

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: March 26, 1981

Forwarded to:

Admiral John B. Hayes
Commandant
U. S. Coast Guard
Washington, D.C. 20593

SAFETY RECOMMENDATION(S)

M-81-1 through -4

About 0518 P.d.t. on July 3, 1980, the F/V ARLON capsized in the Pacific Ocean about 13 miles offshore from Grays Harbor, Westport, Washington. A seal on the ARLON's saltwater pump had failed, and the vessel was being towed to Grays Harbor by a 44-foot Coast Guard motor lifeboat (MLB). After being towed for over 3 hours, the ARLON veered off sharply from the direction of towing and heeled sufficiently to port for seas to enter into its below-deck compartments. As a result, the ARLON capsized. One crewman received minor injuries; however, all five persons on board the ARLON were rescued by the MLB and transported safely ashore. The ARLON washed up on the rocks several days later and broke up. The loss of the vessel and its cargo was estimated at \$212,000. 1/

About 2100 on July 2, after fishing all day, the ARLON's operator got the vessel underway and went below to routinely check the engine room where he noticed water spraying out of the pump which circulated seawater through the engine cooling system. Upon further examination, he found that the water was coming from the pump seal and that the engine would have to be shut down for a closer inspection. He disassembled the water pump and determined that the seal had failed. However, he was not able to repair the pump because he did not have a replacement seal on board. Because he feared that the engine would overheat if he attempted to run with the defective pump, he reassembled the pump, closed the through hull valve, checked the bilges, secured the engine room, and then called the Coast Guard for assistance. He advised the Coast Guard that his vessel was seaworthy and not in immediate danger.

Although the ARLON's water pump malfunction did not pose an immediate danger to the vessel and crew, it resulted in the vessel's being towed. In the National Search and Rescue Manual, the Coast Guard describes towing as a "potentially dangerous evolution" and states that a number of vessels each year sink or capsize while being towed by the Coast Guard; occasionally these sinkings and capsizings result in loss of life. Eight lives were lost when the charter fishing boat PEARL-C capsized while under

1/ For more detailed information, read Marine Accident Report -- "Commercial Fishing Vessel ARLON, Capsized in the Pacific Ocean While Being Towed by a Coast Guard Motor Lifeboat, near Grays Harbor, Westport, Washington, July 3, 1980" (NTSB-MAR-81-2).

tow by a Coast Guard MLB. ^{2/} The evidence indicated that the PEARL-C became disabled when its fuel filter became clogged. The operator of the PEARL-C might have avoided the need for towing assistance if he had carried a spare fuel filter to replace the filter he had removed before calling the Coast Guard for assistance. The ARLON water pump was designed for ease of service, as was demonstrated by the vessel's operator when he disassembled and reassembled the pump. However, the ARLON's operator did not carry the service kit available from the manufacturer. The Safety Board stated in its report on the sinking of the PEARL-C and continues to believe that it is possible and necessary to reduce the large number of hazardous towing assistance cases handled by the Coast Guard nationwide.

Because most of the MLB's crewmembers were seasick shortly after departing the inlet, their ability to perform was somewhat impaired. Seasickness, the inherent rolling of the MLB, and the desire to get the towline to the ARLON as quickly as possible probably contributed to the seaman's connecting the single wire pendant, rather than the bridle to the towline. Because of these adverse conditions, however, the Safety Board believes that the coxswain should have supervised more diligently the preparation of the towline to assure that it was connected to a bridle as intended and made his final approach to throw the heaving line only after he had determined that the towline was configured properly.

It is not unusual for crewmen to become seasick when subjected to sea conditions like those experienced while the MLB was underway to assist the ARLON. However, medication is available which may alleviate seasickness when taken before getting underway. Commandant Instruction 6710.15 provides instructions to motor lifeboat stations in the use of seasickness medication. Because of the importance of peak crew efficiency to the success of assistance and rescue missions, the Safety Board believes that the Coast Guard should monitor and improve its small boat crewmen's use of the antimotion sickness medications.

The wind blowing on the starboard side of the aft mounted staysail increased the magnitude of the ARLON's yawing and veering to starboard while the vessel was being towed. As experienced seamen, both the ARLON's operator and the MLB coxswain should have realized that the staysail would have a destabilizing effect on the towing operation and should have ordered it lowered before the tow began. As the towing operation progressed, the ARLON veered back and forth across the trackline of the MLB. Having failed to take the staysail down initially, the ARLON's operator and the MLB coxswain should have realized that the staysail was affecting the tow adversely and taken it down when the tow first began to veer.

