



National Transportation Safety Board

Washington, D. C. 20594

Safety Recommendation

Date: December 21, 1992

In Reply Refer To: M-92-59 through -61

Admiral Thomas Lynch, USN
 Superintendent
 U.S. Naval Academy
 Annapolis, Maryland 21412

About 0205¹ on April 21, 1991, in the Chesapeake Bay, off Cove Point, Maryland, the U.S. Naval Academy sailing vessel AMERICAN PROMISE and Barge E-2, which was being pushed ahead of the tug SUN COAST, collided. The sailing vessel had 12 crewmembers on board, the tug had 5 crewmembers, and the barge was unmanned. No serious injuries resulted from this accident. The sailing vessel sank, but was salvaged. The AMERICAN PROMISE sustained more than \$800,000 damage and the Barge E-2 sustained about \$10,000 damage. The SUN COAST was not damaged.²

As a result of its investigation of this accident, the Safety Board identified several safety issues, including the adequacy of the crews' collision avoidance actions, adequacy of look-outs aboard the SUN COAST, adequacy of radiotelephone communications procedures by the crew of the AMERICAN PROMISE, and effectiveness of the sailing vessel's radar reflector.

The commercial tug involved in this accident, the SUN COAST, was required to be equipped with a radiotelephone and comply with the provisions of the "Vessel Bridge-to-Bridge Radiotelephone Act" (the Act). The Act required that the SUN COAST be able to communicate on radiotelephone channel 13 in most parts of the United States, including the Chesapeake Bay. The SUN COAST was also required to monitor channel 16, the frequency for distress, safety, and calling. However, when the SUN COAST's relief master tried to contact the vessel detected on his radarscope (the AMERICAN PROMISE) using VHF-FM radiotelephone 16 and 13, he was unsuccessful.

¹All times are local based on a 24hour clock.

²For more detailed information read Marine Accident/Incident Summary Report--Collision of the U.S. Sailing Vessel AMERICAN PROMISE and the U.S. Freight Barge E-2 being pushed ahead of the U.S. Tug SUN COAST Off Cove Point, Chesapeake Bay, April 21, 1991 (NTSB/MAR-92/01/SUM).

The AMERICAN PROMISE also had radio equipment that afforded the sailing vessel the capability to monitor VHF-FM channels 16 and 13, but was operating in compliance with the Naval Academy's communications instructions for the training exercise. Only minutes before the collision did the watch captain adjust the VHF-FM radiotelephone from channel 82A to channel 12. In a later interview, the watch captain stated that she switched to channel 12 because from her past experience she "knew that was the net that most of the tugs communicated on. . . ."

The Academy's communication instructions for the AMERICAN PROMISE required that the vessel guard radiotelephone channel 82A³ as the primary frequency at all times during the overnight sailing trip, and 4145.0 KHz as the secondary frequency. The Assistant Officer In Charge (AOIC) testified that the radiotelephone had a scanning capability, but he did not know how the scanning feature functioned and did not use it during the trip.

The U.S. Navy communications doctrine⁴ specifies that "A continuous guard will be maintained on 156.65 MHz (VHF-FM channel 13) on vessels subject to the Act while operating inside the boundary lines of the United States." However, the AMERICAN PROMISE was not of a size or type included under the Act.⁵ The doctrine further states, "There is presently no requirement for U.S. Navy vessels to guard VHF radiotelephone (R/T) channels in international waters.⁶ However, a continuous guard on channel 16 (156.80 MHz) is highly recommended for establishing communications."

According to the U.S. Naval Academy Sailing Master, the academy communications curriculum for the Command and Seamanship Training Squadron (CSTS) includes the use of VHF radiotelephones, use of channels 12, 13, 16, 22, and 82A, and procedures to be used for intership communications.

Although U.S. Navy communications doctrine highly recommends that channel 16 be used to establish communications in international waters, the policy does not require that channel 16 be monitored in either international or domestic waters. Had the AMERICAN PROMISE monitored channel 16, or had the watch captain adjusted the radiotelephone to channel 16 rather than 12, communications could have been established with the SUN COAST, either directly or with assistance from the Coast Guard. The Safety Board concludes that had the AMERICAN PROMISE's crew monitored and used VHF-FM channel 16, they could have established timely communications with the SUN COAST's operator and exchanged information necessary to avoid the collision.

