

NATIONAL TRANSPORTATION SAFETY BOARD

Washington, D.C. 20594

Safety Recommendation



Date: January 21, 1994

In Reply Refer To: M-93-41 through -44

Admiral J. William Kime
Commandant
U.S. Coast Guard
Washington, D.C. 20593-0001

On December 21, 1992, the St. Vincent and the Grenadines-registered containership JURAJ DALMATINAC collided with the tank barge DUVAL 2, which was being pushed by the U.S. towboat FREMONT, in the Houston Ship Channel (HSC), Galveston Bay. The bow of the JURAJ DALMATINAC penetrated the side and bottom hull of the barge, which buckled and sank. Both cargo tanks were breached, and the barge's cargo of molten sulphur spilled into the waterway.¹

The National Transportation Safety Board determines that the probable cause of the collision between the JURAJ DALMATINAC and the FREMONT tow was the failure by the ship's pilots and master to effectively use all available equipment and personnel to evaluate the developing situation so that they could take timely action to avoid the collision. Contributing to the cause of the collision was the FREMONT's lack of a compass, which could have afforded the tow operator the capability to maintain his tow on station outside the navigation channel.

On the evening of the accident, the FREMONT operator intentionally stopped his tow outside the outbound starboard side of the HSC when he encountered shut-out fog. The Safety Board believes that while attempting to maintain station near buoy 51 in the dense fog, the FREMONT operator allowed his tow to become misaligned and to swing into the channel where it was struck by the passing JURAJ DALMATINAC.

¹For more detailed information, read Marine Accident Report-- Collision of the Towboat FREMONT and Tow with the St. Vincent and the Grenadines-Registered Containership JURAJ DALMATINAC, Houston Ship Channel, December 21, 1992 (NTSB/MAR-93/02).

The Safety Board found that several factors adversely affected the operator's ability to keep his tow aligned with the channel, the most important of which was the lack of a compass. Because fog was so dense, the *FREMONT* operator only had one visual reference, buoy 51, with which he could try to determine his location and keep his tow aligned to the channel. Visual reference to a single floating object was not sufficient to establish alignment. The towboat could pivot completely around the buoy to any heading and still keep the same relative position to the buoy. The operator needed at least one additional point of reference, such as another visual object, a radar reference, or a compass bearing in order to determine his alignment.

Had the *FREMONT* been equipped with a suitable magnetic compass, the operator would have been able to determine at a glance what his heading was and whether it had changed. If he had determined that the tow was misaligned, he could have used the compass to return it to its proper heading without having to rely on visual cues. The Safety Board concludes that if the *FREMONT* had been equipped with a properly functioning compass that the operator could have used to monitor the heading of the tow, this accident probably would have been avoided.

The Coast Guard does not currently require towboats and tugs less than 1,600 gross tons to have a compass. In 1974, the Coast Guard published an Advanced Notice of Proposed Rule Making proposing that all U.S. and foreign vessels more than 150 gross tons be required to be outfitted with a magnetic compass. In the resulting Notice of Proposed Rule Making, which was published in 1976, the Coast Guard deleted the compass requirement, terming it to be "overly burdensome and unrealistic for small vessels." The Coast Guard stated that further study was needed to determine appropriate navigation equipment requirements for smaller vessels. To date, these further studies have not been conducted. The Safety Board does not consider the comparatively small cost of a marine magnetic compass overly burdensome and unrealistic for small vessels, and believes that the safety benefits accrued by such vessels having compasses is more than justified.

The Safety Board believes that tugs and towboats, especially those operating in open waters, such as Galveston Bay, should be required to carry a magnetic compass. These tugs and towboats move barges carrying thousands of barrels of chemicals and petroleum products, which if spilled, can seriously threaten life and property. Such spills are usually caused by collisions and groundings. The Safety Board believes that the acquisition and use of a magnetic compass by towboat operators would reduce the threat of such accidents.

The Safety Board also determined that the *JURAJ DALMATINAC*'s bridge watch failed to use an important equipment resource, the Automatic Radar Plotting Aid (ARPA) radar, that would have afforded them the capability to determine the status of the *FREMONT* early enough to avoid the collision. If the bridge watch of the *JURAJ DALMATINAC* had used the ARPA tracking feature of the radar in this accident, the *FREMONT* could have been identified as a stationary target before the *JURAJ DALMATINAC* had travelled a mere two ship lengths. Given the information that the impending contact was stationary, the lead pilot would have realized that he not only had less time to take avoidance action, but also that the vessel he was approaching could not maneuver out of the way.

The Safety Board is aware of arguments that the ARPA radar is not really well suited for navigation in restricted waters, such as a narrow channel, because of the system's proximity alarm feature, which sounds an alarm on the navigation bridge whenever the radar detects any contact, including navigational aids, within a preset distance of the ship. The Safety Board notes that this feature can easily be turned off without affecting the operation of other ARPA features.

The Coast Guard issued regulations requiring that vessels of a certain tonnage and carrying certain dangerous cargo in U.S. navigable waters be fitted with ARPA radars following Presidential oil antipollution initiatives in 1977 and the Port and Tanker Safety Act of 1978. In the current regulations, the Coast Guard recognizes the ARPA as a time and labor saving device *that can contribute positively to protecting the environment, particularly in waters in which geographic or other conditions do not force vessels to make repeated course changes.* Current regulations do not require that any crewmember know how to use the ARPA radar. In this case, the JURAJ DALMATINAC's master stated that he knew how to use the ARPA radar; both pilots in this accident said that they did not know how to use it.

The Safety Board finds it incredible that regulations require that vessels be equipped with a proven, effective piece of collision-avoidance equipment yet do not require that anyone know how to use it. The Safety Board believes that navigation officers, including pilots, should know how to use state-of-the-art navigation equipment, especially the equipment on vessels that they may be required to navigate.

Therefore, the National Transportation Safety Board recommends that the U.S. Coast Guard:

Require that commercial tugs and towboats operating on the navigable waters of the United States be equipped with a suitable compass. (Class II, Priority Action) (M-93-41)

Require that all licensed deck officers who serve on board vessels equipped with Automatic Radar Plotting Aids be certified in their use. (Class II, Priority Action) (M-93-42)

Require that all First Class Pilots who serve on board vessels equipped with Automatic Radar Plotting Aids (ARPAs) become knowledgeable in the operation of ARPA systems. (Class II, Priority Action) (M-93-43)

Recommend to the International Maritime Organization's Committee for Standards of Training, Certification, and Watchkeeping that deck officers on vessels equipped with Automatic Radar Plotting Aids be required to be certified in their use. (Class II, Priority Action) (M-93-44)

Also, the Safety Board issued Safety Recommendations M-93-45 to the Gantt Marine Services, Inc.; M-93-46 to the American Waterway Operators, Inc.; M-93-47 and -48 to the Harris County Board of Pilot Commissioners; and M-93-49 to the American Pilots' Association. If you need additional information, you may call (202) 382-6860.

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



By: Carl W. Vogt
Chairman