National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: February 6, 1986

In reply refer to: M-86-4 through-7

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About 0230 on February 14, 1983, the fishing vessel ALTAIR departed Dutch Harbor, Alaska, for the crab fishing grounds near the Pribilof Islands in the Bering Sea. About 0330, the helmsman of another fishing vessel en route to Dutch Harbor saw the ALTAIR proceeding on a course toward the Pribilof Islands at about 10 knots. About 0830, the fishing vessel AMERICUS, a sistership to the ALTAIR, departed Dutch Harbor for the same crab fishing grounds. Both the AMERICUS and the ALTAIR were fully loaded with crab pots. About 1430, the capsized AMERICUS was sighted about 30 nautical miles north of Dutch Harbor. The ALTAIR was never seen again. The AMERICUS' seven crewmembers and the ALTAIR's seven crewmembers are missing and presumed dead. The AMERICUS was valued at $3 million and the ALTAIR was valued at $3.2 million. 1/

The AMERICUS and the ALTAIR, as originally designed and constructed, had more than adequate stability when carrying 258 crab pots on deck as indicated in the vessels' stability booklets. In that loading condition, with the crab tanks empty and the double-bottom fuel tanks full as required by the vessels' stability booklets, both vessels had more than twice the area under the righting arm curve required by the International Maritime Organization stability criteria. However, during their years of service, the vessels' displacements had been increased by the addition of trawling gear and other items, the deck space available for storing crab pots had been reduced by the installation of the trawling gear, and the captains had developed a procedure of cross-tanking the crab tanks which was not included in the stability booklets.

Upon departure from Dutch Harbor, the AMERICUS had 228 crab pots on board and the ALTAIR had 224 crab pots on board. That number of crab pots would weigh about 70 tons and is less than the maximum of 258 indicated in the vessels' original stability booklets. The crab pots were not stacked higher than allowed by the stability booklets. Although the vessels' stability would decrease with an increasing load of crab pots, the number of crab pots carried by the AMERICUS and the ALTAIR on their last voyages was not sufficient alone to cause the vessels to capsize under the normal loading conditions in the vessels' stability booklets.

1/ For more detailed information, read Marine Accident Report—"Capsizing of the U.S. Fishing Vessel AMERICUS and Disappearance of the U.S. Fishing Vessel ALTAIR, Bering Sea North of Dutch Harbor, Alaska, February 14, 1983" (NTSB/MAR-86/01).

The lightship characteristics of the AMERICUS and the ALTAIR at the time of their loss did not correspond to the data derived from a stability test of their sister vessel ANTARES and presented in their stability booklets. There is no question that the lightship characteristics were changed by the addition of trawling gear; the lightship displacement was increased about 35 tons and the vertical center of gravity was raised about 1 foot. However, there is evidence from the stability tests of several other vessels that other items in addition to the trawling gear added to the displacements of the AMERICUS and the ALTAIR. The stability test of the MORNING STAR showed that vessel to be about 56 tons heavier than would be expected based upon the original ANTARES stability test, and stability tests of the VIKING EXPLORER and ANDREW McGEE showed those vessels to be about 25 tons heavier. The stability test of the ALYESKA showed that vessel to be about 60 tons heavier. No single item could be identified to explain these weight differences, and it is very likely that they resulted from a combination of items. Inaccuracies in the trawling gear weights, installation of additional equipment, tools, spare parts, supplies, fishing equipment, and minor differences in vessel construction or in vessel condition at the time of the stability tests are some factors that might cause weight differences. Since the AMERICUS and the ALTAIR were lost and no stability tests had been performed on them, the magnitude of the weight differences for those two vessels will never be known. However, the evidence does indicate that both vessels were heavier than would be expected based upon the original ANTARES stability test.

Although the extrapolation of lightship data from one vessel to another might have been standard practice within the fishing vessel construction industry at the time, a deadweight survey probably would have been required to verify the lightship characteristics of the AMERICUS and the ALTAIR if those vessels had been required to meet U.S. Coast Guard stability standards for inspected vessels. If stability tests had been performed on the AMERICUS and the ALTAIR after the trawling gear had been installed, the increases in displacement and any inherent reductions of stability would have been discovered and quantified, and the vessels' stability booklets and stability letters could have been modified appropriately. The revised stability information would have shown the reduced crab pot loading capacity and any other precautions necessary to ensure safe loading. If the stability information had been amended and provided to the captains of the AMERICUS and the ALTAIR, and if the captains had used the information properly, these accidents might have been prevented. The facts and analysis of this case demonstrate that several factors combined to cause the instability that resulted in the capsizing of the AMERICUS and the ALTAIR. The installation of trawling gear reduced the vessels' stability, but the managing owner and the vessels' captains believed that the weight of the trawling gear was offset by the reduced deck load because crab pots could no longer be carried in the space taken by the drag stanchions. The managing owner and the captains believed that carrying the previous maximum load of 258 crab pots had the same effect as carrying the trawling gear and 228 crab pots. The vessels' stability letters cautioned that the crab tanks must remain empty when carrying the maximum load of crab pots, but at least two crab tanks were filled on both the AMERICUS and the ALTAIR and thereby contributed to the vessels' instability.

When questioned about his use of the stability booklet to determine a safe loading condition for the ALYESKA, the captain of that vessel indicated that he referred to "the maximum capacity of the boat" shown on the stability letter. He also indicated that he was "using the trim of the boat" when he concluded that the vessel could safely carry 171 crab pots when it departed Dutch Harbor on February 14, 1983. However, the

stability booklet clearly indicates that the ALYESKA should have carried no more than 116 crab pots with the crab tanks full and the double bottom fuel tanks empty as they were on that day. Like the captain of the ALYESKA, the captains of the AMERICUS and the ALTAIR had no formal training in vessel stability. Although the captains of the AMERICUS and the ALTAIR had extensive experience in the fishing industry and had sailed for many years on the AMERICUS, ALTAIR, ANTARES, ALYESKA, and similar vessels, they apparently had little appreciation for the importance of the loading limitations described in the vessels' stability booklets and stability letters. As a result, they failed to comply with the loading limitations and contributed to the vessels' instability by filling crab tanks while carrying a full load of crab pots. If the captains had had formal training in vessel stability, they would have better understood the importance of the loading restrictions, and the accidents might have been prevented.

Therefore, the National Transportation Safety Board recommends that Jeff Hendricks & Associates, the managing owner of the AMERICUS and the ALTAIR:

> Require a stability test on each new vessel unless a deadweight survey confirms that the stability data from a sister vessel may be used. (Class II, Priority Action) (M-86-4)
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> Require a stability test or deadweight survey and amended stability information when major modifications, such as the addition of trawling gear, are made to your vessels. (Class II, Priority Action) (M-86-5)
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> Require your vessel operators to comply strictly with the provisions of vessel stability letters and stability booklets, and establish a monitoring system to ensure compliance. (Class II, Priority Action) (M-86-6)
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> Provide formal training for your fishing vessel captains in vessel stability and the use of vessel stability information to establish safe loading conditions. (Class II, Priority Action) (M-86-7)

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 actions taken as a result of its safety recommendations and 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-86-4 through -7 in your reply.

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

By: Jim Burnett
Chairman