



# National Transportation Safety Board

Washington, D. C. 20594

## Safety Recommendation

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**Date:** May 21, 1992

**In Reply Refer To:** M-92-25 through -30

Admiral J. William Kime  
Commandant  
U.S. Coast Guard  
Washington D.C. 20593-0001

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On March 22, 1990, the 162-foot-long U.S. fish processing vessel ALEUTIAN ENTERPRISE was trawling for fish in the Bering Sea. As a large net full of fish was hauled aboard, the vessel capsized and sank. Of the 31 persons on board when the accident occurred, 22 were rescued by nearby fishing vessels. Nine persons remain missing and are presumed to have drowned. The vessel was valued at \$6 million.<sup>1</sup>

The National Transportation Safety Board determines that the probable cause of the capsizing and sinking of the fish processing vessel ALEUTIAN ENTERPRISE was the failure of the Arctic Alaska Fisheries Corporation (AAFC) to provide adequate crew training, operating procedures, maintenance, and safety oversight of its fish processing vessels and the imprudent decision, given the existing circumstances, of the master to continue hauling in the loaded net. Contributing to the accident and the loss of life were the AAFC's failure to provide adequate survival equipment and safety training and the Coast Guard's inadequate oversight of fishing vessel operations and safety.

The ALEUTIAN ENTERPRISE flooded, capsized, and sank about 15 minutes after the intermediate net section ripped open. The closures were in such poor condition that any loading that brought the openings close to the sea surface increased the risk of flooding. Had the hull closures been properly maintained, flooding of the fish processing deck would have been reduced.

The processing area had several openings through which flooding water could enter contiguous compartments. At least one and possibly two watertight doors had been removed from the forward bulkhead of the processing area. Also, a

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<sup>1</sup>For more detailed information, read Marine Accident Report--"Capsizing and Sinking of the Fish Processing Vessel ALEUTIAN ENTERPRISE in the Bering Sea March 22, 1990." (NTSB/MAR-92/03).

watertight door at the top of the stairway that led from the passageway between the galley/dining area and the Baader room to the auxiliary machinery space was missing. Further, the door in the starboard engineroom exhaust trunk was not watertight, allowing water to enter the engineroom.

The Safety Board concludes that had the closures been properly maintained and the weathertight and watertight doors kept closed, the ALEUTIAN ENTERPRISE might not have flooded and capsized or it might not have capsized as quickly, thereby increasing the chances that the persons on board would survive. Additionally, had the crewmembers been instructed in the effects of flooding, they would have been aware of procedures to be taken to minimize flooding.

The Coast Guard's postaccident review of the second stability test and the revised trim and stability booklet revealed that the test had not followed all the guidelines from the NVIC 15-81 and that several mathematical errors had been made that rendered the vessel's lightship characteristics inaccurate. Consequently, the assumptions, calculations, and format of the booklet were deficient. The Safety Board concludes that because the booklet was based on an inaccurate stability test, it would have misled the master had he used it.

The information in a trim and stability booklet should be not only technically accurate, it should be presented in a way that allows crewmembers to use it routinely when they are loading cargo, ballasting, transferring fuel, or making any other changes that could affect the distribution of weights on board. The master of the ALEUTIAN ENTERPRISE, with his limited understanding of stability, found the booklet was too difficult and complex to be useful. Consequently, he did not refer to it.

The Safety Board believes that the format and technical level of a trim and stability booklet should be appropriate to the needs and capabilities of the users. The Safety Board concludes that the AAFC should review its vessels' trim and stability booklets and revise them as necessary to make them accurate and usable.

As a result of its investigation of the capsizing of the AMERICUS and the disappearance of the ALTAIR,<sup>2</sup> the Safety Board recommended that the Coast Guard:

M-86-11

Seek legislative authority to require that stability tests be conducted and that complete stability information be provided to the masters of commercial fishing vessels.<sup>3</sup>

The Coast Guard did not concur with the recommendation, preferring to resolve the issue by letting the fishing industry develop a voluntary fishing vessel safety standards program. On July 1, 1986, the Safety Board classified Safety Recommendation M-86-11 as "Closed--Unacceptable Action." The Safety Board reiterated the recommendation two more times: once after its investigation of the

<sup>2</sup>Marine Accident Report--"Capsizing of the U.S. Fishing Vessel AMERICUS and Disappearance of the U.S. Fishing Vessel ALTAIR in the Bering Sea North of Dutch Harbor, Alaska, February 14, 1983" (NTSB/MAR-86/01).

<sup>3</sup>Uninspected fishing vessels, fish processing vessels, and fish tender vessels.

