officer duty, and to record individual qualifications in that regard. An objective system such as the present merchant marine licensing program, including the concept of radar observer endorsement, would appear adaptable to this end.

Action: Selectees for command are currently required to demonstrate their professional knowledge and competence and be recommended for command during their afloat tours. Their performance is objectively reported in the existing fitness report system. A pilot project will be initiated utilizing an examination system similar to the merchant marine licensing program to evaluate the feasibility of enhancing this process.

5. Recommendation 5: It is recommended that the Commandant consider the need for a policy which would insure that Coast Guard vessels with trainees embarked for underway training be manned sufficiently to insure that those persons tasked with the safe navigation of the vessel need not be simultaneously tasked with instructor duties.

Action: Procedures are in the process of being modified to insure that Coast Guard vessels with trainees embarked for underway training be manned sufficiently to insure that those persons tasked with the safe navigation of the vessel need not be simultaneously faced with instructor duties. It is anticipated that the specific instructor needs for various vessels under various conditions will be determined and specific policy or directions to insure that those needs are satisfied will be promulgated.

6. Recommendation 6: It is recommended that the Commandant consider the need to require, on radar-equipped Coast Guard vessels, a wheelhouse radar display to allow the conning officer to use the radar without leaving the wheelhouse.

Action: The CUYAHOGA was the only Coast Guard cutter 65 feet or longer without a wheelhouse radar display. A new radar was scheduled for installation on CUYAHOGA on 25 October 1978. This installation would have included a wheelhouse radar display for use by the conning officer.

7. Recommendation 7: It is recommended that the Commandant consider the need to retrofit all Coast Guard vessels not now in compliance with the current Naval Ships' Technical Manual standards for emergency lighting.

Action: A survey will be conducted of all Coast Guard cutters to determine their status with regard to compliance with the current Naval Ships' Technical Manual standards for emergency lighting. Ship-alterations will be prepared to correct any deficiencies discovered. The survey will be completed by August 1979 and Class A (urgent) alterations issued by December 1979.

8. Recommendation 8: It is recommended that the Commandant consider adopting the standards contained in 46 CFR 160.051 for inflatable liferafts used on Coast Guard vessels.

Action: A replacement program which will provide liferafts in accordance with 46 CFR 160.051 aboard Coast Guard cutters is in progress. Initial plans for this program commenced in 1971. New liferafts are presently being procurred and installed aboard the cutters. It is anticipated that some MK V, 15 man Navy liferafts will be in service through the mid 1980's, due to a lack

of funds to procure a complete fleet set of merchant marine type liferafts. An amendment is being prepared to the Naval Engineering Manual which will require liferaft inspections in accordance with 46 CFR 160.051. This amendment will be promulgated by December 1979.

9. Recommendation 9: It is recommended that the Commandant consider the need to establish standards for physical competence and fit-for-duty status appropriate to vessel command and deck watch officer duty.

Action: Prior to relieving as commanding officer or officer in charge and prior to being assigned to deck watch officer duty, these personnel will be required to be certified as fit for duty within six months of the date of the orders. Further, these personnel will be required to obtain annual physical examinations while they are assigned duty afloat.

10. Recommendation 10: It is recommended that the commandant consider appropriate recognition of QM2 Rose, OC Robison, CWO3 Stone, BM1 Wild, and OC Moser for their actions following the loss of CUYAHOGA.

Action: Consideration will be given for appropriate recognition of the CUYAHOGA personnel for their actions following the loss of the CUYAHOGA.

11. Recommendation 11: It is recommended that the Commandant consider appropriate recognition of the officers and men of M/V SANTA CRUZ II for their actions following the loss of CUYAHOGA.

Action: The Office of Public and International Affairs has been directed to prepare a Public Service Award for the officers and men of the M/V SANTA CRUZ II for their actions following the loss of the CUYAHOGA.

J. B. HAYES
Admiral, U.S. Coast Guard
Commandant

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16732/CUYAHOGA
1 MAR 1979

From: Marine Board of Investigation
To: Commandant

Subj: USCGC CUYAHOGA (WIX-157); collision with M/V SANTA CRUZ II (AR) and subsequent sinking with multiple loss of life, Chesapeake Bay, 20 October 1978.

PRELIMINARY STATEMENT

The Marine Board of Investigation was ordered to convene by the Commandant by letter of 24 October 1978. The Board convened in Baltimore, Maryland on 24 October 1978, and then in Yorktown and Norfolk, Va. The taking of testimony was completed on 14 November, the Board having heard from 47 witnesses, including all survivors of the CUYAHOGA and all persons associated with the navigation of SANTA CRUZ II. The Board viewed salvage of CUYAHOGA on 30 October, and boarded the vessel as it lay on a barge at Portsmouth, Va. on 31 October 1978.

Empresa Lineas Maritimas Argentinas S.A., as owner of M/V SANTA CRUZ II, and Captain Abelardo Albornoz, her master, were designated as parties in interest to the investigation and afforded their rights as set forth in 46 CFR part 4. CWO4 Donald K. Robinson, commanding officer of USCGC CUYAHOGA, was designated a party in interest to the investigation and afforded his rights as set forth in 46 CFR part 4 and paragraph 0304d, Coast Guard Supplement to the Manual for Courts-Martial.

After giving limited background testimony, CWO4 Robinson exercised his right to remain silent and did not testify as to the circumstances of the collision, nor did he submit to cross-examination by parties with regard to his background testimony. The Board requested a grant of testimonial immunity from the Commandant. Testimonial immunity, as opposed to transactional immunity, was desired so that the possibility of future criminal action, if found appropriate, would not be impaired. This request was denied, and CWO4 Robinson maintained his silence. A prior statement, made by CWO4 Robinson on 22 October, was received into evidence. The Board has been hampered in its investigation as a result of the unavailability of his testimony. While the Board was able to determine how this casualty occurred, many questions as to why it occurred can only be answered by CWO4 Robinson.

The investigation was conducted jointly with representatives of the National Transportation Safety Board, pursuant to joint regulations, 46 CFR 4.40. Although the investigation phase was conducted jointly, the deliberations resulting in this report were conducted separately and independently of those of the National Transportation Safety Board.

FINDINGS OF FACT

SUMMARY

1. On the evening of 20 October 1978, the U.S. Coast Guard Cutter CUYAHOGA (WIX-157), under command of CWO4 Donald K. Robinson, USCG, was underway on a training cruise in Chesapeake Bay, with 16 officer candidates, 9 crewmembers, and four augmenting crewmembers on board. The intended track was generally northerly, until off the mouth of the Potomac River, when the course was changed to the left so as to take the vessel into the river for a planned overnight anchorage.

The Argentine Motor Vessel SANTA CRUZ II had departed the port of Baltimore, Md. on the afternoon of 20 October and proceeded southbound in Chesapeake Bay for sea, loaded with a cargo of coal.

CUYAHOGA and SANTA CRUZ II closed on nearly reciprocal courses in Chesapeake Bay, off the mouth of the Potomac River. Neither vessel used bridge-to-bridge radio to communicate with the other or sounded whistle signals as they closed. When about one mile from SANTA CRUZ II, CUYAHOGA changed course 35° to the left, putting her on a collision course with SANTA CRUZ II. SANTA CRUZ II sounded a single short blast signal. CUYAHOGA heard and answered the signal, but it was not heard on SANTA CRUZ II. SANTA CRUZ II sounded a second single short blast, and then the danger signal twice. The engine was stopped and the rudder placed hard to port when the second danger signal was sounded. CUYAHOGA backed engines and sounded a single short blast signal.

At 2107 (all times eastern daylight savings time), 20 October 1978, the vessels collided. CUYAHOGA was struck on the starboard side aft of the wheelhouse by the bow of SANTA CRUZ II. CUYAHOGA heeled to port and sank in two minutes.

Eighteen men escaped from the sinking CUYAHOGA, and made their way to the utility boat which had surfaced, where they

waited until SANTA CRUZ II returned and they were able to board that vessel.

Eleven men perished. Nine bodies were recovered by Navy and Coast Guard divers and two were recovered on the surface before salvage of CUYAHOGA, which occurred on 30 October 1978.

The Inland Rules and Pilot Rules for Inland Waters applied.

2. VESSEL DATA:

Name	CUYAHOGA	SANTA CRUZ II
Official Number	WIX-157	7406497
Call Sign	NRLH	LRUB
Year Built	1927	1977
Service	public vessel	cargo
Gross tons	320 (Displacement)	12,762.17
Net tons		8,921.85
Length	125'	521'07"
Breadth	24'	74'10"
Draft	8'6"	32'0"
Propulsion	diesel	diesel
Horsepower	800 total, 400 each shaft	9,900 BHP
Homeport	Yorktown, Va.	Buenos Aires, Argentina
Owners	United States of America/U.S. Coast Guard	Government of Argentina by Empresa Lineas, Maritimas Argentinas S.A.
Operators	Same	Same

Commanding Officer/ Master	Donald K. Robinson, Chief Warrant Officer (W-4) U.S. Coast Guard	Abelardo Albornoz
License	none	Master, Merchant Vessels 1964, Argentina
Pilot	none	John P. Hamill
Licenses		Maryland License: Vessels of any draft upon Maryland waters, 19 June 1978 USCG License: #496487 Issue 1-2 Master, Steam and Motor Vessels, any gross tons upon bays, sounds, and lakes (other than Great Lakes) and rivers; First Class Pilot steam and motor vessels any gross tons upon Chesapeake Bay from North Point, Md. to Cape Henry, Va.; also the Patapsco River and branches to the head of navigation; also the Potomac River from Smith Pt, Va., to Ragged Pt, Va., First Class Pilot of Steam and Motor Vessels any gross tons upon Chesapeake Bay

from North Pt., Md. to Turkey Pt., Md., Elk River to Courthouse Pt, Md., Chesapeake and Delaware Canal from Courthouse Point, Md. to the Maryland-Delaware Line; Radar Observer.

3. RECORD OF DEAD:

Name:	Michael Andrews Atkinson Seaman Apprentice, USCGR
SSAN:	066-54-5484
DOB:	1 February 1960
Address:	175 Maplewood Avenue Spencerport, N.Y.
NOK:	Mr. and Mrs. Ellis Atkinson (parents)

Name:	Ernestino Acogido Balina Subsistence Specialist First Class, USCG
SSAN:	552-72-4511
DOB:	11 November 1942
Address:	10 Keswick Circle Newport News, Va.
NOK:	Mrs. Leonie Balina (wife)

Name:	William McDonald Carter Yeoman First Class, USCG
SSAN:	230-86-3483
DOB:	25 September 1956
Address:	910 Catalina Drive Newport News, Va.
NOK:	Mr. and Mrs. William C. Carter (parents)

Name:	James Wesley Clark Officer Candidate, USCGR
SSAN:	585-52-6998
DOB:	3 October 1953
Address:	220 Weatherford Street Clovis, N. Mex.
NOK:	Mr. and Mrs. Joe O. Clark (parents)

Name:	John Paul Heistand Officer Candidate, USCGR
SSAN:	154-46-9362
DOB:	5 January 1955
Address:	300 Dewey Drive Forked River, N.J.
NOK:	Mr. and Mrs. John F. Heistand (parents)

Name:	James Lowell Hellyer Fireman Apprentice, USCG
SSAN:	197-42-5628
DOB:	24 September 1958
Address:	RD-4, Box 287, McConnels Mill New Castle, Pa.
NOK:	Mr. and Mrs. George E. Hellyer (parents)

Name:	David Bryan Makin Senior Chief Machinery Technician
SSAN:	023-32-4665
DOB:	12 May 1944
Address:	925 Wheeler Drive Newport News, Va.
NOK:	Mrs. Martha S. Makin (wife)

Name:	David Scott McDowell Seaman Apprentice, USCGR
SSAN:	134-48-7941
DOB:	17 September 1956
Address:	50 Ramblewood Drive North Chili, N.Y.
NOK:	Mr. and Mrs. William G. McDowell (parents)

Name:	Wiyono Sumalyo Captain, Indonesian Navy
DOB:	25 June 1944
Address:	J.L. Bayeman 22 Magelang, Indonesia
NOK:	Dr. and Mrs. Sumalyo (parents)

Name:	Edward Jerry Thomason MK1/Officer Candidate, USCG
SSAN:	502-52-5290
DOB:	29 June 1946
Address:	1627 North Kessler St. Witchita, Kans.
NOK:	Mr. and Mrs. Max E. Thomason (parents)

Name:	Bruce Earl Wood RM1/Officer Candidate, USCG
SSAN:	536-44-9741
DOB:	20 December 1946
Address:	14500 S. McNab #1104 Bellflower, Calif.
NOK:	Mrs. Cathy Nell Wood (Wife)

4. Weather that evening was as follows: Visibility was excellent and at least eight miles. Seas were calm and winds were light. Air temperature was 60°F. Water temperature was 65°F. Moonrise was at 2150 and its stage was nearly full. Predicted current six miles north of Smith Point Light was 135°T at 0.6 knots at 2100. Predicted current 4.5 miles east of Smith Point was 0.5 knots at 165°T at 2100.

5. The time of collision has been established as 2107.0. This is based on an analysis of the automatic engine bell logger on SANTA CRUZ II and the testimony, which varied by as much as one minute. It is considered to be a reasonable determination of the time of collision, although by virtue of conflicting testimony it is an assumption. Testimony with regard to significant events material to the collision and their time relationships to each other was more certain. The Board has determined the times of significant events based on time intervals and the assumed time of collision. The times are considered reasonable determinations, but subject to whatever error may be inherent in the established time of collision.

