

Log #411D



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: JUN 26 1997

In Reply Refer To: M-97-51

Captain Edward Silva
President
San Diego Bay Pilots Association, Inc.
10th Avenue Terminal
627 Switzer Street
San Diego, California 92101

On the evening of June 22, 1995, the Liberian-registered passenger vessel *Star Princess*, carrying 1,568 passengers and 639 crewmembers, was en route from Skagway to Juneau, Alaska, via the Lynn Canal under the direction of a southeast Alaska pilot. At 0142 on June 23, the *Star Princess* grounded on the submerged Poundstone Rock in Lynn Canal, about 21 miles north of Juneau. The vessel's bottom sustained significant damage on the starboard side, including the rupture of oil tanks, which resulted in the loss of at least 5 gallons of oil. The vessel was piloted to safe anchorage at Auke Bay, Alaska, (about 10 miles north of Juneau) to assess damage and debark passengers. No injuries or deaths resulted from this accident. The total cost resulting from required repairs and the delay before the vessel could return to service was estimated at \$27.16 million.¹

The National Transportation Safety Board determined that the probable cause of the grounding of the *Star Princess* was the pilot's poor performance, which may have been exacerbated by chronic fatigue caused by sleep apnea. Contributing to the accident was the fact that the pilot and the watch officers did not practice bridge resource management.

The Safety Board examined the possibility that fatigue, associated with previously undiagnosed obstructive sleep apnea (OSA), might have impaired the pilot's ability to safely navigate the *Star Princess* on the morning of the grounding. It was medically determined after the accident that the pilot suffered from OSA, a sleeping disorder. OSA can cause an individual

¹For further information, read Marine Accident Report -- *Grounding of the Liberian Passenger Ship Star Princess on Poundstone Rock, Lynn Canal, Alaska, June 23, 1995* (NTSB/MAR-97/02).

to awaken repeatedly throughout a sleep period, often without being aware of having done so. This situation may have prevented the pilot's obtaining restful sleep, creating circumstances that may have caused fatigue.

The fact that the pilot suffered from a sleep disorder would likely affect any fatigue-based performance criteria. One sleep researcher found that the pilot fell asleep in an average of about 5 minutes when placed in a dark, quiet room. An individual who is not sleep deprived will, on average, require about 20 minutes to fall asleep under similar circumstances. Thus the less time a person needs to fall asleep from the 20-minute average, the more the individual is sleep deprived and in need of rest. In the case of the pilot, during postaccident testing sessions he fell asleep in about one-quarter the time required for rested individuals. OSA is a chronic disorder that is often present for years or decades prior to diagnosis. Since daytime sleepiness is almost uniformly present in patients who suffer from OSA, chronic fatigue is one of the hallmarks of the disorder. Therefore, the Safety Board concluded that the pilot was chronically fatigued as a result of OSA.

The pilot claimed that because he was unsure of what course the *Fair Princess* (another vessel in the vicinity) would take, he paid careful attention to the vessel. If such was the case, the pilot could have concentrated on the *Fair Princess* to the exclusion of maintaining a safe distance from Poundstone Rock. Focus on a particular stimulus to the exclusion of other critical data can be one effect of fatigue on performance. The pilot also stated that when he first felt the ship shudder upon grounding, he was not immediately sure as to the nature of the problem. Only when he moved to the starboard bridge wing and observed the buoy traveling down that side of the vessel did the pilot realize that he had struck Poundstone Rock. Not only should the pilot have been aware of the location of the buoy from transiting the area on previous occasions, he had for several miles been observing the buoy marking the rock. Under normal conditions, such an experienced pilot should have immediately deduced that he had not safely passed Poundstone Rock when he felt the vessel shudder. A fatigued pilot, however, might not be sufficiently alert to realize that he had grounded. Because the available data suggest that the pilot's performance was degraded consistent with the effects of fatigue, the Safety Board concluded that fatigue may have reduced the pilot's ability to appropriately assess and respond to the developing situation.

Therefore, the National Transportation Safety Board issues the following safety recommendation to the San Diego Bay Pilots Association, Inc.:

Advise pilots about the effect of fatigue on performance and about sleeping disorders such as sleep apnea. (M-97-51)

The Safety Board also issued Safety Recommendations M-97-41 through -43 to the U.S. Coast Guard, M-97-44 and -45 to the State pilot commissions, M-97-46 and -47 to the Alaska Board of Marine Pilots, M-97-48 to the Southeastern Alaska Pilots Association, M-97-49 and -50 to the Alaska Coastwise Pilot Association, M-97-52 and -53 to Princess Cruise Lines, M-97-54 and -55 to the American Pilots' Association, and M-97-56 and -57 to the International Council of Cruise Lines.

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 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 recommendation in this letter. Please refer to Safety Recommendation M-97-51. If you need additional information, you may call (202) 314-6458.

Chairman HALL, Vice Chairman FRANCIS, and Members HAMMERSCHMIDT, GOGLIA, and BLACK concurred in this recommendation.

By: 
Jim Hall
Chairman