

M-127

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: September 11, 1980

Forwarded to:

Admiral John B. Hayes
Commandant
U.S. Coast Guard
Washington, D.C. 20593

SAFETY RECOMMENDATION(S)

M-80-64 through -85

About 2021 e.s.t. on January 28, 1980, the U.S. Coast Guard Cutter BLACKTHORN and the U.S. tankship CAPRICORN collided in Tampa Bay, Florida. As a result of the collision, the BLACKTHORN was capsized and sank, and 23 Coast Guardsmen were drowned. Although refloated, the BLACKTHORN was a total loss. The CAPRICORN experienced hull damage from the collision and subsequent grounding. The cost of repairs to the tankship was estimated at \$600,000 and the cost of salvaging the BLACKTHORN was estimated at \$1 million. 1/

According to the report issued by the U.S. Coast Guard Marine Board of Investigation concerning the collision between the USCGC CUYAHOGA and the M/V SANTA CRUZ II, 2/

"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."

The Safety Board agrees that recency of sea service is an important factor in the selection of a commanding officer (CO). The Board believes that an officer who had been ashore for as long as the CO of the BLACKTHORN had been should not have been selected for command without first having been assigned to a comprehensive refresher course, and direct operational tutelage by a commanding officer of a Coast Guard cutter similar to the cutter to which he is to be assigned. During the almost 5 years ashore since he had last been assigned to a ship the CO of the BLACKTHORN underwent no refresher training. As far as his testimony indicated, the only professional training that he had completed was a rules of the road correspondence course, which he finished after assuming command of the BLACKTHORN.

1/ For more detailed information read, "Marine Accident Report--Collision of USCGC BLACKTHORN and U.S. Tankship CAPRICORN, Tampa, Florida, January 28, 1980 (NTSB-MAR-80-14)."

2/ Marine Casualty Report--USCGC CUYAHOGA, M/V SANTA CRUZ II (Argentine), Collision in Chesapeake Bay on 20 October 1978 with Loss of Life (Report No. USCG 16732/92368).

The CO's testimony indicated that he had never taken any course in, and did not understand the fundamental theory of, ship stability, and he did not know how to apply the information contained in the cutter's stability booklet. The Safety Board believes that no officer should ever be selected for command unless and until he has demonstrated at least a basic understanding of fundamental ship stability theory and practice. He should be fully capable of understanding and using the stability and loading data provided by the Coast Guard concerning his vessel. Without an understanding of stability fundamentals, a CO cannot know that his ship is seaworthy before he takes it to sea. The CO stated that he delegated this responsibility to the engineering officer (EO). However, the EO did not understand the fundamentals of stability theory or how to use the BLACKTHORN's stability booklet. While neither the CO nor the EO knew whether BLACKTHORN had sufficient stability when the cutter departed Gulf Tampa Drydock, an independent stability expert determined that BLACKTHORN had adequate stability before collision.

Both the CO and the officer-of-the-deck (OOD) stated that, before impact, the BLACKTHORN was proceeding along the center of the north side of the channel. Since there is no physical evidence to support this contention and since all existing physical evidence points to the fact that the BLACKTHORN actually crossed midchannel and entered the south side of the channel, the Safety Board can only conclude that these officers did not know precisely where they were. The OOD's statement that, because he noted a 1° bearing drift to the left between the visual bearings he took of the approaching CAPRICORN no risk of collision existed, dramatically illustrates that the conning of the BLACKTHORN had been left to a novice. The Safety Board believes that an experienced mariner would not consider a 1° bearing change, especially when approaching a large vessel at close range, to be the "appreciable change" referred to in the rules of the road for evaluating the risk of collision. This OOD had the documentation of competence required by the Coast Guard: a letter from the CO designating him as qualified. The Safety Board believes the method used by the Coast Guard for the qualification of underway OOD's, whatever its merit when it was first adopted is of questionable merit today. Ideally and theoretically, it can produce competent deck watch officers. In actuality, however, the degree to which each OOD will meet the personnel qualification "standard" will vary from ship to ship. It is entirely up to the subjective evaluation of certifying officers and commanding officers as to what checkoff items will be required and the degree of knowledge of each item that the trainee must demonstrate. It also presupposes that the certifying officers and commanding officers possess the degree of knowledge in all subject items necessary to test other officers, and that the officers come to their ships with a substantial background in ship operations. Even as to Coast Guard Academy graduates this is no longer so in view of the varied curriculum options the cadets are allowed to pursue.