6. USCGC CUYAHOGA was one of 33 sisterships built in 1926-1927 by the Brown, Boveri Electric Company of Camden, N.J. It was built to serve in the Rum War which had resulted from the Volstead Act of 1920. Construction was of riveted steel plate with some welding. The decks were planked with wood. Originally powered with two 150 horsepower Winton diesel engines, CUYAHOGA, along with her sisterships, was repowered with twin GM8-268A 400 horsepower diesels in the early 40's.

CUYAHOGA was equipped with a Triton Modar VHF-FM transceiver. The radio was installed with a piggy-back receiver crystallized for channel 16, used to maintain a constant listening guard. The main unit was multi-channel, and included channels 13, 21, 22, 23, 60, 81, 82, and 83. It was equipped with a reset feature which would cause the main unit receiver to revert to a channel 13 listening guard, notwithstanding the position of the channel selector knob; the revert feature operated whenever the hand microphone was replaced in its cradle. The transmitter was equipped with a one watt, low power and a 25 watt, high power selector.

CUYAHOGA was equipped with the following lifesaving equipment:

a. Two Navy-type Mark 5, Mod 1, 15-man inflatable liferafts, stowed in fiberglass containers mounted in cradles located on the port and starboard sides on the O-1 deck aft. Each raft was secured with a gripe and hydrostatic release device.

b. Two liferings with waterlights attached, one on each side of the deck house.

c. Eighty Navy-type lifejackets, equipped with battery operated manual switch lights, stowed in a bin on the centerline aft on the O-1 deck; there was no stowage at other locations.

CUYAHOGA was equipped with an AN/SPS 53 surface search radar. The unit was located in the chart room on the starboard side, just aft of the bulkhead dividing the chart room from the wheelhouse. The radar could be operated in either the relative bearing mode or true bearing mode. In the former, the head of the vessel always appears at the top of the plan position indicator display (PPI). In the latter, true (more correctly, gyro) north always appears at the top of the PPI display, and the heading flasher shows the direction in which the ship is heading.

The AN/SPS 53 radar was equipped with a variable range marker, as well as fixed range marks. The display scale could be set at 1/2, 1, 2, 4, 8, 16, or 32 miles. Bearings to contacts could be taken using a mechanical bearing cursor.

There was no wheelhouse radar display on CUYAHOGA; the single unit could only be used in the chart room.

The radar on CUYAHOGA had been subject to failures on a number of prior occasions, the most recent was during the week of the collision. The radar had been repaired by technicians from Coast Guard Group Hampton Roads, which was tasked with providing electronic maintenance support for the vessel. The radar was in proper working order when repairs were completed on the 20th of October.

7. M/V SANTA CRUZ II is a modern drybulk carrier with a single deckhouse aft located over the engineroom. Control of the main engine can be accomplished automatically from the wheelhouse command console, or from the engineroom when in the manual or automatic mode, with orders passed from the bridge using a telegraph. The engine is a large displacement slow turning AESA-SULZER six cylinder diesel, capable of burning both heavy and light fuels, producing 9900 HP at 150 RPM. When the engine is being controlled from the wheelhouse command console, changes in speed and direction are effected through a controller which regulates the rate of change so as to prevent damage to the engine. A stop order from a full ahead bell entered at the wheelhouse command console will result in a progressive decrease of engine and propeller RPM's until the shaft stops turning about two minutes after the stop order.

Forward of the wheelhouse on the vessel are two sets of double cranes used in handling cargo hatches and 'tween deck pontoons. Two kingposts with a connecting crosspiece are located on the after part of the fo'c'sle; the forward range light is mounted at the center of the crosspiece.

SANTA CRUZ II is equipped with two independent radar units located in the wheelhouse. The port unit is a Decca RM 1229, X-band, 3cm radar, turned on and operating properly. The starboard unit is a Decca S1230, S-band, 10cm radar, which was turned off but reported to be operating properly.

VOYAGE OF SANTA CRUZ II

8. On the early evening of 20 October 1978, SANTA CRUZ II was southbound for sea in Chesapeake Bay, with a load of 19,000 tons of coal, having sailed from Port Covington Pier, Baltimore, Md. at 1420 that day. The main engine was being controlled from the bridge command position. The engine was making 140 R.P.M., giving a speed of 13.4 knots through the water. Chief Mate Tomas Staiano, a licensed master in the Argentine merchant marine, was on watch. Compulsory state pilot John P. Hamill was on board, serving under the authority of his Maryland license, and had the conn.

Captain Abelardo Albornoz, a licensed master in the Argentine merchant marine, was present on the bridge. A lookout was posted on the starboard bridge wing and a helmsman was at the steering console. Steering was in the manual mode; the auto-pilot was not in use.

Lighted Bell Buoy 50, L.L. No. 2726, was passed abeam to port at about 2047 at a distance of 1/4 mile. The vessel's speed over the ground to Lighted Bell Buoy 50 was found to be 14.4 knots, the result of an apparent favorable current. The course was changed by Pilot Hamill at that time from 170°T to 163°T for the reach from buoy 50 to the Smith Point Fairway Lighted Bell Buoy SP, L.L. No. 2725.10, east of Smith Point. At that time the port radar was observed by Pilot Hamill, and what he took to be a northbound vessel was observed near the fairway buoy, as well as a southbound vessel near Smith Point Light. Pilot Hamill observed a red sidelight, a white masthead light, and other nondescript lights on the northbound vessel, which was CUYAHOGA. He interpreted this situation to be a port to port passing and estimated the closest point of approach (CPA) to be 1/2 mile. No whistle signal was initiated or received. No radio call on channel 13, the vessel bridge-to-bridge frequency, was initiated or received. The range was about eight miles at the time of initial sighting.

The vessels continued to close until at 2104.5, Pilot Hamill observed the lights of CUYAHOGA change; he saw both the red and green sidelight at the same time, and then the green alone. The white masthead light continued to be visible throughout. He commented that the vessel was now showing a green light; Chief Officer Staiano and Capt Albornoz heard the comment and observed the masthead light and green sidelight.

Pilot Hamill went to the port radar and switched scales from the 12 mile scale to the 1-1/2 mile scale. The CUYAHOGA was seen as a contact at 330° relative, about midway in the scope. The range was estimated by him to be about one mile. Pilot Hamill placed the mechanical bearing cursor on the contact, and then went back to his position forward of the helmsman, about five feet to port of the centerline.

Chief Officer Staiano looked briefly at the radar, and took a position at the port side of the wheelhouse, first window from the end, to observe. Captain Albornoz stationed himself on the starboard side of the wheelhouse, the second window from the end, to observe.

At 2105.5, at a distance of 1200 yards, Pilot Hamill sounded one short blast on SANTA CRUZ II's whistle. The course of 163°T was maintained as was the engine order of full ahead, 140 R.P.M. Hamill testified that he signaled to communicate his intent to hold course and speed as privileged vessel.

No response from CUYAHOGA was heard, nor were the target angle, relative bearing, or lights seen to change. At 2106.0, thirty seconds after the first signal, a second single whistle blast was sounded by Pilot Hamill. Again no response was heard; nor was there any apparent maneuver on the part of CUYAHOGA, which had closed to 800 yards.

After the second single short blast signal, Pilot Hamill sounded a danger signal of 5 short blasts. A few seconds after the first danger signal, Pilot Hamill sounded a second danger signal of 5 short blasts and ordered the engine stopped and the rudder placed hard to port. The time was 2106.5.

The heading of SANTA CRUZ II began changing to port, and the propeller RPM's began to fall off slowly. The advance of the ship continued in the direction of 163°T. However, the heading change caused those on SANTA CRUZ II to perceive CUYAHOGA crossing the bow at a higher rate of speed. About 15 seconds after the second danger signal was sounded by SANTA CRUZ II, the bow of that vessel struck CUYAHOGA. The compressed framing and side shell plating of CUYAHOGA penetrated the stem of SANTA CRUZ II, resulting in a hole three feet in diameter, centered seven feet above the waterline and two feet to port from the centerline. SANTA CRUZ II departed the collision scene on the evening of 21 October 1978 and returned to Baltimore, Md. for repairs.

No VHF-FM radio call was initiated by SANTA CRUZ II on channel 13, the designated vessel bridge-to-bridge radio frequency, or on channel 16, the designated calling frequency. Pilot Hamill brought with him a portable VHF-FM radio, capable of broadcasting at a one watt, low power and five watt, high power level on channels 13, 16, 11, and 18A. The radio was in apparent good working order, and had been used on this voyage on channels 13 and 11. At all times material to this casualty, the portable radio was hanging by its strap from the motor of the starboard clear view screen, about 15 feet from the position kept by Pilot Hamill in the minutes before the collision.

Pilot Hamill testified that before CUYAHOGA changed course and showed its green sidelight he felt no need to

communicate any navigation information by bridge-to-bridge radio because of the apparent routine nature of the anticipated port-to-port meeting. He said it was his practice to use the radio when there was some question about vessel intentions.

Pilot Hamill testified that after CUYAHOGA changed course and showed its green sidelight that he did not attempt to retrieve his radio and make a call because he did not want to be distracted from watching, or lose the position and reference point he was using to establish bearing drift. He further testified that he could not have anyone bring the radio to him because people on the bridge did not know the location of his radio. He testified that he would not command or allow vessel personnel to make a bridge-to-bridge call because of language difficulty and possible confusion.

VOYAGE OF CUYAHOGA

9. CUYAHOGA departed its berth at the Reserve Training Center, Yorktown, Va. at 1515, Friday, 20 October 1978. The vessel sounded a long blast on its whistle, which worked properly. The following is a list of CUYAHOGA personnel and status:

Ship's Complement

Authorized Billet/ Position	Assigned/Embarked
CWO4 (Boatswain) Commanding Officer	CWO4 Donald K. Robinson
Chief Boatswain's Mate Executive Petty Officer	BMC Neal A. Verge (on authorized liberty, not on board)
Boatswain's Mate First Class First Lieutenant	BM1 Roger K. Wild
Quartermaster First Class Navigator	QM2 Randy V. Rose
Seaman	SN Kevin J. Henderson
Seaman	SA Jeffrey T. Fox
Subsistance Specialist Third Class	SS1 Ernestino A. Balina

Senior Chief Machinery Technician Engineering Officer	MKCS David B. Makin
Machinery Technician First Class	MK2 Stephen D. Baker
Machinery Technician First Class	MK2 James W. Blacketer III (on authorized liberty, not on board)
Fireman	FN James L. Hellyer

The following individuals were on board for purposes of augmentation:

YN1 William M. Carter
designated as an underway OOD

SA Michael A. Atkinson
USCGR, on active duty for training

SA David S. McDowell
USCGR, on active duty for training

SA Michael E. Myers
USCGR, on active duty for training

<u>Officer Candidates/On Board for Training</u>

CAPT	Jonathan E. Arisasmita (Indonesian Navy)
OC	James W. Clark
AT2/OC	Arne O. Denny
OC	Peter S. Eident
AT1/OC	Earl W. Fairchild
OC	John P. Heistand
OC	Michael E. Moser
OC	Frederick J. Riemer
OC	Joseph L. Robison
AT1/OC	Robert P. Rutledge

CWO3	Timothy C. Stone
CAPT	Wiyono Sumalyo
OC	Earl G. Thomas IV
MK1/OC	Edward J. Thomason
AT1/OC	Lawrence V. Williams
RM1/OC	Bruce E. Wood

As was the routine practice, the officer candidates had received a pre-cruise briefing on Thursday, 19 October. This briefing was conducted by BMC Verge and QM2 Rose; CWO4 Robinson was not on board. The briefing consisted of ship orientation; watch, quarter, and station bill assignments; discussion of watch position duties and use of equipment; and the cruise itinerary.

When leaving the pier on 20 October 1978, the gyrocompass repeaters were found to be malfunctioning in that they did not track or follow the true indication of the master gyro as the ship's heading changed. The repeaters were realigned with the master gyro, and a comparison was made on a range in the York River. The gyrocompass input to the radar, like that to the repeaters, was found to be unsynchronized on departure, and was reset by QM2 Rose after the repeaters were reset. The gyrocompass was found to have no error, and no further malfunctions occurred during the remainder of the voyage. BM1 Wild testified that the handle of the switch energizing the gyrocompass repeaters could be put to the "on" position without the switch actually clicking to the "on" position, and suspected that to be the cause of the problem. After the gyrocompass repeaters and radar were realigned, an abandon ship drill was conducted. Word was passed on the public address (PA) system. All men donned life preservers; the officer candidates were instructed and checked by CUYAHOGA crew.

The VHF-FM radio was used by BM1 Wild to communicate with other vessels, and by QM2 Rose to transmit the 2000 position report to Coast Guard Group Eastern Shore at 2057.

10. The purpose of the extended weekend training cruises was to train officer candidates in shiphandling, conning, docking and mooring, basic seamanship, ship compartmentation, piloting, anchoring watch positions, and to have them participate in abandon ship, fire, collision,

and steering casualty drills, as set forth in Reserve Training Center Operation Order 1-78, file 3120, of 1 September 1977. An additional training requirement to have officer candidates "gain experience in vessel plotting techniques" was established by Reserve Training Center Yorktown Operation Order 1-79, file 3120, of 12 October 1978. However, OPOrder 1-79 had not been received by CUYAHOGA before the voyage of the 20th; OPOrder 1-78 was considered in effect on CUYAHOGA.