1984 sinking of the U.S. fishing vessel SANTO ROSARIO<sup>4</sup> and once again in 1987 as a result of its special study of uninspected commercial fishing vessel safety.<sup>5</sup> Both times the Coast Guard disagreed, and on June 7, 1988, the safety recommendation was classified as Open--Unacceptable Response.

The Commercial Fishing Industry Vessel Safety Act of 1988 and the Coast Guard Final Rule require stability tests for commercial fishing industry vessels and stability instructions for operating personnel. However, the requirements only partially fulfill the intent of Safety Recommendation M-86-11 because they apply only to new vessels and to vessels that have undergone major conversions after September 15, 1991. The Safety Board continues to believe that all commercial fishing industry vessels should be given a stability test and that the masters or persons in charge of commercial fishing industry vessels should have the stability information concerning their vessels. Therefore, the Safety Board reiterates Safety Recommendation M-86-11.

The ALEUTIAN ENTERPRISE was not maintained in a seaworthy condition as recommended by the Coast Guard's NVIC 5-86. The AAFC lacked an effective maintenance and repair program for hull opening closures and for weathertight and watertight doors. The Safety Board believes that had the vessel been subject to periodic inspection by the Coast Guard or another responsible entity, it would have been more seaworthy and the accident might have been averted.

As a result of its study of uninspected commercial fishing vessel safety, the Safety Board determined that commercial fishing industry vessels should be certified and inspected. Consequently, it issued the following recommendation to the Coast Guard:

M-87-64

Seek legislative authority to require that all uninspected commercial fishing vessels<sup>6</sup> be certified and periodically inspected by the Coast Guard or its recognized representative to ensure that the vessels meet all applicable Federal safety standards.

In its March 11, 1988, reply, the Coast Guard did not concur and stated: "The combination of voluntary construction standards and personnel training would most effectively reduce fishing vessel casualties." On June 7, 1988, the Safety Board classified Safety Recommendation M-87-64 as Open--Unacceptable Response. The Safety Board reiterated the recommendation twice, once after the sinking of the UYAK II<sup>7</sup> and once after the sinking of the WAYWARD WIND.<sup>8</sup>

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<sup>4</sup>Marine Accident Report--"Sinking of the U.S. Fishing Vessel SANTO ROSARIO about 35 Nautical Miles East of New Smyrna Beach, Florida, on July 23, 1984" (NTSB/MAR-86/06).

<sup>5</sup>Safety Study--"Uninspected Commercial Fishing Vessel Safety, September 1, 1987" (NTSB/SS-87/02).

<sup>6</sup>Uninspected commercial fishing vessels, fish processing vessels, and fish tender vessels.

<sup>7</sup>Marine Accident Report--"Capsizing and Sinking of the U.S. Fishing Vessel UYAK II in the Gulf of Alaska near Kodiak Island, Alaska, November 5, 1987" (NTSB/MAR-88/08).

<sup>8</sup>Marine Accident Report--"Sinking of the U.S. Fishing Vessel WAYWARD WIND in the Gulf of Kodiak Island, Alaska, January 18, 1988" (NTSB/MAR-89/01).

The Commercial Fishing Industry Vessel Safety Act of 1988 provides for the inspection of fish processing vessels. In addition, the act requires the Secretary of Transportation to use the National Academy of Engineering to:

1. Conduct a study of the safety problems on fishing industry vessels;
2. Make recommendations regarding whether a vessel inspection program should be implemented for fishing vessels, fish processing vessels, and fish tender vessels, including recommendations on the nature and scope of that inspection.

The completed study<sup>9</sup> proposed several options for the inspection of commercial fishing industry vessels. The study stated that the vessels could be periodically inspected by various organizations other than the Coast Guard, including but not limited to marine survey organizations, classification societies, insurance organizations, State governments, and industry organizations or associations. In addition, the study proposed a self-inspection program whereby vessel owners could do the inspections. The Commercial Fishing Industry Vessel Advisory Committee, using the study, recommended to the Coast Guard that fishing industry vessel inspections be conducted by the owners under a self-inspection program. The Coast Guard has not yet submitted its recommendations to Congress concerning an inspection program.

The Safety Board is opposed to a self-inspection program for uninspected commercial fishing industry vessels because past Coast Guard safety programs based on voluntary efforts have not been successful. The Safety Board believes that all such vessels should be inspected by the Coast Guard or by a Coast Guard-approved third party other than a vessel owner.

As a result of the sinking of the ALEUTIAN ENTERPRISE, the Safety Board reiterates Safety Recommendation M-87-64. The recommendation has been retained as Open--Unacceptable Response pending the submittal of the Coast Guard's report to Congress concerning the nature and scope of the vessel inspection program it recommends.

