



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: March 11, 2010

In reply refer to: M-10-1

The Honorable Julius Genachowski
Chairman
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating transportation accidents, determining their probable cause, and making recommendations to prevent similar accidents from occurring. We are providing the following information to urge you to take action on the safety recommendation in this letter. The NTSB is vitally interested in the recommendation because it is designed to save lives.

The recommendation addresses the following safety issue: transmission of vessel location data by emergency position-indicating radio beacons (EPIRBs). The safety issue arose during the investigation of the March 24, 2009, sinking of the uninspected fishing vessel *Lady Mary* in the Atlantic Ocean 65 miles southeast of Cape May, New Jersey. Six crewmembers died in the accident, including the master. One crewmember survived. The NTSB is participating in a formal U.S. Coast Guard Marine Board of Investigation concerning the accident. The NTSB regards the EPIRB issue as critical enough to issue a safety recommendation in advance of its final accident report.

The 71-foot-long *Lady Mary* had been fishing for scallops for 6 days and had 11,000 pounds of the shellfish on board when the accident occurred. At midnight on March 23, the survivor went to bed. He was awakened at 0500 by another crewmember, who told him the vessel was sinking. The survivor said that he went to the wheelhouse, donned his immersion suit, and jumped into the ocean. The *Lady Mary* sank shortly thereafter. The exact time of the sinking is unknown, but the last data from the *Lady Mary*'s vessel monitoring system were transmitted at 0510.¹

¹ The vessel monitoring system allows fishery regulators to track where vessels fish.

As required by Coast Guard regulations (46 *Code of Federal Regulations* [CFR] 25.26-20), the *Lady Mary* was equipped with a float-free, automatically activated EPIRB that could emit a 406-megahertz (MHz) distress signal.² At 0540 on March 24, an EPIRB signal, later identified as from the *Lady Mary*, was detected by a geostationary satellite, part of the search and rescue satellite-aided tracking (SARSAT) system operated by the National Oceanic and Atmospheric Administration (NOAA).³ A geostationary satellite, which orbits every 24 hours at about 22,000 miles, provides continuous coverage of a particular location and receives all information transmitted by an EPIRB.

However, a geostationary satellite cannot determine the position of the emergency radio beacon unless the EPIRB is equipped with an optional global positioning system (GPS) receiver. The *Lady Mary*'s EPIRB did not have a GPS receiver. In addition, the EPIRB had not been correctly registered in the database maintained by NOAA.⁴ The database contains unique identifying information, including vessel name, home port, and emergency contacts, for each EPIRB. Because the identification information for the *Lady Mary* was incorrectly registered, NOAA could not identify the sinking vessel for Coast Guard search and rescue personnel on the basis of the EPIRB signals transmitted by the vessel. (In fact, the vessel was identified from the name printed on the immersion suits of crewmembers pulled from the water, as described below.)

Low earth-orbiting (LEO) satellites, which travel from pole to pole at an altitude of 600 miles and pass over a given location every 60 to 75 minutes, can establish position information from EPIRBs whether or not they have a GPS receiver. An orbiting satellite had crossed the *Lady Mary*'s location shortly before it sank, and by the time of the accident, the satellite was out of range of the vessel's EPIRB signal. It was not until 0707 that a LEO satellite passed over the accident site, detected the *Lady Mary*'s EPIRB signal, and relayed the information to NOAA mission control in Suitland, Maryland. At 0715, NOAA pinpointed the vessel's location in the Atlantic Ocean at 38° 35' 42.8" north, 073° 41' 27.8" west.

Information from the LEO satellite was passed instantly, through a dedicated communications link, to the Coast Guard search and rescue coordination center (RCC) in Portsmouth, Virginia. At 0720, the RCC watchstander directed Air Station Atlantic City to dispatch a rescue helicopter to the accident site. A Coast Guard HH-65 helicopter was airborne at 0755 and arrived on scene at 0820. By that time, 2 1/2 to 3 hours had elapsed since the *Lady Mary* sank.