The Safety Board believes that the method used by the Coast Guard to license merchant marine officers is much more objective and comprehensive than that used to establish the seagoing qualifications of its own officers. All applicants for the same license are tested in the same subject areas. There is no need to caution licensing officials not to "give away" their signature as there is in the current OOD qualification system. The Safety Board believes that the Coast Guard should use the requirements for the testing of merchant marine officers as a guide to tailor a similar program to test the professional knowledge of its officers before they are assigned to ships. (Apart from the increased professionalism such a program would nurture, there would be collateral benefits to the Coast Guard's marine safety program in that the credibility of officers assigned to the program would be enhanced by their having passed examinations comparable to those taken by merchant marine officers.) The USCG Marine Board of Investigation looking into the sinking of the CUYAHOGA made the following recommendation:

"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."

In his action addressing this recommendation, the Commandant of the U.S. Coast Guard said, "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" (i.e. the current process by which Coast Guard officers are selected for command. The Commandant did not address the portion of the recommendation dealing with deck watch officers.) As of August 1980, the Coast Guard has not put a program of this type into effect. Besides initial qualification, the Safety Board believes that requalification on a periodic basis is necessary to insure a high level of sea-going qualification in Coast Guard officers, especially those officers coming off shoreside assignments.

The OOD on watch just before the accident had qualified as an underway OOD during the month before the BLACKTHORN entered the shipyard after only 2 1/2 months on board the BLACKTHORN. The ship was not continuously underway during that time. The vessel was in the shipyard for over 3 months during which time this officer had no opportunity to gain experience as an underway OOD. The CO testified that it was his policy that, whenever this officer had the conn in restricted waters, he was to be under close supervision. Newly qualified and trainee OOD's should have the opportunity to conn their vessels in restricted waters under close supervision by competent officers. The Safety Board believes, however, that it is not a good policy to give inexperienced OOD's a watch at night in a waterway with which none of the officers is thoroughly familiar. This practice will most likely place in jeopardy not only the Coast Guard vessel and crew, but also other vessels which the Coast Guard vessel might meet in the same waterway, such as the CAPRICORN.

The overall level of seagoing experience of the crew of the BLACKTHORN was extremely limited. The percentage of crewmen having less than 1 year's previous experience was inordinately high. Even so, the Safety Board believes that there is no justification for a large number of the crew not knowing where the life preservers were stowed on the BLACKTHORN or how to launch an inflatable liferaft. Such lack of knowledge indicates a breakdown in command responsibility in preparing the vessel for sea after a long lay-up and the need for formal indoctrination of persons reporting aboard ship for the first time.

In an accident where the vessel capsizes before survival equipment can be utilized, it can be expected that crewmen will find themselves in the water and at the mercy of the elements. It is important, therefore, that they be trained in water survival techniques; e.g. basic swimming skills, how to conserve one's energy, whether to stay with the vessel, how to don a lifepreserver in the water, the importance of staying together, and the dangers of hypothermia. A number of survivors from the BLACKTHORN believed that their water survival training was inadequate; the Safety Board believes that the Coast Guard should review its current water survival training programs.

All foreign vessels, all U.S. vessels in foreign trade, most U.S. vessels in domestic trade, drawing more than 6 ft and U.S. Naval vessels transiting Tampa Bay employ local

pilots. The BLACKTHORN did not, in spite of the fact that this was the first time any officer on board had transited Tampa Bay at night and in spite of the fact that they had not been to sea for 3 months. Pilots transit Tampa Bay constantly, should know the waters well, should be aware of problems such as the front range light on Cut A being out, and should keep themselves aware of inbound and outbound traffic.