The planned itinerary of CUYAHOGA was to proceed northward from York River in Chesapeake Bay to anchorage in the Potomac River on Friday, 20 October. On Saturday, CUYAHOGA was to have continued northward to Baltimore, where it was to have moored overnight. The vessel would have returned to the York River on Sunday for overnight anchorage, and the cruise would have ended on Monday morning.

11. The voyage north from the York River was uneventful, and at 1945 the watch relieved. CWO4 Robinson relieved as Senior Deck Officer (SDO); SN Henderson relieved as Quartermaster of the Watch (QMOW), and QM2 Rose relieved as Navigation Supervisor. The officer candidate/trainees assigned to the 2000-2400 watch were Capt. Arisasmita, I.N., OC Eident, AT1/OC Fairchild, OC Riemer, OC Robison, OC Thomas, and AT1/OC Williams. Shortly after 2000, SA Myers was called from his bunk, was assigned to relieve the lookout, and did so. Officer candidates were assigned to watch positions as officer candidate-officer of the deck (OC-OOD), bearing taker, helmsman, boatswain's mate of the watch (BMOW), radar operator, navigator-recorder, and navigator.

At about 2045, CUYAHOGA was approximately 1.7 miles east of Smith Point Light (L.L. No. 2725) on a course of 014°T, speed 11.8 knots through the water, when the lights of what were to be identified as SANTA CRUZ II were seen. The lights were first spotted by then OC-OOD Fairchild, who reported the sighting to CWO4 Robinson. Both men used binoculars to confirm that the lights were of a vessel; they could see a masthead light and a red sidelight. CWO4 Robinson went to the chartroom and by radar ascertained that the range was 15,700 yards. Based on the small size of the radar contact and his perception of a single white light, he formed the opinion that the lights were of a small vessel proceeding into the Potomac River.

The planned track called for two course changes that would take CUYAHOGA into the lower Potomac River. With Smith

Point Light, L.L. No. 2725, bearing 270°T at a range of 3900 yards, course would be changed left to 338°T. With Smith Point Light bearing 199°T, at a range of 5400 yards, course would be changed left to 303°T. That course would take the vessel into the river. At about 2049 course was changed left to 338°T, the change being delayed to allow clear passage of a tug and tow. The engines remained at ahead full, turning for 11.8 knots.

Shortly before 2100, the officer candidates began to rotate positions. AT1/OC Fairchild, the OC-OOD, was to be relieved by OC Eident. The port bearing taker, Capt. Arisasmita, was to be relieved by OC Robison. The radar operator, OC Thomas, was to be relieved by Capt. Arisasmita. The helmsman, OC Robison, was to be relieved by OC Riemer. The navigator, OC Eident, was to be relieved by OC Williams. The navigator-recorder, AT1/OC Williams, was to be relieved by OC Thomas.

When his turn came, OC Eident came forward from the navigation room and began preparing to relieve the OC-OOD. As his eyes adjusted to the dim light, AT1/OC Fairchild gave him the information necessary to relieve. AT1/OC Fairchild pointed out the lights of SANTA CRUZ II; OC Eident looked at the lights through binoculars. He had difficulty doing so because he was also holding two charts and a flashlight, and found it necessary to take off his glasses to look through the binoculars. AT1/OC Fairchild advised OC Eident that CWO4 Robinson already knew about the lights. CWO4 Robinson was observed to be on the port bridge wing, working with the bearing taker.

CWO4 Robinson came into the wheelhouse, and OC Eident began reciting the navigation information necessary to get permission to relieve the OC-OOD. CWO4 Robinson corrected him on a minor point, and asked him a question about CUYAHOGA's destination. When he answered satisfactorily, OC Eident was given permission to relieve the OC-OOD, and did so.

CWO4 Robinson went back to the port bridge wing in anticipation of arriving at the turn bearing of 199°T off Smith Point Light. While there, the lookout, SA Myers, made a report of a series of lights using the voice tube to the wheelhouse. OC Eident acknowledged the report, but having been told that CWO4 Robinson was already aware of the vessel, did not relay the report to him.

CWO4 Robinson returned to the wheelhouse and advised OC Eident to change course left to 303°T. OC Eident relayed the command to the helmsman, and the course was changed. No whistle signal was sounded, nor was a call initiated on bridge-to-bridge radio. The time was 2104.5; the engine order remained at full ahead. CWO4 Robinson showed OC Eident where CUYAHOGA was located on the chart, and told him to return one chart to the chart room. OC Eident did so and returned.

CWO4 Robinson went out to the starboard bridge wing and, at 2105.5, a single short blast was heard from the whistle of SANTA CRUZ II. Apparently still believing that the other vessel was proceeding on a near parallel course that would likewise take it into the Potomac River, CWO4 Robinson decided to alter course further to the left to allow the other vessel to haul ahead on CUYAHOGA's starboard side. CWO4 ROBINSON said to OC Eident "We are going to return that with one blast, and I advise you to change course to 290," or words to that effect. OC Eident gave the necessary command, and the course was changed to 290°T. OC Eident proceeded aft to advise the QMOW. CWO4 Robinson returned one blast on CUYAHOGA's whistle and returned to the starboard bridge wing. The distance between the two vessels was less than 1200 yards; the engine order remained at full ahead.

SA Myers was the lookout on the flying bridge; OC Moser was also on the flying bridge, but not on watch. After reporting the series of lights of SANTA CRUZ II, Myers then occupied himself with other observations and did not take note of SANTA CRUZ II again until it was in close proximity to CUYAHOGA. He and OC Moser discussed and then agreed that SANTA CRUZ II, now identifiable by them as a ship, should again be reported to the bridge. SA Myers was about to make the report when the blast of CUYAHOGA's whistle, located behind him, caused him instead to cover his ears. No report was made, and from that point SA Myers and OC Moser were passive observers.

CWO4 Robinson was observed to be taking bearings on SANTA CRUZ II using the starboard gyrocompass repeater. A second single short blast was heard from SANTA CRUZ II. He came into the wheelhouse long enough to place the engine order telegraph at all stop for both shafts and went back to the starboard bridge wing door.

At that time, BM1 Wild arrived from below decks, bounded up the ladder to the starboard bridge wing and said "Oh my God, Captain, he's going to hit us." The danger signals sounded

by SANTA CRUZ II were heard. CWO4 Robinson placed the engine order telegraph at full astern, both shafts, and sounded one blast on his whistle. The distance was about 200 yards; less than 20 seconds remained before collision.

CWO Stone had been watching the approach of SANTA CRUZ II from the base of the starboard bridge wing ladder. He had decided that collision was imminent and departed proceeding aft and to the port side seeking sanctuary just before the arrival of Wild. He took a firm hold of a stanchion on the port side, prayed, and took a deep gulp of air.

In the engineroom, MK2 Baker had answered the stop bell and remained at the throttle station between the two main engines. When the back full bell was received he perceived it was an emergency situation; the practice on the vessel was to limit backing bells to 2/3 rds except in emergency situations. He shifted the marine transmissions astern and had both engines turning high rpm in a few seconds. The engines continued to back until collision.

The vibration under the counter caused by the backing propellors could be felt throughout CUYAHOGA. The vessel's speed dropped slightly.

Collision occurred at 2107.0.

12. The effect of the collision on CUYAHOGA was to heel the vessel to port 40 to 50 degrees. The effect below decks of the severe impact was to cast adrift personal effects and equipment, and throw crewmembers about, leaving all spaces in disarray. The port side of the main deck was submerged. CUYAHOGA "hung up" on the bow of SANTA CRUZ II and was pushed through the water at nearly 13 knots for 30-45 seconds. Downflooding was rapid through the two partially submerged portside watertight doors because of the speed. There was gross downflooding of the forward accommodation spaces, engine room, galley, and after accommodation spaces.

Electrical power was lost on CUYAHOGA on impact, and all lights went out. After some 30 seconds, the four battle lanterns in the engine room equipped with solenoids automatically came on. There were no other relay lanterns or automatic emergency lighting units on the ship, and all other spaces remained dark.

The port heel progressed until CUYAHOGA was on her beam ends, and she came free. CUYAHOGA then slid down the starboard side of SANTA CRUZ II.

Two minutes after collision, CUYAHOGA sank.

RESCUE

13. As CUYAHOGA heeled to her beam ends, those men who were able to, crawled and climbed to the starboard side of the vessel, where they perched on the side of the deckhouse and the hull. The lifejacket bin was found to be already underwater; no lifejackets were obtained from it. The starboard inflatable liferaft was found to have been crushed in its container, and was not used; the port inflatable liferaft was already underwater. The men jumped or stepped into the water as CUYAHOGA sank. No life rings or float lights were used. A number of men testified that they were aware of the suction effect that would result from the sinking of the ship; one man experienced it and was pulled underwater, but he was able to swim to the surface. The swimmers initially sought pieces of flotsam for support. An ice chest came to the surface and was used for flotation.

Then CUYAHOGA's utility boat, a 14 ft Boston Whaler came free and surfaced. The boat became the focal point of the survivors efforts. CWO4 Robinson experienced difficulty in breathing and was physically unable to continue swimming. QM2 Rose recognized the acute distress and swam to CWO4 Robinson's aid. He found a piece of flotsam, swam it to CWO4 Robinson, and supported his head. He kept Robinson above water until, with the help of OC Moser and BM1 Wild, CWO4 Robinson was taken to the Boston Whaler and placed inside.

SN Henderson was drawn beneath the surface by suction resulting from CUYAHOGA going under, and exhausted himself regaining the surface. OC Robison came to his aid with flotsam, and assisted him to the Boston Whaler.

Eighteen men found themselves swimming in total darkness. CWO3 Stone, one of the more experienced men with extensive sea service, emerged as a leader and kept the other men calm and together. When the Boston Whaler surfaced he gave instructions to the group to move to the boat, but not to attempt to board lest the boat be swamped.

When BM1 Wild saw the Boston Whaler break surface, he swam to it and took charge of making the boat serviceable as a survival platform. He cut the straps securing the boat cover and it was removed. Working in water and in darkness he found and secured the boat plug. He instructed that a pneumatic fender be cut in half, and the halves be used to

bail the boat so that it would provide maximum flotation. The number of men in the water exceeded the capacity of the boat; he limited access to the boat to the injured, and spread the other men around the periphery of the boat so that it would not swamp. CWO3 Stone, who suffered a gash on his head, was assisted into the boat.

The men waited with the boat until SANTA CRUZ II circled and returned. Despite the fact that there were no lights on the boat, they were soon located in the beam of the searchlight of SANTA CRUZ II, and the motor lifeboat on SANTA CRUZ II was lowered. The men around the whaler communicated to the men in the motor lifeboat that they were safe, and that the lifeboat should proceed to search for additional survivors.

SANTA CRUZ II slowed near the Boston Whaler, and attempts were made to pass a line. The line continued to fall short, and OC Moser left the boat, swam to the line and brought it back. The men in the boat pulled themselves to the accommodation ladder which had been lowered, and boarded SANTA CRUZ II.

When on board SANTA CRUZ II, the survivors received prompt and considerate attention, somewhat hampered by language difficulties. They were given dry clothing, blankets, food and beverages, as well as cigarettes and whiskey taken from bonded stores. Those men with injuries were given first aid. After the return of the nurse from the motor lifeboat search, their injuries were further treated. Throughout, the survivors were treated compassionately by SANTA CRUZ II personnel.

14. Following impact SANTA CRUZ II continued to swing to port with the engines stopped. After CUYAHOGA was clear of the starboard side, Captain Albornoz backed the engines half astern to take way off the vessel. Pilot Hamill ordered the helm shifted to hard starboard, and set a course of 343, to return SANTA CRUZ II to the point of collision, and the engine was ordered half ahead.

Captain Albornoz relieved Chief Mate Staiano as officer of the watch, ordered the port motor lifeboat ready for lowering, and the accommodation ladder lowered. He turned on the searchlight and located the Boston Whaler in its beam as SANTA CRUZ II approached.

The motor lifeboat, with Chief Officer Staiano in charge and the vessel's nurse on board was lowered and, after ascertaining that the survivors in and around the Boston

Whaler were safe, proceeded to look for additional survivors. They searched for a number of hours, working in conjunction with the searchlight being operated on SANTA CRUZ II. No additional survivors were found, and when helicopters and other Coast Guard vessels arrived on scene, the motor lifeboat returned to SANTA CRUZ II.

Survivors were taken by helicoptor and boat to Patuxent River Naval Air Station, where they received immediate treatment for exposure and minor injuries. All were released on 21 October except CWO4 Robinson who, while uninjured, was hospitalized until 23 October for exposure and observation.

RECOVERY AND SALVAGE

15. CUYAHOGA was found on the bottom in 58 feet of water at lat. 37°56.5'N., long. 76°10.5'W., on a heading of 225°T. The vessel was upright, with a 25 degree list to port. Initial dives on 21 October were made by Coast Guard divers to ascertain if any persons were alive within the hull; no one was found alive.

16. The body of James L. Hellyer was recovered by divers on 22 October 1978 on the bottom about 50 feet from the port bow of CUYAHOGA. The death certificate lists the cause of death as a fractured skull. Pronouncement of death on 20 October 1978 was made on 22 October 1978. He was cremated, and his ashes were scattered at sea on 7 November 1978.

The body of James W. Clark was recovered by divers on 22 October 1978, inside the main berthing area, near the starboard escape hatch at frame station 17. The death certificate lists the cause of death as drowning. Pronouncement of death on 20 October 1978 was made on 22 October 1978. Burial was in Clovis Memorial Cemetary, Clovis, New Mexico on 28 October 1978.