The president of the AAFC stated that following the advice of legal counsel, the AAFC had considered its vessels, such as the ALEUTIAN ENTERPRISE, to be fishing vessels and not fish processing vessels. The president of the AAFC erroneously believed that before obtaining a load line the vessel had to be classed by a classification agency such as the ABS. However, there is no classification requirement for the issuance of a load line. The ALEUTIAN ENTERPRISE met the legal definition of a fish processing vessel because besides gutting and decapitating fish, it filleted and packaged fish for marketing; therefore, according to the Coast Guard, the vessel was required to obtain a load line.

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<sup>9</sup> *Fishing Vessel Safety, Blueprint for a National Program*, Committee on Fishing Vessel Safety, Marine Commission on Engineering and Technical Systems, National Research Council, National Academy Press, Washington, D.C., 1991.

The Coast Guard's position concerning the applicability of the load line regulations was clearly stated to the AAFC in May 1988, about a year before the ALEUTIAN ENTERPRISE sank. The Coast Guard reaffirmed its position in January, April, and July 1989, following appeals by the AAFC. However, the AAFC took no action to obtain load lines for its fish processing vessels until the Coast Guard detained the U.S ENTERPRISE, a month after the ALEUTIAN ENTERPRISE sank. The Safety Board concludes that the AAFC was adequately informed about the requirements for obtaining load lines for its fish processing vessels and should have complied with the Coast Guard load line regulations.

According to the Coast Guard's postaccident calculations, the vessel's existing stability plans and calculations would have been inadequate to obtain the stability approval required to obtain a load line. Additionally, the trim and stability booklet would have had to be put into a format that was useful to the master. The Safety Board concludes that the load line regulatory process would have significantly improved the master's ability to maintain the seaworthiness of the ALEUTIAN ENTERPRISE and might have prevented this accident.

Similar vessels with equal numbers of persons on board and operating under the same hazards at sea are held to significantly different safety standards only because one may fillet the fish or preserve roe while the other does not. The Safety Board believes that the goals of safeguarding lives, property, and the environment are best achieved by basing safety requirements on the hazards and risks encountered and not on some unrelated factors, such as ship length or fish processing method. Therefore, the Safety Board believes that the Coast Guard should seek legislation to require load lines for fishing vessels not according to whether they are fish tender or fish processing vessels but according to the hazards and risks, such as the number of persons on board and the area of operation.

The master and the crewmembers of the ALEUTIAN ENTERPRISE had little or no formal training in vessel safety, firefighting, the use of lifesaving equipment, survival procedures, or cold water survival. The proposed Coast Guard licensing plan could correct this lack of training aboard fishing vessels of less than 200 gross tons. Several crewmembers stated that they did not know enough about the on-board lifesaving and emergency equipment, such as where it was stowed or how it should be used. Although there were enough immersion suits for all the crewmembers, several survivors stated that they did not know where the suits were stowed or how to don them.

The Safety Board believes that crewmembers should be instructed when boarding a vessel about the location and proper use of safety equipment. Additionally, realistic drills should be conducted before a vessel leaves port and at regular intervals while it is at sea. A logbook of the drills should be maintained.

The ALEUTIAN ENTERPRISE carried videotapes about safety and survival at sea. Crewmembers could watch them only during their off-duty times, something they were reluctant to do because of their 16-hour workdays and 7-day workweeks, and they believed they were not required to watch them. Consequently, the videotapes were an ineffective method of on-board training.

The AAFC had encouraged crewmembers to attend safety training courses offered by the NPFVOA when they were first offered in 1986-87. However, course attendance declined during the 3 years before the accident. Training was also available from other outside organizations. Equipment supplier seminars were used

to update a few engineers, but these training opportunities were limited and sporadic. The Safety Board attributes the decline in the AAFC's training program for crewmembers to the company's philosophy that crewmembers were expected to be fully qualified for their positions when hired. Had the AAFC more actively encouraged attendance and provided support, more crewmembers probably would have attended safety training courses.

As a result of its study of uninspected commercial fishing vessel safety, the Safety Board issued Safety Recommendation M-87-52 on September 22, 1987, to the Coast Guard:

M-87-52

Seek legislative authority to require uninspected commercial fishing vessel<sup>10</sup> captains/owners to provide safety training to all crewmembers.

