

Tog M-262

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: December 18, 1984

Forwarded to:

Mr. William E. Troy
President
Pacific Western Lines
5225 East Marginal Way, South
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SAFETY RECOMMENDATION(S)

M-84-44 thru - 47

About 1530 P.d.t. on October 27, 1983, the U.S. ocean towing vessel EAGLE, with two barges in tow, was proceeding on a southeasterly course en route from Anchorage, Alaska, to Seattle, Washington. When the EAGLE was about 25 miles west-southwest of Cape Fairweather, Alaska, it suddenly heeled about 50° to starboard and sank within a few minutes. At the time, a severe storm was sweeping through the area, and the vessel and tow were encountering 50- to 60-knot winds and 25- to 35-foot seas from the southeast. Of the nine persons on board the EAGLE, only one person survived. The estimated value of the EAGLE was \$2 million. 1/

The suddenness of the 50° heel to starboard experienced by the EAGLE about 1530 on October 27 strongly indicates that the tug was tripped by its towing hawser tending sharply to starboard, and suggests that the fairlead system which guided the towing hawser over the stern of the vessel failed in some manner, allowing the direction of the tension force exerted by the towing hawser to be transferred from astern to starboard. The fact that the vessel continued to heel, although a few times it appeared that the vessel might right itself, suggests that the towing hawser continued to exert a continuous overturning force on the vessel's starboard side.

A failure of the holddown device would have allowed the towing hawser to come out of the towing pins. Failures of holddown devices are not uncommon on U.S. ocean towing vessels. In the case of the EAGLE, the padeyes connecting the holddown device to the deck had failed on several occasions and stronger padeyes had been installed. Installation of stronger padeyes should have reduced the possibility of future failures; however, deck fittings could have failed due to improper welding, metal fatigue, and high stress. Also, other parts of the holddown device, such as the chain, shackles, and roller, were subjected to stress and fatigue and, therefore, could have failed. The seas at the time of the accident, which frequently reached 50 feet in height, could have caused the vessel to pitch considerably, occasionally lowering the vessel's stern sufficiently to place a very high stress on the holddown device. A steering failure caused by a loss of electrical power or a failure of the steering gear itself could have caused the vessel to

1/ Marine Accident Report--"Capsizing and Sinking of the U.S. Ocean Towing Vessel M/V Eagle in the Gulf of Alaska, October 27, 1983" (NTSB/MAR-84-1).

yaw excessively, thereby placing a severe stress on the holddown device. The highest stress on the holddown device probably would have occurred if the vessel had yawed excessively while simultaneously rolling. Had the holddown device failed at such a time, the towing hawser almost instantly would have transmitted a strong overturning force and the vessel would have heeled severely or capsized.

A failure of one or both towing pins to remain upright would have resulted in very high stress being placed on the holddown device as the vessel yawed, which probably would have caused some part of the device to break. Because the pneumatic rams which raised and lowered the pins were not designed to keep the pins upright under conditions of loading that the towing hawser might impart, it was essential that the brace or locking bar be securely fastened. A failure to properly fasten the brace, such as a failure to install the cotter key or bolt, could have resulted in the brace becoming disabled, thereby allowing the pin to be depressed by the towing hawser in the event the vessel yawed excessively.

Once the tension of the towing hawser shifted from astern to starboard, it would have been essential for the navigation watch in the pilothouse to release immediately the brake on the towing winch, to allow the towing hawser to run out. However this would not have been an easy task to accomplish during a severe storm and with the vessel being heeled to 50° or more. Once the vessel was heeled beyond 50°, it would have been exceptionally difficult for the crew to reach the winch controls, and such a heel would have made operation of the mechanical override nearly impossible. If the EAGLE had been equipped with the capability to release the brake on the towing winch remotely from the pilothouse, at the first indication of a serious heel, tension on the towing hawser could have been released immediately.