The body of David S. McDowell was recovered by divers on 23 October 1978, in the athwartship passageway on the main deck level on the port side, by way of frame station 30. The death certificate lists the cause of death as a broken neck. Pronouncement of death on 20 October 1978 was made on 22 October 1978. Burial was in Arlington National Cemetary on 27 October 1978.

The body of Bruce E. Wood was recovered by divers on 23 October 1978, on the port ladder leading up from the main berthing area to the athwartship passageway on the main deck

level by way of frame station 30. The death certificate lists the cause of death as a fractured skull. Pronouncement of death on 20 October 1978 was made on 23 October 1978. Burial was in Acacia Memorial Cemetary, Woodinville, Washington on 27 October 1978.

The body of John P. Heistand was recovered by divers on 23 October 1978, inside the main berthing compartment. The death certificate lists the cause of death as drowning. Pronouncement of death on 20 October 1978 was made on 23 October 1978. Burial was in Veteran's Memorial Gardens, Hampton, Virginia on 26 October 1978.

The body of Michael A. Atkinson was recovered by divers on 23 October 1978, inside the main berthing compartment. The death certificate lists the cause of death as a broken neck. Pronouncement of death on 20 October 1978 was made on 23 October 1978. He was cremated, and burial was in Spencerport Cemetary, Spencerport, New York on 27 October 1978.

The body of Ernestino A. Balina was recovered by divers on 26 October 1978, inside the boiler room, compartment C-201-E, frame station 42. The death certificate lists the cause of death as drowning. Pronouncement of death on 20 October 1978 was made on 26 October 1978. Burial was in Peninsula Memorial Park, Newport News, Virginia on 28 October 1978.

The body of Edward J. Thomason was recovered by divers on 26 October 1978, just inside the engine room and near the main deck athwartship passageway by way of frame station 40. The death certificate lists the cause of death as drowning. Pronouncement of death on 20 October 1978 was made on 26 October 1978. Burial was in Dighton Memorial Cemetary, Dighton, Kansas on 28 October 1978.

The body of Wiyono Sumalyo was recovered by divers on 26 October 1978, in the forward berthing area, compartment A-202-L. The death certificate lists the cause of death as drowning. Pronouncement of death on 20 October 1978 was made on 26 October 1978. Burial was in Yogyakarta, Indonesia on 1 November 1978.

The body of William McDonald Carter was recovered on the surface by Coast Guard UTB 41358, 500 yards north of the salvage site on 28 October 1978. The death certificate lists the cause of death as a fractured skull. Pronouncement of death on 20 October 1978 was made on 28

October 1978. Burial was in Peninsula Memorial Park, Newport News, Virginia on 31 October 1978.

The body of David B. Makin was recovered on the surface by Coast Guard UTB 41330, two miles west of the salvage site on 29 October 1978. The death certificate lists the cause of death as a fractured skull. Pronouncement of death on 20 October 1978 was made on 29 October 1978. Burial was in Riverside Cemetery, Fairhaven, Massachusetts on 1 November 1978.

17. Salvage operations were conducted by U.S. Navy Harbor Clearance Unit Two, based at Little Creek, Va. CUYAHOGA was lifted by tandem heavy lift derrick barges on 30 October 1978, in conditions of deteriorating weather. The vessel was secured on a barge during the hours of darkness. The Board and representatives of M/V SANTA CRUZ II viewed the salvage and conducted a preliminary examination that night. CUYAHOGA was taken that night to USCG Support Center, Portsmouth, Va. On 31 October, CUYAHOGA was again examined by the Board, representatives of SANTA CRUZ II, and various surveyors.

CUYAHOGA was released by the Coast Guard to the General Services Administration for disposal.

CUYAHOGA DAMAGE AND EQUIPMENT ASSESSMENT

18. The stem of SANTA CRUZ II struck CUYAHOGA on the starboard side; the first contact was at the after starboard corner of the top of the wheelhouse by way of frame station 31, and then on the stack. The included angle between the centerlines of the vessels was about 45°. Initial contact at the main deck level was also by way of frame station 31, which showed deformation of the deck coaming. The main deck was penetrated beginning at frame station 34, progressively deeper going aft to a depth of about three feet from frame stations 37 to 47. The side shell plating was punctured at the waterline by way of frame station 36, resulting in a hole one foot high by two feet wide, with a surrounding set-in. The area of set-in at and above the waterline continued aft to frame station 39 where the side shell plating was again penetrated. The penetration resulted in an opening that extended aft to frame station 45, and from the main deck down to a point four feet below the waterline.

The watertight bulkhead at frame station 40 separating the after accommodation and galley spaces from the engineroom

was breached, and set-in from the main deck to 2 feet below the waterline.

The leading edge of the gross side shell penetration, from frame station 36 to 40 showed evidence of tearing and inward deformation. The side shell plating was compressed going aft and curled outward from frame station 40 aft to frame station 44.

19. CUYAHOGA was equipped with a magnetic compass. The deviation table for the compass was out of date. There had been no adjustment of the magnetic compass or establishment of an accurate deviation table following the work done on CUYAHOGA at the Coast Guard Yard in April of 1978.

20. There were two ladders of wooden construction from the forward accommodation spaces leading up to the athwartship passageway on the main deck by way of frame station 30. The port ladder provided primary access to and from the ship's office, main berthing space, and forward eight-man berthing area. The starboard ladder provided primary access to the three staterooms. Both ladders contained drawers for stowage built between the steps.

On impact, the drawers opened, making use of the ladders difficult, if not impossible. During the examination of CUYAHOGA by the Board as it lay on a barge after salvage, the drawers were found opened and firmly held in that position by swelling. Climbing the ladders was extremely difficult.

21. Testimony from CUYAHOGA personnel was unanimous that the main deck watertight doors, port and starboard, at the athwartship passageways by way of frame stations 30 and 40, were YOKE MODIFIED fittings. These doors were routinely opened and closed by vessel personnel as the needs of comfort dictated. The natural and forced draft ventilation systems on the vessel were inadequate of themselves to maintain below deck habitability. In addition, excessive engineroom heat encountered during warm weather operations would result in inverter fuse failures. There was no requirement to obtain permission to go through or leave open these doors.

Consistent with Coast Guard naval engineering practice and the compartment closure list, these doors were, in fact, DOG ZEBRA fittings. As such, these fittings would be required to be closed only when condition ZEBRA was set, i.e., for battle and emergency conditions, or when darken ship was

set. They would not be required to be closed for peacetime cruising when condition YOKE was set.

22. Testimony is conflicting as to whether or not the general alarm was working properly. MK2 Blacketer testified that it was not and had not been for some months; it was an item he intended to investigate and attempt repair. Other members of the crew testified that they believed the alarm to be working, but could not remember recent use.

23. CUYAHOGA was equipped with two ship's service generators. However, there was no emergency generator or other central source of emergency electrical power that would automatically energize in the event of loss of the ship's service generators.

CUYAHOGA was equipped with four relay lanterns; all were located in the engineroom, two each per generator. There were no relay lanterns anywhere else on CUYAHOGA.

Standards for emergency lighting on Coast Guard vessels are found in Naval Ships' Technical Manual, NAVSEA S 9086-K9-STM-000, chapter 330, which provide in part:

> 330-1.193 PURPOSE. Emergency illumination is provided for all spaces and interior watch stations where, because of functional requirements, continuous illumination is essential and personnel are expected to remain on duty.
>
> 330-1.197 RELAY LANTERNS. Relay lanterns installed throughout the ship can provide limited illumination when other sources fail. They have the following uses and applications:
>
> 1. Prevent panic and personal injury which might occur in total darkness.
> 2. Mark escape routes (both normal and emergency).
>
> 330-1.198 Relay lanterns are installed for the foregoing purposes in accordance with the following requirements:
> 1. Manned machinery spaces, and unmanned spaces containing machinery having a deck area greater than 200 square feet, shall have one lantern for each access, companionway, escape trunk, and essential passageway.
> 2. Escape passages and companionways leading from compartments where personnel are stationed or quartered shall have lanterns installed to illuminate accesses, emergency escape panels (compartment sides), escape side

of scuttles, the top of scuttles opening into walking areas, ladders, trunks, companionways, and passageways.

CUYAHOGA was equipped with portable type battle lanterns at other locations, including berthing and accomodation spaces and passageways. The NAVSHIPS Technical Manual provides in part:

> 330-1.201 PORTABLE LANTERNS. Portable lanterns, symbol 100.2, are used to supplement relay lanterns and at other stations were duties involve the functional operation of the ship. Portable lanterns shall be used in accordance with the following requirements:
> 1. Stations and small spaces which are only used occasionally (except such spaces as staterooms and lockers), shall have one lantern.

24. The watertight subdivision of CUYAHOGA below the main deck was compromised with various stuffing tube openings and other small penetrations in the after bulkhead of the engineroom at frame station 40 separating the engineroom from the mess deck and galley space and in the bulkhead at frame station 53 separating the mess deck and galley space from the lazarette. These openings were not sealed after removal of degaussing cables and miscellaneous wiring. Steering gear cables passed through openings in the after bulkheads under the main deck level. Such discrepancies were noted during the biennial inspections made by the Fifth Coast Guard District inspection staff in October 1975 and again in November 1977 but were not corrected.

25. There was not enough locker and drawer space for stowage of all personal effects of the officer candidates on CUYAHOGA. A great deal of clothing and other personal effects of the officer candidates was hung from or laid on bunks or were otherwise loose. On impact, flooding, and submersion, this gear was strewn about the spaces.

During the view by the Board of CUYAHOGA salvage operations, it was apparent that this resulted in extreme difficulty during dewatering operations. The personal items, bedding, and other loose gear continually clogged pump strainers to the point that there were frequent and lengthy interruptions.

26. Evidence is conflicting with regard to operation of the forward range light of CUYAHOGA, which is mounted on the main deck bulwark at the stem. Testimony of CUYAHOGA personnel is unanimous in that the light was on and

functioning properly. Testimony from SANTA CRUZ II crewmen was that, as the vessels closed, a light was seen on the forward section of the ship; some thought it might be coming from a deck locker. There is no deck locker forward of the wheelhouse on CUYAHOGA.

27. CUYAHOGA's port 15-man inflatable liferaft was recovered by USCGC POINT HURON at 0910, 22 October 1978, 36 hours after the sinking. The position was lat. 38°01.0N, long. 76°06.5W, 5.5 miles northeast of the collision. There were no persons onboard. The raft was fully inflated and the drogue was deployed. There was no evidence of damage or mechanical failure.

The inflatable liferafts are the 15-man, Mark 5, Mod-1, U.S. Navy type. They were originally intended for soft valise stowage. A modification was made by the Coast Guard so that the rafts would be stowed in rigid fiberglass containers, with hydrostatic release-equipped gripes for securing the containers in the cradles. The operating depth for the hydrostatic release devices is 10-40 feet.

The rafts are not designed with automatically operated interior and exterior canopy lights. This is distinguished from Coast Guard requirements for approved liferafts on inspected commercial vessels, as specified in 46 CFR 160.051-7(b)(5).

There have been difficulties experienced with the stowage of Mk 5 inflatable liferafts in rigid containers. The experienced difficulties resulted in the promulgation of Commandant Notice 9820 of 28 June 1978, which required certain corrective measures.

There is a difference in the scope of shipboard testing between that required by section 9820 of the Coast Guard Naval Engineering Manual (CG-413), and Naval Ships' Technical Manual, NAVSEA 9086-TX-STM-000. The Coast Guard's procedure requires ship's force unpacking and inspection of the rafts on receipt and at six month intervals. The Navy's procedure is to limit interior inspection to trained personnel at Fleet Maintenance Assistance Groups, or shipyard sail lofts. Shipboard personnel do not open the containers. This is consistent with the regulations applicable to inspected merchant vessels; those regulations require inflatable liferafts to be serviced annually at approved servicing facilities. See 46 CFR 160.051-6.

28. Watch training was conducted under the supervision of the senior officer of the deck, who was assisted in the wheelhouse by a quartermaster of the watch. Navigation instruction was conducted by the navigation supervisor who performed his duties in the chart room and navigation room.

Underway watch training was conducted by assigning officer candidates to traditional watch positions under the supervision of assigned CUYAHOGA personnel. The watch positions included an officer of the deck, helmsman, lookout, bearing taker, navigation recorder, radar observer, and navigator. If the number of officer candidates was insufficient, the watch was supplemented by assigned CUYAHOGA personnel.

The degree of responsibility and authority of the officer candidate-officer of the deck (OC-OOD) varied as a weekend cruise progressed. Typically, an OC-OOD had no authority to maneuver the vessel during the Friday portion of the cruise. The OC-OOD would only make recommendations to the senior deck officer. This relationship would change; and on Saturday and Sunday the OC-OOD would be allowed more authority.

29. The underway navigation training on CUYAHOGA on the afternoon and evening of 20 October was almost totally devoted to training in piloting. The bearing taker took visual bearings of aids to navigation using an alidade and gyrocompass repeater. The radar observer took radar ranges to prominent points of land and aids to navigation. The navigation recorder received information on sound-powered phones from the bearing taker and radar observer and he recorded the information in the bearing book. The navigator plotted the information received on a navigation chart to establish fixes at 5 minute intervals, and made recommendations to the officer of the deck as necessary to keep the vessel on the inked intended track line.

