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Log m-313

# National Transportation Safety Board

Washington, D.C. 20594  
Safety Recommendation

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**Date:** May 23, 1986  
**In reply refer to:** M-86-33 and -34

Admiral James S. Gracey  
Commandant  
United States Coast Guard  
Washington, D.C. 20593

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About 0324 on October 31, 1984, as the 660-foot-long United States-registered chemical tankship PUERTO RICAN was preparing to disembark a pilot about 8 miles west of the Golden Gate Bridge, San Francisco, California, an explosion occurred in the vicinity of the vessel's center void space No. 6. The main deck over the void and adjacent wing tanks was lifted up, blown forward, and landed inverted over center cargo tank Nos. 4 and 5 and their adjacent wing tanks. An intense fire erupted and burned out of control for several hours. A few hours after the explosion, the vessel was towed farther offshore in an effort to avoid polluting the coastline if the vessel sank. Several days later the vessel broke in two while in heavy seas, and the stern section sank. The bow section remained afloat and was later towed to a shipyard. The pilot and one crewmember were injured, and one crewmember is missing and presumed dead. The PUERTO RICAN was valued at \$35 million. 1/

The force of the explosion blew the pilot and third officer, who were standing on the main deck with a standby able bodied seaman (AB), over the port side of the vessel into the water close to the pilot boat SAN FRANCISCO, which was about amidships and 100 feet to the left of the PUERTO RICAN. Hearing people shouting in the water, the pilot boat crew readied its emergency man-overboard retrieval nets. By 0345, the pilot and third officer had been picked up from the water by the pilot boat net. The standby AB was not found.

The equipment used by the pilot boat SAN FRANCISCO to recover the third officer and the pilot was specially designed and installed for the purpose of rescuing people from the water. The equipment consisted of a net, a small block and tackle, and a boom. The net was secured to the deck railing. A plastic pipe was secured to the center and another to the outboard edge of the net, and both pipes were parallel to the boat. These pipes helped to keep the net open and flat. Lines were secured to the forward and after ends of the net just outboard of the pipe in the center of the net. The crew could use these lines to pull the person in the net closer to the boat. The boom was stowed on top of the pilothouse and could be rigged easily to extend over the side of the vessel. The block and tackle was secured to the outboard end of the boom and to a bridle attached to the pipe on the outboard edge of the net.

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1/ For more detailed information read Marine Accident Report--"Explosion and Fire Onboard U.S. Chemical Tankship PUERTO RICAN in the Pacific Ocean near San Francisco, California, October 31, 1984" (NTSB/MAR-86/05).

The net was operated by lowering its outboard edge over the side of the boat and into the water. The boat was maneuvered so that the net could go under the person in the water, and the block and tackle was used to raise the net. The tag lines could be used to assist in raising the net and in frapping the net into the railing, which was inboard from the side of the vessel.

Since the third officer and the pilot were both severely burned and the pilot had serious leg injuries, the rescue capabilities of the pilot boat SAN FRANCISCO played a vital role in their prompt rescue. The use of the recovery system nets enabled the pilot boat crew to minimize or eliminate several obstacles that otherwise would prevent a successful rescue in many cases. For example, the height of the deck of a vessel above the water often makes it impossible for a rescuer to reach over the side and grab the person being rescued. Since the deck at the stern of a vessel is usually the closest to the water, a rescue boat may be tempted to approach the person in the water stern-first. Such an approach is dangerous since the person being rescued may be drawn into the propeller by the propeller wash or otherwise injured by the propeller. A stern approach on some vessels, such as the pilot boat SAN FRANCISCO, is even more difficult since the operator cannot see the stern as he maneuvers the boat. The added weight of wet clothing on a person being pulled from the water adds to the difficulty of lifting a person aboard. The urgency of an expeditious rescue is intensified when the person being rescued is weak, injured, unconscious, or hypothermic and unable to assist in the rescue.

The recovery system nets aboard the pilot boat considerably reduced most of the rescue difficulties. The recovery nets were located on both sides of the pilot boat, which facilitated maneuvering the boat so the rescue net could be brought to the person being rescued. This system eliminated the danger of having to rescue the person near the propeller. Since the block and tackle and boom could be easily and quickly rigged, and the net was already stowed rolled up alongside the boat where it could be readily released, the delays in rescue were considerably reduced. An expeditious rescue was facilitated because the net could be maneuvered under the person in the water. The difficulty of lifting a person with the added weight of wet clothing can be facilitated by using the block and tackle.

The recovery net, which was designed specifically for use on the pilot boat SAN FRANCISCO, operates similarly to rescue equipment used on both land and water by law enforcement agencies, the United States Navy, and the United States Coast Guard. Several brands and sizes of such rescue equipment are available commercially as off-the-shelf products. However, despite their relatively low cost (generally under \$1,000), these devices do not appear to be in wide use in the marine industry.

Because of the important role that the recovery system on the pilot boat SAN FRANCISCO played in the rescue of the third officer and the pilot, and the many obstacles to a rapid rescue that use of the recovery system eliminated, the Safety Board encourages the use of this type of equipment on rescue or other type of watercraft.

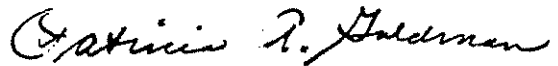
A float-free, self-releasing liferaft is designed to float free and release only after a vessel has sunk. However, there are instances, such as in this accident, where manual launching of the liferaft may be desired. The stern of the PUERTO RICAN had not sunk when the crew wanted the liferaft launched, so they manually lifted, with much difficulty, the 400-pound liferaft over the 42-inch-high railing. A removable section in the railing near the liferaft would have facilitated the launching.

Therefore, the National Transportation Safety Board recommends that the United States Coast Guard:

Publicize throughout the marine industry the availability and benefits of the use of rescue equipment similar to the recovery system used on the pilot boat SAN FRANCISCO. (Class II, Priority Action) (M-86-33)

Require liferafts to be installed so that unnecessary lifting, such as over railings, will not be required when they are manually launched. (Class II, Priority Action) (M-86-34)

GOLDMAN, Acting Chairman, and BURNETT, LAUBER, and NALL, Members, concurred in these recommendations.



By: Patricia A. Goldman  
Acting Chairman