Stability calculations conducted by the U. S. Coast Guard (USCG) revealed that the order of taking oil from the fuel tanks resulted in raising the vessel's center of gravity and the creation of free surface in some tanks, both of which reduced the vessel's ability to withstand a heeling moment. These calculations also revealed that the EAGLE, as loaded at the time of the accident, failed to meet USCG stability standards. USCG calculations also determined that if the fuel oil on board the vessel at the time of the accident had been in tanks having the lowest centers of gravity, the EAGLE would have exceeded all USCG stability standards. However, no written instructions on the sequence of drawing fuel oil from various tanks in order to meet USCG stability standards had been required by the USCG, and none were on board the vessel. In the absence of written instructions, the chief engineer was guided primarily by verbal instructions from the master--to keep the bow of the vessel trimmed higher than the stern and to keep the vessel from listing. Neither the chief engineer nor the master apparently were aware that the stability of the vessel was decreased substantially by the sequence followed in drawing oil from the fuel tanks. Similarly, the masters and chief engineers of other vessels operated by Pacific Western Lines, as well as other operators, may be in need of improved procedures and written guidance regarding the sequence of drawing fuel from various tanks in order to provide optimum stability.

The use of an exposure suit enabled the chief engineer to remain afloat and survive for about 2 hours despite the low water temperature of about 48° F. The three other persons on the bridge probably would have survived the accident if they had been able to don exposure suits. However, because of the severe heel, it was not possible for the persons on the bridge to obtain the exposure suits which were stored in their living quarters. This problem could be resolved by storing an adequate number of exposure suits on the bridge for watchstanders on ocean towing vessels operating in the Alaska towing industry.

The sounding of the general alarm might have been sufficient to arouse some of the crew in time for them to avoid being trapped below decks. A review of the EAGLE's logs revealed that abandon ship drills were not being held. Based on the evidence, the ship's deck officers probably were not trained or inclined to make use of the general alarm in a timely manner. The value of training and drills for emergencies is widely recognized by mariners. Without some prior training, crewmembers will not know what to do or how to work together to save themselves during such emergencies as abandoning ship. The lack of training and preparation was clearly indicated by the failure of the crew to work together to utilize the EAGLE's liferaft. Since it appears that the master failed to give any orders to abandon ship, the second mate probably acted on his own initiative when he inflated the port liferaft. There is no indication, however, that the second mate ever directed the AB or other crewmen to make use of the liferaft. It is unclear why the second mate, after inflating the liferaft, apparently abandoned any further attempts to use it, and entered the water without a life preserver. If the master, the second mate, or the able seaman had been properly trained in survival matters, they would have recognized that the liferaft, in addition to providing a platform for escape, would have afforded them protection from hypothermia. The apparent failure by the master to attempt to evacuate the crew from the sinking vessel and the apparent failure of the second mate to react in a positive manner to direct crewmen to use the raft indicate a lack of discipline and training. If the master or the second mate, both licensed officers, had taken charge of the situation and provided some leadership, it is possible more lives could have been saved.

As a result of its investigation, the National Transportation Safety Board recommends that Pacific Western Lines:

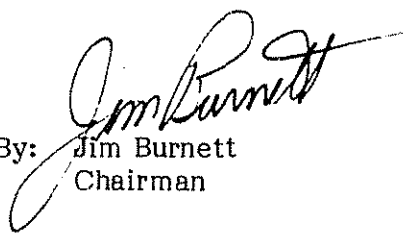
Alter the towing winches on vessels in your fleet to provide a means for releasing the brake on the towing winch remotely from the pilothouse and each steering station. (Class II, Priority Action) (M-84-44)

Review the practices used by the crews of vessels in your fleet to draw fuel from various tanks to ensure that these practices provide for optimum stability, and provide written guidance describing the proper practices on board each vessel. (Class II, Priority Action) (M-84-45)

Where feasible, place sufficient exposure suits for the navigation watch in the pilothouses of vessels in your fleet. (Class II, Priority Action) (M-84-46)

Require that masters of vessels in your fleet conduct and log emergency drills, including drills in abandoning ship, on a periodic basis sufficient to ensure that all crewmembers on board are trained adequately for emergencies. (Class II, Priority Action) (M-84-47)

BURNETT, Chairman, GOLDMAN, Vice Chairman, and BURSLEY, Member, concurred in these recommendations.

By: 
Chairman