The officer candidate navigation team had no assigned role with regard to acquiring, tracking, and plotting other vessels navigating in proximity to CUYAHOGA. The efforts of the officer candidates were directed only at piloting. The officer candidates were given no instruction or requirement to plot radar contacts on the PPI scope or maneuvering board, or to develop closest-point-of-approach (CPA) information.

The navigation supervisor at the time of the casualty had not been instructed that radar contacts should be noted and reported to the OC-OOD or SDO.

30. At the time of the casualty, the navigation supervisor was Quartermaster Second Class Rose. QM2 Rose enlisted in the Coast Guard in September of 1975, served in USCGC RELIANCE for 9-1/2 months as a seaman, attended quartermaster school, and was rated as a quartermaster in February of 1977. He served in RELIANCE in that capacity until transferred to CUYAHOGA on 2 October 1978. Rose was immediately assigned the position of navigator.

QM2 Rose testified generally about the mechanics of radar observation and maneuvering board solutions. He evidenced a general but not sophisticated understanding. His training in this area came from quartermaster school, and from practical exposure in USCGC RELIANCE. Rose underwent no particular certification or testing prior to his designation as navigator on CUYAHOGA. His proficiency in such matters was assumed, based on his advancement in the quartermaster rating.

31. CUYAHOGA had undergone biennial inspection by the Fifth Coast Guard District inspection staff in 1973, 1975, and 1977. The 1973 report, in commenting on the vessel personnel allowance of one officer and 10 enlisted, said in part:

> The utilization of personnel is very good, but the workload of ship's maintenance, watchstanding and providing a training program is very taxing to the permanent party. To assure the vessel material condition does not deteriorate further additional personnel support must be furnished. This could be resolved by an increase in the personnel allowance or augmentation provided by the Reserve Training Center.

The 1975 report said in part:

> The personnel allowance for this unit appears far below the necessary manpower needed to maintain this class of vessel, provide the routine administration, watchstanders, and furnish qualified instructors for training OCS and Reserve personnel. Approximately two years ago, the unit was provided additional personnel support by augmentation of OC's from the Reserve Training Center. This augmentation program was discontinued and only one extra billet is being

furnished. This has placed a very heavy workload on the assigned personnel. This very reduced force also seriously limits the ship's force capabilities to provide adequate personnel to man underway stations during emergency and operational exercises when the ship's force is not augmented by trainees. During the underway training periods, the OCS and Reserve personnel are assigned Watch, Quarter and Station Bill billets and thereby furnish adequate manpower to meet the underway station requirement.

and went on to say in part:

> The unit is conducting a training program, although there is no documentation of this program other than a monthly training schedule of what subjects are to be covered for the month. The very low marks on the first aid and NBC warfare written examinations and the unsatisfactory grades in many drills reflect a need for improved training programs. It is recommended that the unit utilize the administrative volume of CCGD5 Training Program as a guide to develop an effective training program.

The 1977 report said in part:

> The number of personnel allowed is not adequate for maintenance, and for operations when no outside augmentation is available.

and went on to say:

> Considering the Reserve training mission of the vessel, a yearly requirement for limited team training at FTU, Little Creek, is recommended. This will allow the permanent crew to remain proficient in the latest navigation, damage control, etc., techniques taught by the Navy. This training is at no additional cost to the Coast Guard; CCGD5 (or) should be contacted for additional details.

Despite these reports, the personnel allowance list for CUYAHOGA remained on the day of the casualty the same as it was in 1973, 1975, and 1977. CUYAHOGA had not undergone training at Fleet Training Unit, Little Creek, Va., nor was it scheduled to do so. CUYAHOGA had not been visited by a Coast Guard Ship Training Detachment, nor was it scheduled to be so visited.

32. The Commanding Officer of RTC Yorktown and the Officer in Charge of the Officer Candidate School both testified that they did not consider the officer candidates to be a supplementary resource enhancing the operational capability of CUYAHOGA. In their view, the officer candidates were considered supernumerary trainees; the operational needs of the vessel with regard to navigation and piloting had to be met by the assigned personnel. As related by the Commanding Officer, RTC Yorktown, the officer candidates were "sent aboard as observers and to the degree that their learning and skills and background permitted, to begin to practice some of the arts of seamanship."

33. Much of the time and attention of the senior officer of the deck was devoted to the underway training objectives for officer candidates of watch familiarization and navigation by piloting. The activities of CWO4 Robinson for 15 minutes before the collision are illustrative:

- on port bridge wing working with bearing taker.
- listening to OC Eident make report prior to relieving OC-OOD watch, and instructing with regard to proper relief procedures.
- on port bridge wing watching for turn bearing.
- advising OC Eident to change course left to 303°T.
- discussing vessel's position and course to anchor on navigation chart with OC Eident.
- on starboard bridge wing; heard first single whistle blast, sounded one blast and changed course to 290°T.
- stopped engines, heard second single blast and danger signals from SANTA CRUZ II, backed engines; CUYAHOGA struck by SANTA CRUZ II.

34. The operational performance of mission by CUYAHOGA was subject to routine oversight. However, there was no policy or program at RTC Yorktown to have shipriders observe the underway operation of the vessel and training of officer candidates; the past practice of assigning an instructor from the officer candidate school to the cruise had been discontinued the preceeding year.

Prior to 1974, both operational and administrative control were vested in Commanding Officer, RTC Yorktown. By Commandant (G-PTP-1) letter 5440 of 30 Jan 1974, and subsequent explanatory letter of 24 Feb 1974, limited administrative control was shifted to Commander, Fifth Coast Guard District. That administrative control vested in the District Commander included all matters except personnel

administration and pay. Commanding Officer, RTC Yorktown, retained operational control of CUYAHOGA, and control of personnel administration and pay.

The purpose and net effect of the change was to take advantage of the resources of the Fifth District. By virtue of its coterie of staff engineering specialists, it could provide more effective support, particularly with regard to maintenance.

CUYAHOGA COMMAND

35. CWO4 Robinson was ordered to assume command of CUYAHOGA by message orders from the Commandant dated 30 March 1977, and he did so on 17 June 1977. His orders provided:

> Attention is called to COMDTINST 1540.3 series, Formal School Training Standards for Major Cutters. Every effort should be made to obtain as much of the recommended training as possible prior to reporting for duty. Requests for training should be directed to COMDT (G-PTE-2/72).

Among the courses recommended for commanding officers were:

a. Emergency Shiphandling for Senior Officers, and
b. Rules of the Road and Shiphandling (Refresher).

Among the courses recommended for those who stand deck OOD watches were:

a. Rules of the Nautical Road, and
b. Emergency Shiphandling.

CWO4 Robinson never received any of the recommended training. The instruction:

a. did not apply to vessels less than 143' or designated WIX;
b. was not distributed to CUYAHOGA or RTC YORKTOWN; and
c. was replaced on 29 March 1977 by Commandant Instruction 3502.1, which contained similar training recommendations, but likewise was applicable only to major cutters, and not to CUYAHOGA. It was not distributed to RTC Yorktown or CUYAHOGA.

However, CWO4 Robinson did receive a copy of the Command at Sea Orientation Manual (CG-359), under cover of Commandant

(G-OMR-3/74) letter 3501 of 3 May 1977. That letter provides in part that CG-359:

"outlines the Commandant's policy concerning readiness training. If you have the opportunity, it is recommended that you obtain such training as you may find desirable before detachment from your present unit or while enroute to your new assignment."

CG-359 suggests:

a. Rules of the Road, and
b. Navigation and Shiphandling.

CWO4 Robinson testified that he had not undergone classroom courses or training in these matters. Rather, all his training was described as "practical."

CWO4 Robinson had the following sea service before assignment to CUHAHOGA:

USCGC YAKUTAT	SA-QM3	33 months 1952 - 1954
USCGC MACKINAC	QM3-QM2	7 months 1959
CG 95314	QM2	12 months 1959 - 1960
USCGC YEATON	QM2-QM1	21 months 1960 - 1962
CG 95304	QMCP-QMC	27 months 1965 - 1967
USCGC CAMPBELL	QMC	1 month 1968
CG 95332	QMC-QMCS	19 months 1968 - 1970
USCGC COURIER	CWO2 (Boatswain) Deck Watch Officer, First Lieutenant	24 months 1970 - 1972

There are no records attesting to CWO4 Robinson's proficiency in seamanship, rules of the road, emergency shiphandling, or local knowledge.

36. CWO4 Robinson is myopic, with his most recent eye examinations showing 20/30 right eye, 20/100 left eye vision. His vision is correctable to 20/20 in each eye. He has sunglasses which were worn during daylight activity; these are corrective prescription eyeglasses. There is no record of his ever having obtained clear prescription eyeglasses for nighttime use. CWO4 Robinson was not wearing corrective prescription eyeglasses at any time material to this casualty.

The statement of CWO4 Robinson was to the effect that on initial sighting, he perceived a single white light and single red light. However, SANTA CRUZ II was showing a white masthead light and white forward range light in addition to her red and green side lights. These lights were on and working properly.

There are no objective standards of visual acuity within the Coast Guard which reflect the particular demands of vessel command or deck watch officer duty. There is no procedure for identifying those individuals who must be wearing corrective prescription eyeglasses to meet eyesight requirements while performing such duties.

37. CWO4 Robinson was under a physician's care at the time of this casualty, being treated for possible allergic bronchitis and sinus problems. At the time of the casualty the drugs SLOPHYLLIN, ALUPENT, and ENTEX were prescribed for him; a bottle containing ENTEX was recovered from his stateroom following salvage of the vessel.

Medical testimony received was that there was little likelihood that the drugs affected CWO4 Robinson's visual acuity, made him drowsy, or altered his personality. Absent CWO4 Robinson's testimony, there is no evidence before the Board as to what medications may have been taken on the day of the casualty.

38. Medical testimony further revealed that other than the aviation group, there are no distinctions made with regard to fit-for-duty status between shoreside personnel and those assigned to sea duty. Further, there is no distinction made with regard to those performing conning officer duties and other vessel personnel. The physician in this case candidly testified that he had never been on a Coast Guard cutter,

and did not have a sophisticated understanding of the duties of a commanding officer. However, his opinion was that there should be some differentiation for fit-for-duty determinations between people performing sea duty and those ashore.

COMMAND AND CONNING OFFICER QUALIFICATIONS

39. Selection for command of a Coast Guard cutter is based on appropriate prior experience. The evaluation is made by the Office of Personnel, which considers rank, career pattern, recency of sea service, and performance marks. A selection board annually selects prospective commanding officers in the grade of commander and captain. The primary criteria for selection is "performance record and appropriate prior experience" (Commandant Notice 5420 of 28 September 1978). While the selection of warrant officers to command afloat is not the subject of board selection, the factors considered are generally the same. Command afloat for warrant officers is considered on the basis of:

a. Availability for a two-year tour.
b. Previous experience afloat as a chief warrant officer.
c. Previous experience on type of vessel to be assigned.
d. Local knowledge - desired but not required.
e. Individual's desire for assignment.
f. Good record.

The designation of an officer to serve as an underway officer of the deck on a Coast Guard cutter is a subjective determination made by the vessel's commanding officer. The factors considered vary from vessel to vessel and are subject only to the admonishment of Coast Guard Regulation 4-2-6, that:

> "... a person shall not be assigned duty as officer of the deck or as engineer officer of the watch unless in the opinion of the commanding officer he is qualified for such duty."

This procedure and criteria is distinguished from that required by the Coast Guard of pilots and officers of the Merchant Marine. To serve as master, pilot, or officer of the watch on a merchant vessel, the individual must possess a license issued by the Coast Guard. To obtain such a license, the pilot or merchant mariner must not only demonstrate appropriate prior experience (i.e., service at sea) but must undergo written examination to demonstrate

competence and professional knowledge, as set forth in 46 CFR Part 10.

Applicants for pilot licenses or endorsements are tested in the following subjects:

(1) Rules of the Road
(2) Inland Rules
(3) Local Knowledge
(4) Chart Navigation
(5) Aids to Navigation
(6) Ship Handling
(7) Chart Sketch of Route Waters
(8) Pollution Abatement

Applicants for ocean master and mate licenses are tested in celestial navigation, sailings, lifesaving and firefighting, piloting, fuel conservation, international and inland rules of the road, and related subjects, as set forth in 46 CFR 10.05-45(b).

BRIDGE-TO-BRIDGE RADIO

40. Testimony was heard from Captain Alexander Kaufman. He is an experienced master mariner, being the holder of a license to serve as master of vessels of unlimited tonnage, any ocean, and as first class pilot for most of the waters from Chesapeake Bay north to Narragansett Bay. He has been piloting in Chesapeake Bay from 1957 to present, holding an unlimited Maryland pilot's license since 1963. He estimated that he had made at least 3,000 transits on Chesapeake Bay past Smith Point.

It is the practice of Maryland pilots transiting Chesapeake Bay on foreign merchant vessels to personally make all calls on channel 13, VHF-FM. Typically, the pilot's portable radio is set to channel 13 and the ship's radio is set to channel 16. The reason for this is to minimize possible confusion resulting from language difficulties and misunderstanding of pilot intentions. The vessel's crew is not allowed to use the radio on channel 13, VHF-FM.

