National Transportation Safety Board

Washington, DC 20594

Safety Recommendation

Date: November 4, 2011

In reply refer to: M-11-17

William F. Scott
Chairman
Jefferson and Orange County Board
of Pilot Commissioners
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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 your organization to take action on the safety recommendation in this letter. The NTSB is vitally interested in this recommendation because it is designed to prevent accidents and save lives. Information supporting the recommendation is discussed below. 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.

Background

The recommendation is derived from the NTSB's investigation of the January 23, 2010, accident in which the 810-foot-long oil tankship *Eagle Otome* collided with the 597-foot-long general cargo vessel *Gull Arrow* at the Port of Port Arthur, Texas. A 297-foot-long barge, the *Kirby 30406*, which was being pushed by the towboat *Dixie Vengeance*, subsequently collided with the *Eagle Otome*. The tankship was inbound in the Sabine-Neches Canal with a load of crude oil en route to an ExxonMobil facility in Beaumont, Texas. Two pilots were on board, as called for by local waterway protocol. When the *Eagle Otome* approached the Port of Port Arthur, it experienced several unintended heading diversions culminating in the *Eagle Otome* striking the *Gull Arrow*, which was berthed at the port unloading cargo.

A short distance upriver from the collision site, the *Dixie Vengeance* was outbound with two barges. The towboat master saw the *Eagle Otome* move toward his side of the canal, and he put his engines full astern but could not avoid the subsequent collision. The *Kirby 30406*, which was the forward barge pushed by the *Dixie Vengeance*, collided with the *Eagle Otome* and breached the tankship's starboard ballast tank and the No. 1 center cargo tank a few feet above the waterline. As a result of the breach, 862,344 gallons of oil were released from the cargo

tank, and an estimated 462,000 gallons of that amount spilled into the water. The three vessels remained together in the center of the canal while pollution response procedures were initiated. No crewmember on board any of the three vessels was injured.[1]

The National Transportation Safety Board determines that the probable cause of the collision of tankship *Eagle Otome* with cargo vessel *Gull Arrow* and the subsequent collision with the *Dixie Vengeance* tow was the failure of the first pilot, who had navigational control of the *Eagle Otome,* to correct the sheering motions that began as a result of the late initiation of a turn at a mild bend in the waterway. Contributing to the accident was the first pilot's fatigue, caused by his untreated obstructive sleep apnea and his work schedule, which did not permit adequate sleep; his distraction from conducting a radio call, which the second pilot should have conducted in accordance with guidelines; and the lack of effective bridge resource management by both pilots. Also contributing was the lack of oversight by the Jefferson and Orange County Board of Pilot Commissioners.

Pilot Oversight and Mariner Fatigue

According to the Texas Transportation Code, Section 69.015, the Jefferson and Orange County Board of Pilot Commissioners ("the commission") has exclusive jurisdiction over pilot services provided in Jefferson and Orange counties, including stops and landing places on navigable streams fully or partially located in the commission's jurisdiction.

In the postaccident Marine Board of Investigation hearing that the Coast Guard convened March 9–11, 2010, it became clear that the commission was not aware of the piloting guidelines that the Sabine Pilots Association had developed for two-pilot operations on the Sabine-Neches Waterway until the guidelines were introduced as evidence during the hearing. Further, although the commission had a standing invitation to attend the meetings held by the Southeast Texas Waterways Advisory Council (SETWAC), the commission had not participated in the meetings since at least 2001.

As a result of its investigation, the NTSB determined that the first pilot, who had the conn of the *Eagle Otome* leading up to the accident, was fatigued because of his untreated obstructive sleep apnea and his work schedule, which did not prevent extended hours of wakefulness and disruption to circadian rhythms. For at least 3 days during the week before the accident, the first pilot had maintained a day-awake, night-asleep work schedule. However, in the 1–2 days before the accident, he worked two consecutive piloting assignments that resulted in his being awake for at least 27 hours straight. He subsequently rested during daytime hours, which was contrary to the circadian rhythms that he had been maintaining.

The Sabine Pilots Association had a rest period policy in place; however, because it did not consider circadian rhythms nor prevent extended wakefulness, the policy was ineffective in preventing fatigue. Further, no regulatory body with pilot oversight authority had rules or regulations in place that could have precluded the adverse effects of fatigue-inducing scheduling

[1] For more information, see *Collision of Tankship* Eagle Otome *with Cargo Vessel* Gull Arrow *and Subsequent Collision with the* Dixie Vengeance *Tow, Sabine-Neches Canal, Port Arthur, Texas, January 23, 2010*. Marine Accident Report NTSB/MAR-11/04 (Washington, DC: National Transportation Safety Board, 2011), available at http://www.ntsb.gov.

practices from impairing the very cognitive skills that the pilots needed most to effectively navigate vessels through the Sabine-Neches Canal.

