



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Log M-358C

Date: January 5, 1990

In reply refer to: M-89-158 and -159

Captain Joe William Warfield
Presiding Officer
Houston Pilots
8150 South Loop East
Houston, Texas 77017

On Thursday, November 10, 1988, at 0715 central standard time, the 650-foot-long Swedish auto carrier FIGARO collided with the 921-foot-long French tank vessel CAMARGUE while both vessels were inbound in the entrance channel to Galveston Bay, Texas. The CAMARGUE was partially loaded with crude oil and was bound for Texas City. The FIGARO, partially loaded with various types of vehicles, was bound for the Barbours Cut container terminal, located at the head of Galveston Bay.¹

After the Houston pilot boarded the FIGARO at 0700 to pilot the vessel into Galveston Bay and the Houston Ship Channel, he again observed the larger inbound vessel approximately 1/2 mile ahead. He ordered full ahead on the engine and selected a course of 300°--a course that would keep the FIGARO outside the northern edge of the Galveston Bay Entrance Channel as the vessel approached the No. 4 buoy. Two minutes after boarding the FIGARO (0702), the pilot radioed the tankship CAMARGUE and requested permission to overtake the CAMARGUE on one whistle (its starboard side). At that time, he informed the CAMARGUE that the FIGARO would enter the channel at the No. 4 buoy. Since there was sufficient depth for the FIGARO to remain outside the channel, the pilot believed that he could overtake and pass the CAMARGUE and enter the channel southeast of buoy No. 4. The pilot of the FIGARO told the master that he had routinely overtaken and passed larger vessels in the channel and that the "faster ships always go ahead." The pilot did not consider remaining astern of the CAMARGUE even though he knew that the tankship was bound for Texas City and would soon exit the Houston channel. By remaining astern of the CAMARGUE until that vessel exited the Houston Channel, the FIGARO would only have been delayed about 20 minutes. Furthermore, the pilot did not inquire about the time the vessel was

¹For more detailed information, read Marine Accident Report--"Collision Between the Swedish Auto Carrier FIGARO and the French Tankship CAMARGUE Galveston Bay Entrance, November 10, 1988" (NTSB/MAR-89/07).

scheduled for work at the terminal. The FIGARO was not scheduled for work at the terminal until 1300; consequently, there was more than sufficient time for the FIGARO to reach its terminal without overtaking vessels in the channel. The actions of the pilot during the first few minutes aboard the FIGARO suggest that he was determined to overtake the CAMARGUE and did not consider other factors in his decision.

At approximately 0708, the FIGARO was abeam of the seabuoy and the speed of the auto carrier had increased to about 15 knots. The course recorder trace of the FIGARO indicates that at approximately the same time, or shortly before 0708, the pilot altered the vessel's course slowly to port in 2⁰ increments until 0710 at which time the vessel was steadied on a heading of 294⁰; this heading was maintained for the next 1 1/2 minutes until 0711:30, or 3.5 minutes before impact. The pilot's decision to alter the FIGARO's course slowly to port is consistent with his intent to pass the CAMARGUE and enter the channel before reaching the No. 4 buoy. Furthermore, the pilot's decision to alter the course to port and pass between the buoy and the tankship indicates that he still had no concern about the overtaking maneuver.

The course recorder trace indicates that shortly after the swing to port was momentarily slowed at 0713:30, the vessel began a more rapid turn to port. The Safety Board believes that although the helmsman was applying increasing right rudder to comply with the pilot's order of a course change to starboard, the effects of the sloped bottom and the nonuniform current flow were beginning to take place as the vessel headed into the channel. Results of a study by Dr. Haruzo Eda, indicate the effects of hydrodynamic forces could have occurred between 1 and 1 1/2 minutes before impact. As the vessel moved forward and to the left, these effects and the hydrodynamic forces of interaction with the CAMARGUE rapidly increased causing the FIGARO to continue to turn to the left. As these forces increased, the ability of the right rudder to overcome the forces diminished and eventually was eliminated.

The master and the pilot of the FIGARO, both with many years of shiphandling experience, had probably experienced the effects of hydrodynamic forces such as bank suction, slope bottom, interaction, and nonuniform current flow at various times during their careers. Furthermore, most pilots and shipmasters, as a consequence of many years of experience, are aware, to a greater or lesser extent, of these effects in maneuvering vessels, particularly in an overtaking situation. However, the onset and magnitude of these forces depends on many parameters including ship sizes and shapes; separation distances; vessel speeds; water depths and bottom contours; and current direction, speed, and gradient. Therefore, it is very difficult to predict the onset and magnitude of these forces, particularly in the confines of a channel such as the Galveston Bay Entrance Channel.

By restricting the movement of large vessels (120,000 dwt or over) to daylight hours with two pilots aboard, the Galveston-Texas City pilots acknowledged that the larger vessels pose an additional risk when transiting the area. Despite the restriction by the Galveston-Texas City pilots on the movement of these larger vessels in the channels, the Houston pilot onboard

the FIGARO continued to overtake and pass large vessels on a routine basis. The Safety Board believes that shiphandlers should not attempt to overtake large draft vessels in the entrance channels to Galveston Bay because it is difficult to predict the onset of the various hydrodynamic forces. Accordingly, the Safety Board urges the Coast Guard to prohibit vessels over 120,000 dwt to overtake, or be overtaken by, other deep draft oceangoing vessels in the entrance channels to Galveston Bay.

Ongoing training for ship pilots has in the last several years been recognized by the maritime community as a necessary adjunct to the skills already possessed by experienced pilots. When the Amoco Corporation scheduled a new larger class of vessel to call at its Texas City terminal, the company realized that the safe handling of its vessels required additional training of the local pilots. Since the Galveston-Texas City pilots had no means to provide this training to its pilots, Amoco made it available on a limited basis.

Advanced technological training aids can simulate the performance characteristics of a number of vessel types in many waterways and harbors. A number of schools currently provide shiphandling simulators which can be used to supplement on-the-job training. These simulators can replicate wind, hydrodynamic effects and other external forces such as tugs, thrusters, anchors, lock walls, and mooring lines which are prevalent during docking maneuvers. While the Safety Board recognizes that it is difficult to predict the onset and magnitude of hydrodynamic forces that occur in an actual situation, in support of ongoing training for pilots (and shipmasters), the Safety Board believes that the Galveston-Texas City Pilots and the Houston Pilots should encourage their members to enhance their piloting and shiphandling skills by taking simulator courses in advanced shiphandling.

Therefore, the National Transportation Safety Board recommends that the Houston Pilots:

Recommend to the members of your association to avoid overtaking deep draft vessels of 120,000 dwt or greater when piloting other oceangoing vessels in the entrance channels to Galveston Bay. (Class II, Priority Action) (M-89-158)

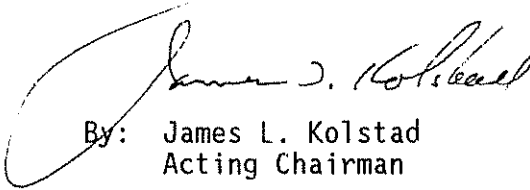
Encourage your members to enhance their piloting and shiphandling skills by attending advanced training courses that are currently available. (Class II, Priority Action) (M-89-159)

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-89-158 and -159 in your reply.

Also, the Safety Board issued Safety Recommendations M-89-153 through -155 to the U.S. Coast Guard; M-89-156 to the State of Texas; M-89-157 to the Port of Houston Authority Pilot Board; and M-89-160 and -161 to the Galveston-Texas City Pilots.

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



By: James L. Kolstad
Acting Chairman