The circumstances for use of bridge-to-bridge radio vary from pilot to pilot, and are subjective. Pilot Kaufman, testifying as an expert, said that he saw nothing wrong with Pilot Hamill not using the radio while the vessels were some miles apart, because the red sidelight of CUYAHOGA could be seen, and a clear port-to-port meeting was apparent. However, he testified that in similar meeting situations he would consider use of the radio necessary if the closest

point of approach would be 1/2 mile or less; he would desire the exchange of navigational information to be complete 10 minutes before the vessels reached their closest point of approach. He also testified that he had experienced a number of occasions when other vessels took sudden and unanticipated actions, changing proper and safe situations to hazardous situations.

COLLISION GEOMETRY

41. Based on the evidence adduced, the Board plotted the tracks of CUYAHOGA and SANTA CRUZ II as they navigated with respect to each other. A copy of this plot is shown as figure 1. SANTA CRUZ II sighted CUYAHOGA when passing buoy 50 abeam to port. The range was nearly eight miles, and CUYAHOGA was within five degrees of being dead ahead. CUYAHOGA sighted SANTA CRUZ II shortly before coming left to 338°T. The course change to 338°T put SANTA CRUZ II dead ahead at a range of 7.4 miles. The courses were within five degrees of being reciprocal, less than 1/2 point. Had not CUYAHOGA changed course to 303°T some 15 minutes later, the vessels would have met port to port at a distance of less than 0.4 miles.

CONCLUSIONS

1. Shortly after CUYAHOGA and SANTA CRUZ II came in sight of each other, they were in such relative positions as to establish a meeting situation. At a distance of 7.4 miles, SANTA CRUZ II was dead ahead of CUYAHOGA; CUYAHOGA was within five degrees of being dead ahead of SANTA CRUZ II. The courses were within 1/2 point of being reciprocal, with a divergence of five degrees. The vessels would have passed port to port at a distance of less than 0.4 miles had CUYAHOGA not changed course. Both vessels had the duty to keep clear of each other and pass port to port. Pilot Rule 80.3 would have required the vessels to sound whistle signals since they would have passed within half a mile of each other. It is the conclusion of the Board that the rules pertaining to the meeting situation applied as CUHAHOGA and SANTA CRUZ II continued to navigate with respect to each other.

CUYAHOGA violated its duty to pass port to port, as required by Pilot Rule 80.4, when, at 2104.5, it came left from 338°T to course 303°T. This change put CUYAHOGA on a course across the bow of SANTA CRUZ II and precipitated the collision.

2. The proximate cause of this casualty was the change of course left to 303°T by CUYAHOGA across the bow of SANTA CRUZ II. The improper navigation of CUYAHOGA resulted from the failure of CWO4 Donald K. Robinson, Commanding Officer, CUYAHOGA, to understand the position, true course, and speed of SANTA CRUZ II before changing course left from 338°T to 303°T, which change put CUYAHOGA on a collision course with SANTA CRUZ II. He failed to plot or require to be plotted radar contacts of vessels navigating with regard to CUYAHOGA, either by grease pencil on the radar scope or on a maneuvering board. CWO4 Robinson apparently perceived SANTA CRUZ II to be steaming in a westerly direction into the mouth of the Potomac River. This was a gross misinterpretation of the navigation lights of SANTA CRUZ II and the true situation, in which SANTA CRUZ II was steaming in a southerly direction. He persisted in this erroneous belief until the vessels were in the jaws of collision. This may have resulted in part from his erroneous belief that the small contact he observed on the radar must have been a small vessel, without regard to factors such as target angle or radar adjustment.

There is evidence that Chief Warrant Officer Donald K. Robinson, United States Coast Guard, United States Coast

Guard Reserve Training Center, Yorktown, VA., did, on 20 October 1978, while serving in command of United States Coast Guard Cutter CUYAHOGA (WIX-157), while underway in Chesapeake Bay, negligently hazard the said vessel by failing and neglecting to ascertain, or cause to be ascertained, the position, true course, and speed of M/V SANTA CRUZ II, a vessel whose presence was well known to him, before changing the course of USCGC CUYAHOGA (WIX-157) left from approximately 338° True to approximately 303° True, which change put USCGC CUYAHOGA on a collision course with M/V SANTA CRUZ II, as a result of which neglect USCGC CUYAHOGA collided with M/V SANTA CRUZ II and was sunk with multiple loss of life, all in violation of Article 110, Uniform Code of Military Justice.

3. Contributing to the cause of this casualty was the failure of CWO4 Robinson and Pilot Hamill to use bridge-to-bridge radio while CUYAHOGA and SANTA CRUZ II were navigating with respect to each other. As CUYAHOGA and SANTA CRUZ II closed for some 15 minutes, neither vessel initiated a radio call on Channel 13, VHF-FM.

CWO4 Robinson on CUYAHOGA knew he would be taking his vessel across the shipping lane of Chesapeake Bay when he turned left into the Potomac River. The added danger of this part of the voyage warranted special attention by CWO4 Robinson to the need to use the radio; no vessel would otherwise be privy to this information. CWO4 Robinson's neglect to broadcast his intention precluded SANTA CRUZ II from replying as to the danger of such a maneuver.

It appears that bridge-to-bridge radio has yet to reach its full potential as an aid in reducing risk of collision. The radio is often not used where it might be because of the apparent assumptions that other vessels seen navigating in a proper manner will continue to do so. After situations deteriorate, the radio is not used because of insufficient time, the perceived need to continually observe, and related factors. Given the experience of the sea, these assumptions should not be made. Pilot Kaufman testified as to his experiences where other vessels took sudden and unexpected actions resulting in grave risks. Most mariners share similar recollections. The case books are replete with collision cases in which one of two vessels took a sudden and unexpected action precipitating collision.

The consequences of collision are severe and often disastrous. Conversely, the burden of communicating on bridge-to-bridge radio to pass navigational information is slight. The equipment is installed on most commercial vessels, and state pilots carry portable radios crystallized to channel 13. By regulation, marine VHF-FM radios are required to be equipped with a 1-watt, low power setting to reduce the likelihood of frequency congestion resulting from distant traffic. There are regulations enhancing circuit discipline by restricting traffic to essential information. This very usable tool is in place, operational, and available at the touch of a button.

Bridge-to-bridge radiotelephone will reach its full potential only when mariners come to use it to exchange information and confirm intentions in routine situations. When navigating with respect to other vessels, use of the radio must be made early. Reliance on assumption in this context must be considered an unnecessary risk by the prudent mariner.

The evidence adduced with regard to practices of mariners demonstrates a stubborn determination to resist full use of technological advances such as bridge-to-bridge radio. The result of such resistance is seen in casualties such as this, with adverse consequences to safety and the environment. It is unworthy of the centuries-long pursuit of safety at sea that such attitudes should delay optimum use of technologies already accepted in other modes of transportation.

The existing regulations governing vessel bridge-to-bridge radio are objective in all areas of application, save one. Matters of equipment, frequency, record keeping, and required installation are clear and straightforward. The one subjective regulation is that which speaks to when navigational information should be exchanged; i.e., "when necessary," (33 CFR 26.04(b)).

It is concluded that the absence of an objective regulation specifying when the exchange of navigational information by radio is necessary contributed to CWO4 Robinson's and Pilot Hamill's failure to consider or use the radio when the vessels were still in a meeting situation.

4. Contributing to the cause of this casualty was the failure of Pilot Hamill to sound the danger signal when CUYAHOGA's sidelights were seen to shift from red to red-green to green.

All during the time CUYAHOGA closed SANTA CRUZ II on a course of 338°T, the intentions of CUYAHOGA were properly felt to be understood on SANTA CRUZ II. It appeared that a port to port meeting would occur at about 1/2 mile; there was no reason to believe otherwise.

The change of course by CUYAHOGA was known on SANTA CRUZ II, as the shift of CUYAHOGA sidelights from red to red-green to green was clearly seen. The dangerous situation resulting from CUYAHOGA's apparent departure from the rules and the port to port passage was evident to those on SANTA CRUZ II. The departure of CUYAHOGA from the rules and its failure to continue to the anticipated port to port passage created doubt as to its intentions. Pilot Rule 80.1 provides that the danger signal shall be sounded immediately if, "when steam vessels are approaching each other, either fails to understand the course or intention of the other ...."

After CUYAHOGA changed course, SANTA CRUZ II was navigated as if the rules pertaining to the crossing situation applied. Pilot Hamill improperly considered SANTA CRUZ II to be a privileged vessel obligated to hold course and speed and SANTA CRUZ II continued at full ahead on course 163°T. He sounded the two single blast whistle signals to indicate his intention to hold course and speed. The danger signals were not sounded until nearly two minutes after CUYAHOGA changed course, when the vessels were in the jaws of collision. It was only then that Pilot Hamill considered the vessels in extremis, and he stopped the engine and put the rudder hard to port.

Neither vessel was privileged during the initial meeting situation, and no privilege was created by CUYAHOGA's departure from the rules. As such, SANTA CRUZ II was not privileged and was not obligated to hold course and speed. Rather, those in charge of her navigation were at liberty and had the duty to exercise their best judgment to avoid collision and act accordingly. The range of possible actions by SANTA CRUZ II included stopping, slowing, or turning, in addition to holding course and speed.

Had that judgment been exercised, no criticism could be made of the selected action; it is recognized that the mariner is not to be second-guessed in this regard. However, the failure to exercise judgment, which resulted from Hamill's improper belief as to privilege, was error.

Had the danger signal been sounded by SANTA CRUZ II immediately after the lights of CUYAHOGA showed her course

change, it is possible that the collision could have been avoided. CUYAHOGA would have been alerted that its actions were not understood and would have had an opportunity to take corrective action. The single whistle signals later sounded by SANTA CRUZ II were inappropriate to the situation and did not convey the same urgency as would attend the danger signal.

There is evidence of violation of Pilot Rule 80.1 on the part of Pilot Hamill and SANTA CRUZ II with regard to the delay in sounding the danger signal.

5. Contributing to the cause of this casualty was the fact that CUYAHOGA was not adequately manned to simultaneously train officer candidates and give adequate attention to the demands of safe navigation of the vessel. By virtue of the additional task of providing training and instruction, watchstanders were distracted from their navigation duties, or placed in inappropriate positions. The SDO, CWO4 Robinson, had to divert much of his attention from the needs of safe navigation. Instead of serving as quartermaster of the watch where he might assist the SDO, a position for which he was properly qualified, QM2 Rose was assigned to instruct officer candidates. SN Henderson was assigned as quartermaster of the watch, a position for which he had not yet been adequately trained.

As a result of the manning situation and the overall level of qualifications of personnel in relation to their watch assignments, the safety of CUYAHOGA was vested in the part-time attention of one man. Instructors for embarked trainees should have been provided to allow assigned personnel to attend the duties of safe navigation.

6. Contributing to the cause of this casualty was the absence of a wheelhouse radar display on CUYAHOGA. A radar in the wheelhouse would have lent itself to the monitoring of vessel contacts by the conning officer. With such an aid available, it is likely that CWO4 Robinson would have made better use of the radar and not persisted so long in his misunderstanding of the true position, course, and speed of SANTA CRUZ II.

7. Contributing to the loss of life in this casualty was the fact that the main deck watertight doors on the port side by way of frame station 30 and 40 were open for ventilation. When CUYAHOGA was pushed over by SANTA CRUZ

II, these doors were partially submerged. As the two vessels continued through the water by virtue of the momentum of SANTA CRUZ II, a tremendous volume of water entered CUYAHOGA through the doors. As a result of this rapid downflooding, personnel below decks were hampered in their efforts to escape against the rush of water. In addition, this condition resulted in CUYAHOGA's rapid sinking, reducing the time in which those belowdecks could escape.

8. Contributing to the loss of life in this casualty was the failure to sound the general alarm or use the public address system, which could have warned the personnel located below decks in CUYAHOGA of the impending collision.

9. Contributing to the loss of life in this casualty was the absence of adequate automatic emergency lighting in the passageways, berthing, and accommodation spaces in CUYAHOGA, which absence inhibited escape from below decks in those minutes before CUYAHOGA sank. It is probable that this lack of lighting contributed to the deaths of:

- SS1 Ernestino Acogido Balina,
- OC James Wesley Clark,
- OC John Paul Heistand,
- MK1/OC Edward Jerry Thomason, and
- Capt. Wiyono Sumalyo

10. Possibly contributing to the loss of life in this casualty was the installation of drawers between the steps of the two wooden ladders leading from the forward accommodation spaces up to the athwartship passageway on the main deck by way of frame station 30. The open drawers may have impeded personnel trying to escape.

11. Possibly contributing to the loss of life in this casualty was the large amount of bedding, personal clothing, and other equipment for which there was no proper stowage or means of securing on CUYAHOGA. On impact, this material came adrift, and may have impeded the escape of those men below decks.

12. It is the conclusion of the Board that the failure of the port liferaft to deploy when CUYAHOGA sank did not contribute to the loss of life in this casualty. That is only the result of the fortuitous fact that the utility boat broke free of the sinking CUYAHOGA and surfaced.

The Board concludes that the port liferaft did not inflate until sometime during the hours of darkness of the night of 21-22 October 1978. The Board is unable to conclude which, among the many possible factors, including insufficient depth, would account for the delay. Had the raft inflated promptly in this case, its utility to the survivors would have been diminished because of the absence of canopy lights and the fact that it would have drifted away. It is unknown why the raft did not remain attached to CUYAHOGA by the sea painter.

In view of the technical nature of servicing liferafts and past experienced difficulties, it appears that the policy of frequent raft inspection by untrained personnel warrants reevaluation.