The Jefferson and Orange County Board of Pilot Commissioners asserted that its authority only extended to pilot licensing and pilot training. The commission's lack of scheduling rules created a void that permitted fatigued pilots to perform safety-critical duties in a busy, challenging waterway. Such a void in a complex transportation system poses a threat to property, ecosystems, and the lives of those in and near the waterway. Researchers have suggested criteria—such as time of day, circadian rhythms, duration of opportunity for sleep, sleep quality, predictability, sleep debt, time on task, and short breaks—to evaluate the efficacy of hours of service rules.[2] Although it can be argued that not all of the criteria are appropriate to a fatigue mitigation and prevention regulatory scheme, these criteria can be used as a standard of comparison against which regulations can be assessed, and most hours of service rules in place today meet at least several of these criteria. However, because no regulatory body had established effective hours of service rules that Sabine pilots were required to follow, the pilots were at risk for fatigue in each of the suggested criteria, highlighting the safety hazard posed by the regulatory vacuum that existed. Without effective hours of service rules and education in fatigue management, there was little to mitigate the effects of fatigue among the Sabine pilots except for Coast Guard medical oversight of mariner sleep disorders. Therefore, the NTSB concluded that the absence of an effective fatigue mitigation and prevention program among the pilots operating under the authority of the Jefferson and Orange County Board of Pilot Commissioners created a threat to the safety of the waterway, its users, and those nearby.

The statement by the Jefferson and Orange County Board of Pilot Commissioners—that it deals primarily with pilot training and pilot re-commissioning—appears to meet the letter, but not the spirit, of its regulatory responsibilities. As Kirchner and Diamond note, "State pilotage systems not only license pilots and oversee their professional activities (as the Coast Guard does for Federal pilots), they also seek to ensure that each port in the state has a reliable, expert pilot operation … ."[3] The commission's charter calls for it to "adopt rules and issue orders to pilots and vessels when necessary to secure efficient pilot services," a responsibility that gives the commission the authority to regulate the safety of pilot actions and performance. Pilot oversight organizations should use the power that the governors of their states and territories have given them to fully regulate practices that enhance the safety of their waterways. To enhance safety in the Sabine-Neches Waterway, the commission could have been aware of and enforced the intent of the two-pilot guidelines that the Sabine Pilots Association developed for piloting large vessels through the Sabine-Neches Waterway and played an active role in SETWAC. The commission could also have implemented a fatigue mitigation and prevention program to educate pilots about fatigue and require that fatigue-preventing hours of service rules govern pilot schedules. The commission's lack of familiarity with the Sabine Pilots Association's two-pilot guidelines further illustrates that the commission did not take an active role to ensure waterway safety through

[2] C.B. Jones and others, "Working Hours Regulations and Fatigue in Transportation: A Comparative Analysis," *Safety Science*, vol. 43 (2005), pp. 225–252.

[3] P.G Kirchner and C.L. Diamond, "Unique Institutions, Indispensible Cogs, and Hoary Figures: Understanding Pilotage Regulation in the United States," *University of San Francisco Maritime Law Journal*, vol. 23 (2010), pp. 168–205.

establishing safety rules and piloting oversight. The NTSB therefore concluded that the Jefferson and Orange County Board of Pilot Commissioners should have more fully exercised its authority over pilot operations on the Sabine-Neches Waterway by becoming aware of and enforcing the Sabine Pilots Association's two-pilot guidelines and implementing a fatigue mitigation and prevention program among the Sabine pilots.

Therefore, as a result of this accident investigation, the National Transportation Safety Board makes the following recommendation to the Jefferson and Orange County Board of Pilot Commissioners:

> Develop and implement (1) a system to monitor your state-licensed pilots so that your commission can verify the execution of policies, procedures, and/or guidelines necessary for safe navigation, and (2) a fatigue mitigation and prevention program among the Sabine pilots. (M-11-17)

The NTSB also issued safety recommendations to the U.S. Coast Guard, the Sabine Pilots Association, the American Pilots' Association, and governors of states and territories in which state and local pilots operate.

In response to the recommendation in this letter, please refer to Safety Recommendation M-11-17. 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 response includes attachments that exceed 5 megabytes, please e-mail us asking for instructions on how to use our Tumbleweed secure mailbox. 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 Members SUMWALT, ROSEKIND, and WEENER concurred in this recommendation.

[Original Signed]

By: Deborah A.P. Hersman
Chairman