

NATIONAL TRANSPORTATION SAFETY BOARD

Washington, D.C. 20594



Safety Recommendation

Date: January 21, 1994

In Reply Refer To: M-93-47 and -48

Mr. Ned Holmes
Chairman
Harris County Board of Pilot Commissioners
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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 determined 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 personnel and equipment to evaluate the developing situation so that they could take timely action to avoid the collision.

When two pilots are employed in the navigation bridge, as was the case on the JURAJ DALMATINAC, interaction among bridge personnel becomes more complicated. In this accident, prior to the collision, the assisting pilot, the master, and the lead pilot each had a different perspective of the navigation situation that they failed to adequately confirm or communicate to other members of the bridge watch.

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 assisting pilot first noticed the radar contact (the FREMONT tow) when it was at a range of about 1-3/4 miles. He assumed the contact was making way and did not plot the contact to determine its speed. The master became aware of the radar contact when it was about 1 1/2 miles away and soon recognized that it was stationary. The lead pilot did not become aware of the tow on radar until it was about 3/4 mile away and continued to believe that it was making way until shortly before the containership struck the barge.

This accident demonstrates that the roles of the individuals who are responsible for the safe navigation of vessels need to be clearly defined. The pilot who was serving in an assisting capacity at the time of collision testified that the roles of the two pilots "are not spelled out anywhere." Both pilots involved in this accident described the working arrangement as an informal one in which the assisting pilot merely responds to the lead pilot's specific requests and does not have any specific duties or predesignated tasks other than checking the ship's side clearance as it passes piers and other structures in the waterway.

The Safety Board believes that an unstructured, essentially reactive mode of delegating and coordinating task assignments hampers a pilot's ability to maintain proactive situational awareness. If the lead pilot had asked that the assisting pilot, who was a certified radar observer, plot all radar contacts encountered in the channel, the lead pilot would have learned earlier that the FREMONT tow was stationary. However, the lead pilot did not request that the assisting pilot perform such a task, and the assisting pilot did not take the initiative to do so on his own.

The Houston Pilots routinely assigns two pilots to vessels such as the JURAJ DALMATINAC because their structural configurations obstruct visibility to the extent that the capabilities of a single pilot to maneuver the vessel are exceeded. The association recognizes the potential hazard to safety and has addressed it by providing additional manpower. The Safety Board acknowledges the association's proactive effort. However, the Board believes that the association's solution is inadequate because pilots do not have guidelines to follow when executing a two-pilot scheme. The Safety Board concludes that the Harris County Board of Pilot Commissioners should prepare guidelines for members of the Houston Pilots to use when they are working in a two-pilot scheme.

During its investigation of this accident, the Safety Board also determined that the JURAJ DALMATINAC bridge watch failed to use an important equipment resource, the Automatic Radar Plotting Aid (ARPA), that would have enabled them to determine the status of the FREMONT tow early enough to avoid the collision. This computer-based electronic device, which processes radar signals and displays selected navigational information, has a tracking feature that provides digital readouts of a target's true course and speed, its closest point of approach (CPA), and length of time to CPA. Moreover, the ARPA radar system continuously updates the status of a contact while tracking it.

The Safety Board believes that if the bridge watch of the JURAJ DALMATINAC had used the ARPA tracking feature of the radar in this accident, the lead pilot would have realized that he not only had less time to take action to avoid a stationary tow, 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.

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. Current Federal regulations do not require that any crewmember know how to use the ARPA radar. 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 Harris County Board of Pilot Commissioners:


Establish written recommended guidelines for members of the Houston Pilots to follow when they are working in a two-pilot scheme. (Class II, Priority Action) (M-93-47)

Encourage members of the Houston Pilots to become knowledgeable in the operation of Automatic Radar Plotting Aids. (Class II, Priority Action) (M-93-48)

Also, the Safety Board issued Safety Recommendations M-93-41 through 44 to the U.S. Coast Guard; M-93-45 to the Gantt Marine Services, Inc.; M-93-46 to the American Waterway Operators, Inc.; and M-93-49 to the American Pilots' Association. If you need additional information, you may call (202) 382-6860.

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-93-47 and -48 in your reply.

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

By: 
Carl W. Vogt
Chairman