13. The Board is unable to conclude whether any defect in CWO4 Robinson's professional knowledge and competence contributed to this casualty. The absence of his testimony and the lack of an objective system which records demonstration of professional knowledge and competence prevent this. Given the gross errors precipitating this casualty, the possibility cannot be discounted.

The lack of an objective system of record for vessel commanding officers to demonstrate their competence and professional knowledge is considered a weakness in the assignment process. It is recognized that present practice which identifies good past performance and seagoing experience is likely to result in satisfactory selections for command. It does not, however, serve to ascertain that selectees are, in all cases, possessed of desired levels of professional knowledge and competence at the time of assignment.

Similarly, the practice of deck watch officers being qualified only by virtue of observation on the vessel could be improved. While past results have been in the main satisfactory, there is lacking the degree of certainty that objective examination and periodic reexamination would provide.

14. The Board is unable to conclude whether or not medications prescribed for CWO4 Robinson played any part in this casualty. The possibility does exist.

15. The Board is unable to conclude whether or not CWO4 Robinson's visual acuity and the absence of eyeglasses played a part in this casualty. Given the apparent initial

perception by CWO4 Robinson of a single white masthead light and red sidelight on SANTA CRUZ II, and his impression that the lights were of a small vessel steaming westerly into the Potomac River, the possibility cannot be discounted.

The Board considers the absence of specific standards of visual acuity for those performing deck watch officer duties or assigned as vessel commanding officers to be a weakness in the system of selection and qualification of such individuals. The Board considers the absence of a system of record identifying those individuals who should be wearing corrective prescription eyeglasses while performing deck watch officer duties to be a similar weakness.

16. The efforts of CWO3 Stone, BM1 Wild, QM2 Rose, OC Moser, OC Robison, and the officers and men of M/V SANTA CRUZ II, with regard to post-collision survival and rescue, are commendatory and worthy of note.

17. The deficiencies identified with regard to materiel and manning conditions on CUYAHOGA are, to a large degree, the cumulative result of past management decisions, no one of which could be labeled as specifically causing this casualty. The analysis of such decisions is beyond the competence and charter of this Board. Commanding officers at all levels are confronted with the need to accomplish assigned missions in an environment where needs outstrip resources. They must judge the impact of deficiencies and shortfalls on unit ability to accomplish broad missions and specific tasks. They must allocate resources among competing priorities. A significant factor in these management decisions is the adaptable nature of the ship and the absence of objective standards of seaworthiness in the broad sense. Other than the hull, propulsion, steering gear, and a cadre of essential personnel, there is little on a Coast Guard cutter that can be labeled vital. A vessel can sail on a specific assignment despite a minor reduction in capability occasioned by the absence of a particular man or the inoperability of a particular piece of equipment. Yet, the cumulative effect of several such reductions is a substantive denigration of seaworthiness.

Only after a tragedy such as this is an analysis of those factors which constitute seaworthiness in the broad sense undertaken. One such analysis into the safety of afloat training for entry-level personnel in the Coast Guard has recently been concluded. To the degree that this Board

results in the establishment of objective standards of operational seaworthiness on Coast Guard vessels and the allocation of resources necessary to achieve those standards, the tragic loss of life in this casualty will not have been in vain.

18. Except as noted above, there is no evidence of actionable misconduct, inattention to duty, negligence, or willful violation of law or regulation on the part of any licensed or certificated persons; nor evidence of failure of inspected material or equipment; nor evidence that any personnel of the Coast Guard or any other government agency or any other person contributed to the casualty.

RECOMMENDATIONS

1. Violation of Article 110, Uniform Code of Military Justice, is a serious offense. In the case of negligent hazarding of a vessel, punishment may include dishonorable discharge and confinement at hard labor for two years; a general court-martial is the only forum empowered to consider such punishments. Despite the gravity of this case, the Board is mindful of the contributing causes which have been identified and which may act in mitigation when consideration is given to the appropriate action to be taken with regard to the conduct of CWO4 Robinson.

A charge sheet has been prepared in accordance with Paragraph 0302 d(11)(c), Coast Guard Supplement to the Manual for Courts-Martial, and is forwarded herewith. The Board recommends referral to an appropriate court-martial convening authority for such further investigation and action under the Uniform Code of Military Justice as he may consider appropriate.

2. It is recommended that the Commandant consider the need to amend existing requlations by defining specific and objective parameters for those situations where exchange of navigational information between vessels by bridge-to-bridge radio is necessary.

3. It is recommended that further investigation under the civil penalty procedures be initiated with regard to Pilot John P. Hamill for his part in this casualty.

4. It is recommended that the Commandant consider the need to require appropriate Coast Guard personnel to demonstrate the professional knowledge required for vessel command and deck watch officer duty, and to record individual qualifications in that regard. An objective system such as the present merchant marine licensing program, including the concept of radar observer endorsement, would appear adaptable to this end.

5. It is recommended that the Commandant consider the need for a policy which would insure that Coast Guard vessels with trainees embarked for underway training be manned sufficiently to insure that those persons tasked with the safe navigation of the vessel need not be simultaneously tasked with instructor duties.

6. It is recommended that the Commandant consider the need to require, on radar-equipped Coast Guard vessels, a

wheelhouse radar display to allow the conning officer to use the radar without leaving the wheelhouse.

7. It is recommended that the Commandant consider the need to retrofit all Coast Guard vessels not now in compliance with the current Naval Ships' Technical Manual standards for emergency lighting.

8. It is recommended that the Commandant consider adopting the standards contained in 46 CFR 160.051 for inflatable liferafts used on Coast Guard vessels.

9. It is recommended that the Commandant consider the need to establish standards for physical competence and fit-for-duty status appropriate to vessel command and deck watch officer duty.

10. It is recommended that the Commandant consider appropriate recognition of QM2 Rose, OC Robison, CWO3 Stone, BM1 Wild, and OC Moser for their actions following the loss of CUYAHOGA.

11. It is recommended that the Commandant consider appropriate recognition of the officers and men of M/V SANTA CRUZ II for their actions following the loss of CUYAHOGA.

R. H. Wood
RADM R. H. WOOD, USCG
Chairman

P. Nichiporuk
CAPT P. NICHIPORUK, USCG
Member

J. L. Bailey
CDR J. L. BAILEY, USCG
Member

J. E. Shkor
LCDR J. E. SHKOR, USCG
Member and Recorder

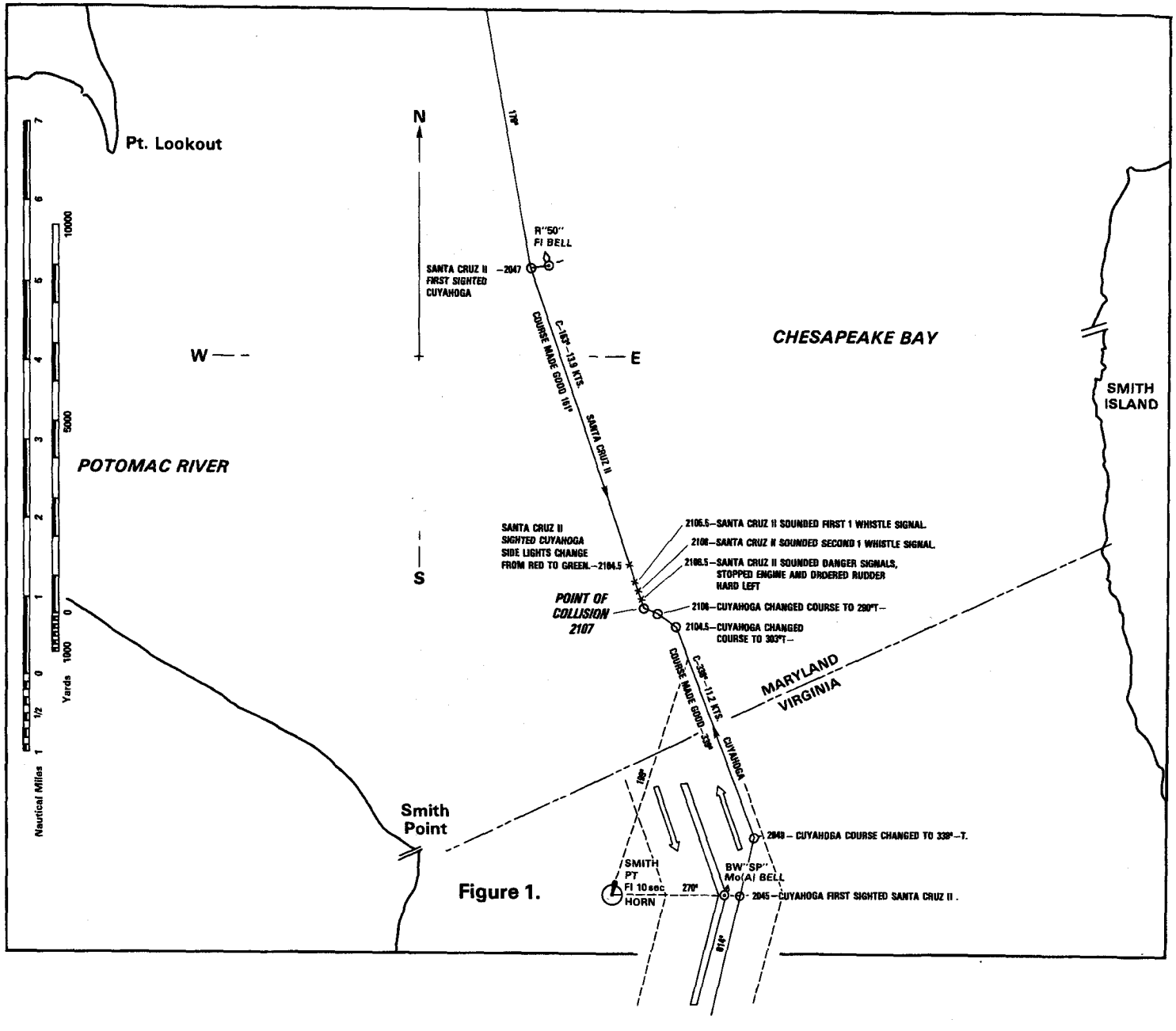
Pt. Lookout
N
W
E
S
POTOMAC RIVER
CHESAPEAKE BAY
SMITH ISLAND
MARYLAND
VIRGINIA
Smith Point
Nautical Miles
Yards
R"50"
Fl BELL
SANTA CRUZ II
FIRST SIGHTED
CUYAHOGA
–2047
COURSE MADE GOOD 181°
C-183°–13.9 KTS.
SANTA CRUZ II
SANTA CRUZ II
SIGHTED CUYAHOGA
SIDE LIGHTS CHANGE
FROM RED TO GREEN.–2104.5
POINT OF
COLLISION
2107
2106.5–SANTA CRUZ II SOUNDED FIRST 1 WHISTLE SIGNAL.
2106–SANTA CRUZ II SOUNDED SECOND 1 WHISTLE SIGNAL.
2106.5–SANTA CRUZ II SOUNDED DANGER SIGNALS,
STOPPED ENGINE AND ORDERED RUDDER
HARD LEFT
2106–CUYAHOGA CHANGED COURSE TO 290°T–
2104.5–CUYAHOGA CHANGED
COURSE TO 303°T–
COURSE MADE GOOD 338°
C-338°–11.2 KTS.
CUYAHOGA
2049 – CUYAHOGA COURSE CHANGED TO 338°–T.
SMITH
PT
Fl 10 sec
HORN
270°
BW"SP"
Mo(A) BELL
2045–CUYAHOGA FIRST SIGHTED SANTA CRUZ II .

Figure 1.