Certainly, the crews of Coast Guard cutters, which are homeported in a particular harbor, should have knowledge of that harbor comparable to local pilots; however, the crews of Coast Guard cutters which visit unfamiliar ports do not. The CO of the BLACKTHORN did not call the Tampa Bay pilots before getting underway to determine what traffic would be in the harbor that night nor did the CO make any security calls to let other vessels know that the BLACKTHORN was outbound in Tampa Bay. If the CO had employed a pilot, the pilot would have been aware of the inbound CAPRICORN, would have informed other vessels that the BLACKTHORN was outbound, and could have provided the CO with local knowledge. The Safety Board believes that the commanding officers of Coast Guard cutters that are over 100 ft in length should employ local pilots when cutter crews are unfamiliar with the pilotage waters they are planning to transit, should participate with local pilot associations in exchange of information regarding ship movements and should transmit security calls when appropriate.

Although the BLACKTHORN and CAPRICORN were not subject to the International Regulations for Preventing Collisions at Sea, 1972 (COLREGS 72) at the time of the accident, both ships did operate in international waters where COLREGS 72 applies. Even though the Inland Rules of the Road do not require a second masthead light and consequently give no criterion for horizontal separation, COLREGS 72 requires that the forward masthead light and the after masthead light be spaced not less than 50 percent of the length of the vessel apart and that the forward light be placed not more than 25 percent of the vessel's length aft of the stem. For the BLACKTHORN, this means the lights should have been spaced 90 ft apart and that the forward light should have been not more than 45 ft aft of the stem. However, the Coast Guard has exempted certain buoy tenders from this requirement. The two lights on the BLACKTHORN were spaced only 16 ft apart and the forward light was 68 ft aft of the stem. The Coast Guard certified that the buoy tenders were unable to comply because of their special construction or purpose; however, if on this class of vessel the forward masthead light were to be placed on the forecastle the cutters would nearly comply with the regulations without hampering vessel operations. The placements allowed by the exemption for buoy tenders operating primarily in restricted waters are deceptive to other vessels at night, because the arrangement creates the illusion of a much smaller vessel and one subject to Article 25 of the Inland Rules:

"In narrow channels, a steam vessel of less than 65 feet in length shall not hamper the safe passage of a vessel which can navigate only inside that channel."

In addition, the spacing of lights 16 ft apart does not present as effective a range as lights spaced 90 ft apart and thus makes it more difficult for other vessels to determine a buoy tender's heading. The Safety Board considers the exemption for buoy tenders from Rule 23(a)(i) and (ii) and Paragraph 3(a) of Annex I of COLREGS 72 to be unsafe and recommends that the Coast Guard modify the lights on buoy tenders to comply as closely as possible to the regulations by moving the forward masthead light as far forward as possible and then modify or rescind the present exemption as appropriate.

On Board the BLACKTHORN whistle signals were not always blown after a passing agreement had been established over the bridge-to-bridge radiotelephone. The CO said that whistle signals were not blown if the whistle signals would be confusing to other vessels in the area. The Safety Board believes that the Coast Guard should set the example for other vessels by sounding whistle signals in accordance with the appropriate rules of the road.

The waters of Tampa Bay provide access to one of the busiest port facilities in the United States. The vulnerability of this waterway to closure was demonstrated when 20 ships were trapped within the port of Tampa waiting for salvors to clear the BLACKTHORN from the main shipping channel where it had sunk. The Safety Board believes that the following steps should be taken to increase the safety of navigation upon this waterway.

First and foremost, reduction of congestion at the intersection of Mullet Key and Cut A channels should be examined. At this intersection, vessels bound to and from the Intracoastal Waterway and to and from the Southwest Channel enter and leave the main shipping channel. Therefore, it is the junction of four separate channels. The Safety Board believes that situations cannot fail to evolve where, when two vessels are meeting at the junction, one of the vessels will have doubt as to the course and intention of the other vessel. The pilot of the CAPRICORN stated that when he first sighted the BLACKTHORN he expected that it would turn right into Mullet Key Channel for a normal port-to-port passing. When he was unable to establish bridge-to-bridge radio contact and when the BLACKTHORN seemed to him to have passed the point where it could safely turn into Mullet Key Channel, he assumed that the BLACKTHORN would continue on its course and leave the main shipping channel. Since vessels do leave the main shipping channel at this point bound for the Southwest Channel and the Intracoastal Waterway, the Safety Board believes that confusion as to the intended course of outbound vessels is possible and will continue to arise. Had the intersection of the Southwest Channel and Intercoastal Waterway not been located at this point, the Safety Board believes that the pilot might not have entertained the possibility that the BLACKTHORN's intention was to cross his bow. Therefore, the Safety Board believes that the Coast Guard, in conjunction with appropriate Federal and State agencies should act to move the intersection of these channels away from buoy 2A.