After the ARLON had been under tow for about 3 hours, the coxswain noticed that the ARLON was veering excessively to starboard and ordered the engine reduced to 1,300 rpms. Shortly after the rpm reduction, the ARLON veered sharply to starboard, the towline tightened, and the sound of the MLB's engines changed as they suddenly came under increased load. Within seconds, the ARLON rolled over on its portside. The increase in towline angle and tension significantly increased the towline heeling moment which caused the portside to be immersed. The heeling moment caused by the lateral force component would have been reduced if the chocks had been fitted at deck level.

^{2/} For more detailed information, read Marine Accident Report -- "Charter Fishing Boat PEARL-C Sinking on the Columbia River Bar, near Astoria, Oregon, September 13, 1976" (NTSB-MAR-77-1).

The 4- to 6-foot waves striking the starboard side and the wind forces on the starboard side freeboard and staysail further aggravated the heeling situation. These combined factors heeled the ARLON on its portside, immersed the gunwale, and caused water to enter the forecandle through its access opening while the vessel was still portside down, thus reducing the ARLON's righting ability. The drainage provisions in the ARLON made its internal compartments nonwatertight and allowed the forecandle flooding to progress to other compartments. When minutes later the fish hold hatch cover blew off, the hold filled with water, increasing the flooding rate, and caused the vessel to remain portside down. The Safety Board concludes that the ARLON was heeled over sufficiently by lateral towline forces and by wind forces and waves striking the hull and staysail from the vessel's starboard side for water to flood the hull openings. The severe flooding reduced the ARLON's stability sufficiently so that it could not right itself after the towline was cut. However, because the flooding occurred over a short period of time and not instantaneously, it is possible that the ARLON may have been able to right itself if the towline had been cut immediately after the vessel heeled over and before the mast went into the water.

There was no apparent consideration or discussion between the ARLON's operator and the MLB's coxswain regarding the use of personal flotation devices (PFDs) by the ARLON's crew. When the ARLON rolled over on its side and evacuation was necessary, it was too late for the crew to locate and don PFDs. Fortunately, the ARLON remained afloat for a sufficient time for the crew of the ARLON to evacuate the vessel. If the sinking had been more rapid, lives might have been lost.

The Safety Board has investigated other accidents in which the failure to wear PFDs contributed to the loss of life of persons aboard vessels being towed and recommended that the Coast Guard advise the crews of vessels being towed to wear PFDs. As a result of these recommendations, the Coast Guard has included PFDs as an item on the towing checklist which is posted in the coxswain's station on MLBs. The National Search and Rescue Manual states that "towing is a potentially dangerous evolution" and that "since the wearing of personal flotation devices would reduce the possibility of loss of life during towing operations, vessels under sixty-five (65) feet should normally not be taken in tow until all POB ^{3/} the towed vessel are wearing approved personal flotation devices." This doctrine is also included in the training curriculum at the Coast Guard's Motor Lifeboat School. The crew of the ARLON was not advised to don their PFDs. Even though most of the ARLON's crewmen were sleeping and might not have donned the PFDs, every effort should have been made to insure that the crewmen were wearing PFDs. The Safety Board believes that the Coast Guard should make additional efforts to assure that persons aboard vessels under tow are wearing PFDs.

As a result of this investigation, the National Transportation Safety Board recommends that the U. S. Coast Guard:

Emphasize in its coxswain training curriculum the importance of using towing bridles, the effect on the directional stability on a towed vessel of wind and seas acting on the vessel's hull and superstructure, the need to supervise less experienced seamen assisting in towing operations, and the situations where the towline should be immediately cut. (Class II, Priority Action) (M-81-1)

^{3/} Persons on board.

Reexamine all aspects of its towing assistance operations to find ways to better assure that coxswains and rescue coordinators adhere to the Coast Guard's doctrine which urges that persons aboard towed vessels wear personal flotation devices. (Class II, Priority Action) (M-81-2)

Encourage the use of seasickness medication to improve boat crew performance during search and rescue operations. (Class II, Priority Action) (M-81-3)

Establish a program to advise commercial fishing vessel operators of the importance of carrying basic spare parts necessary to effect routine minor repairs at sea to minimize the need for emergency assistance and towing. (Class II, Priority Action) (M-81-4)

KING, Chairman, and McADAMS, GOLDMAN, and BURSLEY, Members, concurred in these recommendations. DRIVER, Vice Chairman, did not participate.


By: James B. King
Chairman