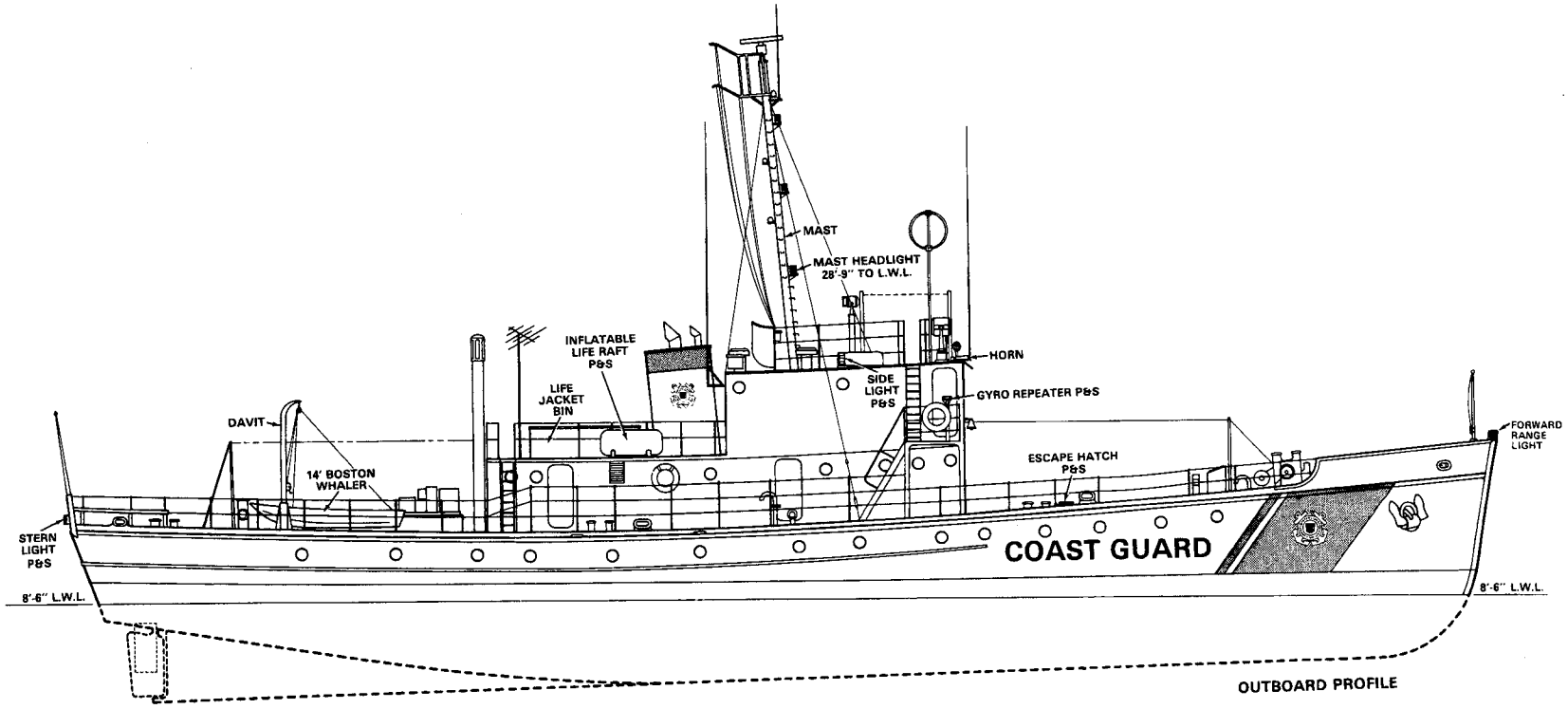
MAST
MAST HEADLIGHT
28'-9" TO L.W.L.
HORN
INFLATABLE
LIFE RAFT
P&S
LIFE
JACKET
BIN
SIDE
LIGHT
P&S
GYRO REPEATER P&S
DAVIT
14' BOSTON
WHALER
ESCAPE HATCH
P&S
FORWARD
RANGE
LIGHT
STERN
LIGHT
P&S
COAST GUARD
8'-6" L.W.L.
8'-6" L.W.L.
OUTBOARD PROFILE

Figure 2

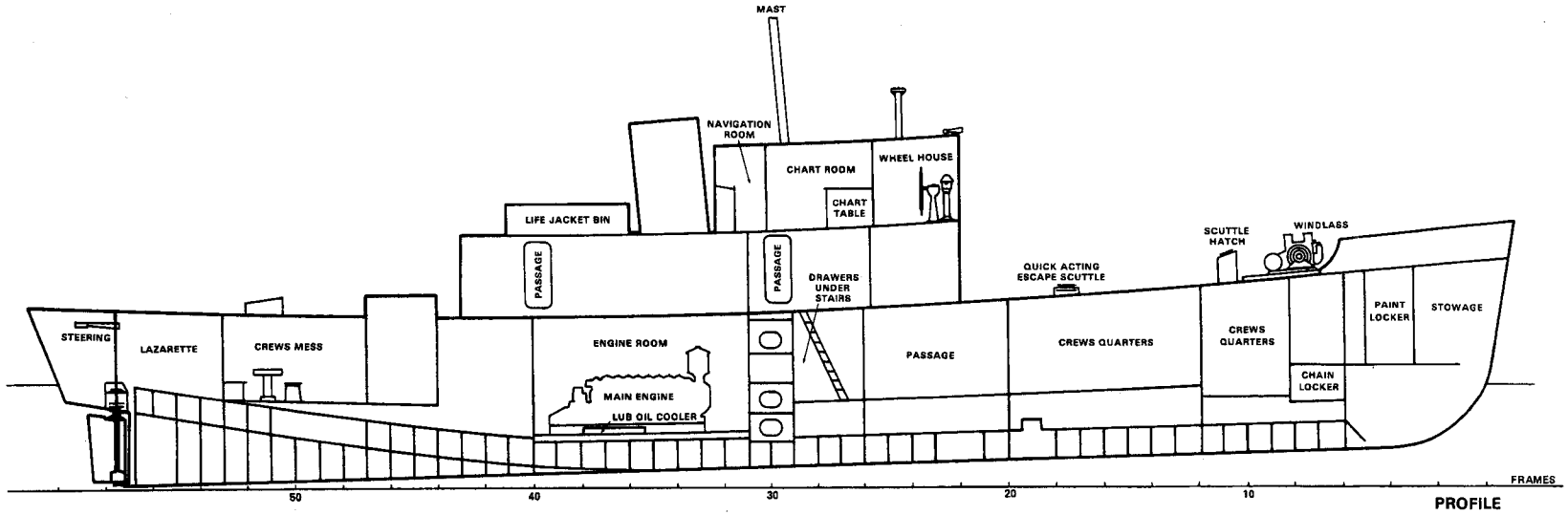

Figure 3

4 3942

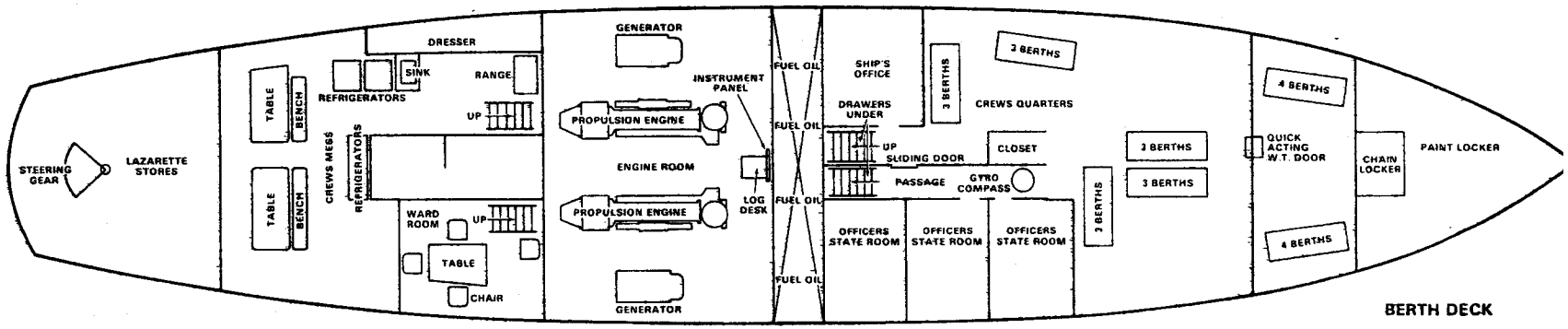
STEERING GEAR
LAZARETTE STORES
TABLE
BENCH
TABLE
BENCH
CREWS MESS
REFRIGERATORS
REFRIGERATORS
DRESSER
SINK
RANGE
UP
WARD ROOM
UP
TABLE
CHAIR
GENERATOR
PROPULSION ENGINE
ENGINE ROOM
PROPULSION ENGINE
GENERATOR
INSTRUMENT PANEL
LOG DESK
FUEL OIL
FUEL OIL
FUEL OIL
FUEL OIL
SHIP'S OFFICE
DRAWERS UNDER
UP
SLIDING DOOR
PASSAGE
GYRO COMPASS
CLOSET
3 BERTHS
3 BERTHS
CREWS QUARTERS
OFFICERS STATE ROOM
OFFICERS STATE ROOM
OFFICERS STATE ROOM
3 BERTHS
3 BERTHS
3 BERTHS
4 BERTHS
4 BERTHS
QUICK ACTING W.T. DOOR
CHAIN LOCKER
PAINT LOCKER
BERTH DECK

Figure 4

MAIN DECK

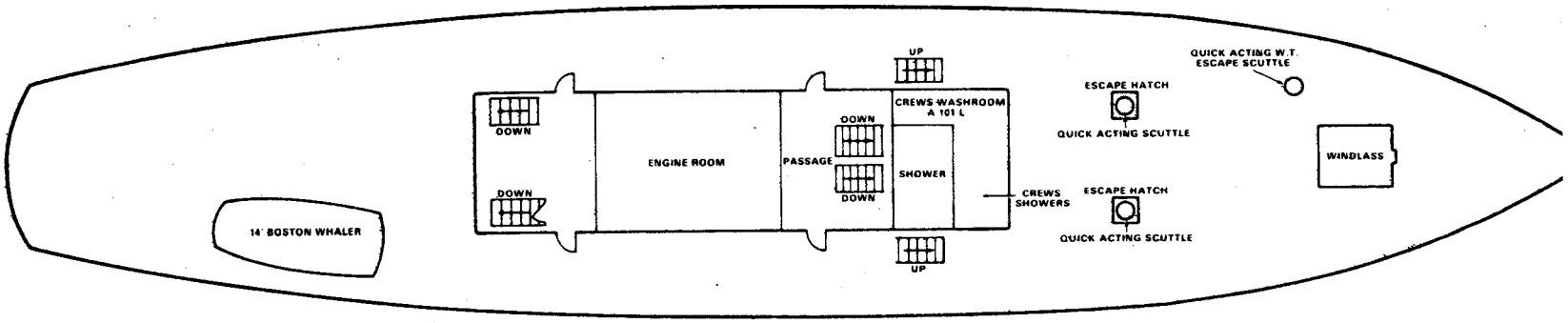

Figure 5

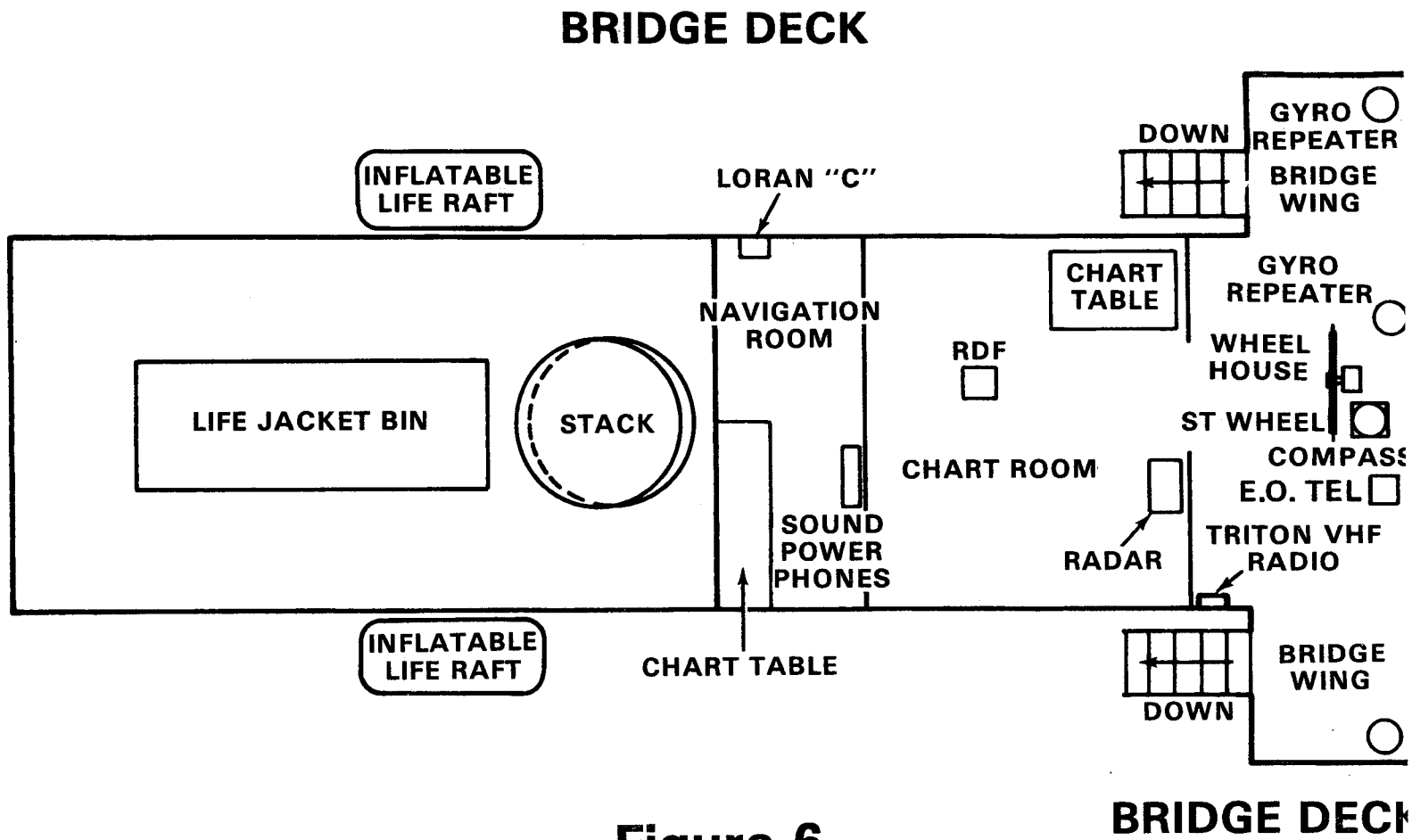
BRIDGE DECK
INFLATABLE LIFE RAFT
LORAN "C"
DOWN
GYRO REPEATER
BRIDGE WING
CHART TABLE
GYRO REPEATER
NAVIGATION ROOM
RDF
WHEEL HOUSE
LIFE JACKET BIN
STACK
ST WHEEL
COMPASS
CHART ROOM
E.O. TEL
SOUND POWER PHONES
RADAR
TRITON VHF RADIO
INFLATABLE LIFE RAFT
CHART TABLE
BRIDGE WING
DOWN
BRIDGE DECK

Figure 6