From the data collected and correlated in an unofficial study made by Commander William J. Ecker, USCG, entitled "Casualty Analysis of Selected Waterways," and this accident, the Safety Board believes that a higher level of vessel traffic service (VTS) is needed in Tampa Bay. Had there been, for example, a regulation prohibiting meeting in bends in the main shipping channel, this accident might have been avoided. The Board concludes that the Coast Guard should reevaluate the VTS needs in Tampa Bay and should take action to increase the safety of navigation on the waterway through a higher level of VTS.

None of BLACKTHORN's principal survival craft, her own four or the borrowed 15-man inflatable liferafts, was effective in saving lives. Instead, a wooden watchstander's shack, wooden planks, and lifejackets were used as flotation until rescue boats arrived. Two of the liferafts, the Mark 3 liferafts, were over 24 years old. U.S. Navy standards (adopted for Coast Guard use) state that Mark 3 liferafts should be disposed of because of fabric deterioration and a civilian liferaft expert testified that they should never be used. The Safety Board urges

the Coast Guard to examine all Mark-5 inflatable liferafts on all Coast Guard cutters and to immediately replace all Mark 3 liferafts with Coast Guard-approved liferafts in accordance with Commandant Instruction M 14070.10 dated January 2, 1979.

BLACKTHORN's liferaft installation did not meet the intent of the Naval Ships' Technical Manual (adopted for Coast Guard use) that liferafts should be located to permit ready manual overboard launching, since the 385-lb liferafts were stowed 7 ft from the side of the cutter and one deck up. This required the liferafts to be carried down from the 02 level to the 01 level before launching. If the liferafts were to be dropped to the 01 level by releasing the stowage baskets, the liferafts probably would be damaged. The Safety Board believes that the Coast Guard should examine the location of liferaft stowage on all cutters to insure that the liferafts can be readily launched in an emergency.

The BLACKTHORN's hydrostatic releases for its liferafts were set to activate at water depths within the Navy standard of 10 to 40 ft. However, buoy tenders, operate primarily in water depths of less than 40 ft. Therefore, the Safety Board believes that the Coast Guard should adopt the merchant vessel standard that hydrostatic releases be set between 5 and 15 ft for Coast Guard cutters. In this case, the setting of the hydrostatic releases was not a factor in the effectiveness of the liferafts since their flexible containers were not buoyant. The Coast Guard should use buoyant containers for liferafts on Coast Guard cutters.

Survivors testified that, as the cutter capsized BLACKTHORN's lights went out, no emergency lighting came on, and about 15 crewmen were trapped on the mess deck. About nine of these crewmen became disoriented in the dark and climbed into the engineroom where they died. As a result of its investigation of the sinking of USCGC CUYAHOGA, 3/ on October 28, 1978, the Safety Board recommended that the Coast Guard:

"Provide automatic emergency lighting for egress from all manned spaces on all Coast Guard cutters (M-79-29)."

The Safety Board believes that the Coast Guard should examine the reliability of the emergency lighting aboard Coast Guard cutters and make necessary modifications.

The CAPRICORN was exempted from having a motor lifeboat and gravity davits because it was converted before May 26, 1965. This accident illustrates the difficulty of maneuvering hand-propelled lifeboats during an emergency and the delays involved in launching lifeboats using sheath, screw-type davits. The Safety Board does not believe that outdated lifesaving equipment should be permitted to remain in service indefinitely. The Coast Guard should establish a service life after which all lifesaving equipment on U.S. merchant vessels should be upgraded to meet current vessel standards.