Prior to the accident, the AOIC was involved with clearing fouled sheets when the watch captain reported to him that a vessel (the SUN COAST tow) was

³Channel 82A, as assigned by the FCC, is intended for "U.S. Government Only."

⁴Basic Operational Communication Doctrine (U), NWP 4(Rev.B).

⁵No Federal regulation currently requires a sailing vessel the size of the AMERICAN PROMISE to be equipped with a radiotelephone. The FCC requires any nongovernment vessel having a voluntary radiotelephone station to keep a watch on VHF-FM radiotelephone channel 16 at all times that the station is in operation.

⁶Title 47, Section 352 exempts vessels owned and operated by the U.S. Government from radio equipment and operator requirements.

approaching. The AOIC directed the watch captain to go below, awaken the other officers, and get them topside. Rather than stop and assess the risk of collision, the AOIC continued for a few more seconds to try and clear the sheets so that the AMERICAN PROMISE could maneuver with sails. The Safety Board believes that the AOIC could have radioed the tow to alert the tug operator to the presence and heave-to condition of the AMERICAN PROMISE. The Safety Board concludes that had the AOIC on the AMERICAN PROMISE correctly assessed the risk of collision and communicated by radio, the SUN COAST's operator could have been alerted in time to maneuver to avoid the sailing vessel.

Research shows that small wooden boats, such as the AMERICAN PROMISE, are poor radar reflectors; they give off weak, fluctuating radar echoes that can be easily lost in sea clutter on a radarscope.⁷ The sailing vessel was equipped with a Firdell Blipper radar reflector, which should have enhanced its radar echo. As the vessels closed prior to the collision, the AMERICAN PROMISE's orientation to the SUN COAST was such that the sailing vessel's hull should have presented a good broadside radar-reflective surface. However, the relief master's description of the radarscope images that he observed indicated that the radar reflection from the AMERICAN PROMISE was poor.

In an independent study performed in the United Kingdom by the Admiralty Surface Weapons Establishment (Civil Marine Division), testers found that the Firdell Blipper did not return the same radar signal strength through 360 degrees. Tests indicated that the Firdell Blipper's signal was stronger in the 180- to 360-degree sector than in the 0- to 180-degree sector.⁸ Based on testimony describing the radar screen image, the Safety Board concludes that the Firdell Blipper on the AMERICAN PROMISE did not provide adequate reflectivity, or it may not have been effective in the sector where the SUN COAST was located.

Therefore, the National Transportation Safety Board recommends that the U.S. Naval Academy:

Require that naval academy vessels having VHF-FM radiotelephone equipment on board monitor VHF-FM channel 16 while underway. (Class II, Priority Action) (M-92-59)

Require that officers assigned to naval academy vessels promptly use the VHF-FM radiotelephone for making passing agreements when encountering other vessels. (Class II, Priority Action) (M-92-60)

Conduct tests to evaluate the adequacy of the radar reflectors being used aboard naval academy vessels and replace them if they are found to be inadequate. (Class II, Priority Action) (M-92-61)

Also, the Safety Board issued Safety Recommendation M-92-58 to the Secretary of the Navy; M-92-62 and -63 to the Robert Dann Company; and M-92-64 to the American Waterway Operators.

⁷Radar Instruction Handbook, U.S. Department of Commerce, Maritime Administration, 1974.

⁸Practical Sailor, Volume 14, Number 4, February 15, 1988.

The National Transportation Safety Board is an independent Federal agency with the statutory responsibility "to promote transportation safety by conducting independent accident investigations and by formulating safety improvement recommendations" (Public Law 93-633). The Safety Board is vitally interested in any action taken as a result of its safety recommendations. Therefore, it would appreciate a response from you regarding action taken or contemplated with respect to the recommendations in this letter. Please refer to Safety Recommendations M-92-59 through -61.

VOGT, Chairman, COUGHLIN, Vice Chairman, and LAUBER, HART, and HAMMERSCHMIDT, Members, concurred in these recommendations.



By: Carl W. Vogt
Chairman