The helicopter crew rescued the survivor and retrieved from the water the bodies of the master and one deckhand, both wearing immersion suits. Other Coast Guard search assets were

² Uninspected commercial vessels 36 feet or more in length are required to carry automatically activated EPIRBs. Vessels under 36 feet are permitted to carry manually activated EPIRBs. In either case, only 406-MHz EPIRBs are allowed.

³ SARSAT is part of the international COSPAS-SARSAT system, a cooperative development of the United States, Russia, Canada, and France. COSPAS is a Russian acronym that translates as "Space System for the Search of Vessels in Distress."

⁴ Vessel owners in the United States are required by the Federal Communications Commission to send their identifying information to NOAA when they purchase a new or used EPIRB.

subsequently launched, but the remaining four crewmembers were not found. One crewmember's body was later discovered by divers inside the vessel's hull, one was brought up in a fisherman's net on May 19, and two remain missing and are presumed dead.

According to data from a buoy located 48 nautical miles from the accident site, at 0500, approximately the time of the sinking, the air temperature was 33° F and the water temperature was 40.6° F. The probability of survival for the two victims whose bodies were recovered by the rescue helicopter was calculated using the Cold Exposure Survival Model (CESM).⁵ For one victim, the CESM results showed a functional time (having the ability to move) of 1 hour and a survival time (staying alive) of 2.2 hours. For the other victim, functional time was 1.5 hours and survival time was 3.1 hours. The CESM calculations allowed for the victims' immersion suits.

The delay between the transmission of the first EPIRB signal and the arrival of rescuers was 2 1/2 hours. The two victims whose bodies were retrieved after the survivor was rescued had been in the cold water for 3 to 3 1/2 hours. If a rescue helicopter could have been launched after the first EPIRB signal was received at 0540, it would presumably have arrived on scene within an hour, given the launch history of the actual rescue helicopter. It is possible that the two victims found in the water wearing immersion suits would have still been alive when the rescuers arrived. Moreover, it is also possible that the two crewmembers whose bodies were never found either would have been found alive or their bodies would not have drifted too far from the scene to be found.

Two problems concerned the EPIRB carried on the *Lady Mary*. One was that it did not transmit position data. The other was that it was incorrectly registered. If the EPIRB had been equipped to broadcast the location of the *Lady Mary*, the geostationary satellite would have received the vessel's position, regardless of the incorrect identifying information in NOAA's database, and the location would have been instantly transmitted to the Coast Guard RCC. According to manufacturers, the GPS option adds about \$100 to the cost of a marine EPIRB.

The NTSB is convinced that if all EPIRBs transmitted position data, more lives could be saved. The NTSB therefore recommends that the Federal Communications Commission take the following action:

For commercial vessels required to carry 406-MHz emergency position-indicating radio beacons (EPIRBs), mandate that those EPIRBs broadcast vessel position data when activated. (M-10-1)

We urge you to take action on the safety recommendation in this letter. The NTSB would appreciate a response from you within 90 days addressing the actions you have taken or intend to take to implement our recommendation. In your response, please refer to Safety Recommendation M-10-1. If you would like to submit your response electronically rather than in hard copy, you may send it to the following e-mail address: correspondence@ntsb.gov. If your

⁵ The CESM, developed by Canada's Defence and Civil Institute for Environmental Medicine, predicts functional time and survival times for cold air exposure and cold water immersion based on cooling of the body's core and on an individual's physical characteristics, clothing, and weather and sea conditions. The model does not include the effects of dehydration, injuries, medications, drugs, alcohol, sleeplessness, or circadian hormonal cycles.

response includes attachments that exceed 5 megabytes, please e-mail us asking for instructions on how to use our secure mailbox procedures. To avoid confusion, please use only one method of submission (that is, do not submit both an electronic copy and a hard copy of the same response letter).

Chairman HERSMAN, Vice Chairman HART, and Member SUMWALT concurred in this recommendation.

[Original Signed]

By: Deborah A. P. Hersman
Chairman