Although the CAPRICORN was equipped with a Sperry Mark IV course recorder, the trackline of the CAPRICORN could not be accurately reconstructed by the Safety Board, by a Coast Guard course recorder expert, or by an expert hired by the owners of the

3/ "Marine Accident Report—Collision of Argentine Freighter M/V SANTA CRUZ II and U.S. Coast Guard Cutter CUYAHOGA in Chesapeake Bay at the mouth of the Potomac River, Maryland, October 28, 1978 (NTSB-MAR-79-3).

CAPRICORN. The course recorder was not accurately synchronized with either local time or G.m.t. nor were there any notations made explaining time discrepancies which made correlation with the time of collision difficult. Since the CAPRICORN was not maintaining a navigation plot and since there was no continuous recording of the tankship's rpm's, no correlation of ship's heading with distance traveled could be established. Further, since neither whistle signals, rudder orders, or bridge commands were recorded, the sequence of events could not be accurately determined.

In three previous reports, ^{4/} the Safety Board has proposed the installation of automatic recording devices on U.S. vessels and has recommended that the Coast Guard submit to the Inter-Governmental Maritime Consultative Organization (IMCO) an initiative to adopt a similar international requirement.

On February 14, 1978, the Safety Board recommended to the Coast Guard:

"Conduct a formal study in coordination with the Federal Maritime Administration and the shipping industry to determine a standard array of operational and audio data that should be recorded automatically with a view to establishing a requirement for the installation and operation of suitable equipment in U.S. vessels over 1,600 gross tons built after 1965, and to submitting an initiative to the Inter-Governmental Maritime Consultative Organization (IMCO) for the adoption of a similar international requirement. (Class III, Long Term Action) (M-78-2)"

On June 22, 1978, in reply to Safety Board recommendation M-78-2, the Coast Guard stated:

"The Coast Guard considers requirements for new equipment on board merchant vessels in the broadest context. While we attempt to improve safety and protect property and the environment, we must also consider other associated issues, including economic ones. The expected value of the information obtained from the suggested equipment and its impact on what we are trying to accomplish must be weighed against the cost. Because we do not have a firm assessment of utility versus cost, and because validity of survivor testimony has caused some difficulty, the Coast Guard is initiating a study of automatic recording equipment to answer the basic questions of whether the equipment is necessary and, if so, what level of sophistication is appropriate."

^{4/} "Marine Casualty Report--SS AFRICAN NEPTUNE Collision with the Sidney Lanier Bridge at Brunswick, Georgia, on November 7, 1972, with Loss of Life," (Report No. USCG/NTSB-MAR-74-4, released July 22, 1974, recommendation M-74-18). "Marine Casualty Report--SS C.V. SEAWITCH - SS ESSO BRUSSELS (Belgium), Collision and fire in New York Harbor, June 2, 1973, with Loss of Life," Report No. USCG/NTSB-MAR-75-6, released March 2, 1976, recommendation M-76-8). "Marine Accident Report--U.S. Tankship SS MARINE FLORIDIAN Collision with Benjamin Harrison Bridge, Hopewell, Virginia, February 24, 1977," (NTSB-MAR-78-1) recommendation M-78-2).

The Safety Board urges the Coast Guard to complete its study and reiterates Safety Recommendation M-76-8:

"The U.S. Coast Guard requires the installation of an automatic recording device to preserve vital navigational information aboard oceangoing tankships and containerships."

Therefore, in addition to reiterating recommendation M-79-8, the National Transportation Safety Board recommends that the U.S. Coast Guard:

Require all Coast Guard candidates for command or designation as qualified deck watch officer on Coast Guard cutters over 100 ft in length to pass an examination similar to that required for corresponding merchant marine licenses and to be reexamined on a periodic basis. (Class II, Priority Action) (M-80-64)

Require all Coast Guard candidates for command or designation as qualified deck watch officer on Coast Guard cutters over 100 ft in length to take a course in basic ship stability. (Class II, Priority Action) (M-80-65)

Require all Coast Guard candidates for designation as engineering officer on Coast Guard cutters over 100 ft in length to take a course in basic ship stability and demonstrate their knowledge of the stability and loading data for the cutter to which assigned. (Class II, Priority Action) (M-80-66)

Require all Coast Guard personnel designated as commanding officer of cutters over 100 ft in length to have a period of underway training before assuming command if they have been ashore for an extended period. (Class II, Priority Action) (M-80-67)

Require that the commanding officer of each Coast Guard cutter insure that all personnel are aware of the location of all lifesaving equipment, such as lifejackets, before getting underway. (Class II, Priority Action) (M-80-68)

Require that the commanding officer of each Coast Guard cutter insure that all personnel are aware of how liferafts are launched before getting underway. (Class II, Priority Action) (M-80-69)

Review current water survival training programs for Coast Guard personnel assigned to cutters, and, increase the effectiveness of these programs. (Class II, Priority Action) (M-80-70)

Require that commanding officers of Coast Guard cutters over 100 ft in length employ pilots when the commanding officer is unfamiliar with pilotage waters. (Class II, Priority Action) (M-80-71)

Require commanding officers of Coast Guard cutters over 100 ft in length to conform to local practice regarding exchange of information with local pilot associations regarding their movements in pilotage

waters, unless such exchange would not be in the interest of national security. (Class II, Priority Action) (M-80-72)

Require commanding officers of Coast Guard cutters over 100 ft in length to broadcast securite calls when getting underway to inform other vessels of their presence, unless such information would not be in the interest of the national security. (Class II, Priority Action) (M-80-73)

Modify the lights on Coast Guard buoytenders to comply as closely as possible to the regulations by moving the forward masthead light as far forward as possible and rescind or modify the exemption for Coast Guard buoy tenders in appendix B of 33 CFR Subchapter DD - Implementation and Interpretation of the 72 COLREGS (Class II, Priority Action) (M-80-74)

Prohibit ships from meeting in bends in Tampa Bay. (Class II, Priority Action) (M-80-75)

Emphasize to all commanding officers of Coast Guard cutters the important obligation to sound whistle signals in accordance with the appropriate rules of the road. (Class II, Priority Action) (M-80-76)

In conjunction with appropriate Federal and State agencies, relocate the intersection of the Intercoastal Waterway and the Southwest Channel and the main shipping channel in Tampa Bay away from buoy 2A. (Class II, Priority Action) (M-80-77)

Reevaluate the proposed level of vessel traffic service (VTS) in Tampa Bay and determine if a higher level of VTS is needed. (Class II, Priority Action) (M-80-78)

Require all U.S. merchant vessels over 1,600 gross tons to be equipped with at least one motor lifeboat on each side and gravity davits throughout. (Class II, Priority Action) (M-80-79)

Inventory the liferafts on all Coast Guard cutters and replace all Mark 3 liferafts with Coast Guard-approved liferafts immediately. (Class I, Urgent Action) (M-80-80)

Conduct a one-time inspection of all Mark-5 liferafts on Coast Guard cutters and replace or repair them as necessary. (Class II, Priority Action) (M-80-81)

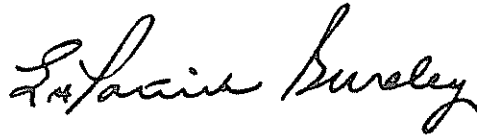
Examine the stowage location of liferafts on all Coast Guard cutters and insure that the location permits ready manual overboard launching. (Class II, Priority Action) (M-80-82)

Require that the hydrostatic releases on buoy tenders and other Coast Guard cutters which operate principally in coastal waters be set between 5 and 15 ft, as required by Coast Guard regulation for merchant vessels. (Class II, Priority Action) (M-80-83)

Provide all liferafts used on Coast Guard cutters with buoyant containers so that they will float to the surface if the cutter sinks. (Class II, Priority Action) (M-80-84)

Examine the reliability of automatic emergency lighting aboard Coast Guard cutters and make necessary modifications. (Class II, Priority Action) (M-80-85)

KING, Chairman, McADAMS, GOLDMAN, and BURSLEY, Members concurred in these recommendations. DRIVER, Vice Chairman did not participate.



JK By: James B. King
Chairman