On March 11, 1988, the Coast Guard responded that it partially concurred with the recommendation. It believed that the overall level of safety on uninspected commercial fishing vessels could be improved through voluntary industry training courses, videotapes, and safety manuals. The Coast Guard stated that guidance for voluntary training is in both the NVIC 5-86 and the vessel safety manual. The manual is written by and for fisherman and establishes recommended training standards for emergency procedures on fishing vessels. The Coast Guard further stated that vessel owners and operators could use the NPFVOA's videotapes to enhance their voluntary training programs. The Safety Board responded that it continued to believe that safety training should be mandatory, and it classified Safety Recommendation M-87-52 as Open--Unacceptable Response. Further, the Board urged the Coast Guard to reconsider its position.

Although the Final Rule requires the master or individual in charge of a vessel to ensure that drills are conducted and instructions are given to each individual on board at least once each month, the requirement applies only to documented vessels that operate either beyond the boundary lines or with more than 16 individuals on board. The Safety Board continues to believe that all crewmembers of uninspected commercial fishing vessels should receive safety training, regardless of whether the vessel operates inside or outside the boundary line. Therefore, the Safety Board reiterates Safety Recommendation M-87-52.

Even though there were enough immersion suits for everyone on board the ALEUTIAN ENTERPRISE, the suits were not easy to reach. At the time of the accident, most people were unable to get suits. Although about 3/4 of the people were on or below the lower trawl deck and exited through the door located forward of the net reels, 3/4 of the immersion suits were stowed above the lower trawl deck.

Had the immersion suits on the ALEUTIAN ENTERPRISE been stowed in areas normally occupied by the individuals who would use them in an emergency, more people would have been able to get the suits before entering the water.

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<sup>10</sup>Uninspected commercial fishing vessels, fish processing vessels, and fish tender vessels.

Survivors stated that it was hard to get to the suits stored in the box on the lower trawl deck because equipment had been stowed on top of the box. The survivors who did get suits used valuable time searching for them and, consequently, did not have enough time to properly don the suits before they entered the water. Several survivors did not know where the suits were stowed. Had placards been posted showing suit stowage locations, more individuals may have known about the stowage.

When the ALEUTIAN ENTERPRISE capsized, the water was between 32° and 34° F. Although it is important that people not enter cold water without immersion suits, several crewmembers did not know how to don them. Instructions should be posted that explain how to put on a suit. Crewmembers should be told how to don their suits when they are assigned to a vessel, before the vessel leaves port, and periodically while the vessel is at sea.

As a result of the collision between the USS RICHARD L. PAGE and the fishing vessel CHICKADEE<sup>11</sup> the Safety Board issued Safety Recommendation M-88-31 on June 1, 1988, to the Coast Guard:

M-88-31

Require a placard with donning instructions for exposure suits<sup>12</sup> to be posted in a conspicuous place on all fishing vessels<sup>13</sup> that carry such suits.

The Coast Guard responded that it concurred with the intent of this recommendation, stating that legislative authority to require immersion suits on certain uninspected commercial fishing industry vessels had recently been signed into law and that regulations would be developed to implement the law. The Coast Guard anticipated that the regulations would address placard requirements. The Coast Guard further stated that the NVIC 5-86 recommends that donning instructions be displayed conspicuously and that it will encourage manufacturers to provide placards to purchasers of immersion suits.

The Safety Board responded it was pleased that the Coast Guard was developing regulations to implement the recently enacted law. The Safety Board urged the Coast Guard to include requirements for immersion suit placards throughout the proposed rulemaking process. The Safety Board classified Safety Recommendation M-88-31 as Open--Acceptable Response.

The Final Rule does require documented fishing industry vessels to have conspicuously posted emergency instructions, but only if the vessel operates beyond the boundary lines or with more than 16 individuals on board. The emergency instructions must identify the location of immersion suits and include illustrated instructions for donning them. The Safety Board believes that the requirement should apply to all fishing industry vessels that carry immersion suits. Therefore, the Safety Board reiterates Safety Recommendation M-88-31.

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<sup>11</sup>Marine Accident Report--"Collision between the USS RICHARD L. PAGE and the U.S. Fishing Vessel CHICKADEE in the Atlantic Ocean on April 21, 1987" (NTSB/MAR-88/04).

<sup>12</sup>Also referred to as immersion suits.

<sup>13</sup>Uninspected commercial fishing vessels, fish processing vessels, and fish tender vessels.

The painter of a 10-person Elliot liferaft that did not inflate was pinched between the two canister halves and, therefore, could not be pulled to inflate the liferaft. Tests of Elliot liferafts demonstrated that canister halves could deform and pinch the painter when they struck or were struck by a hard object. The reason the ALEUTIAN ENTERPRISE's liferaft did not inflate was that the canister probably struck or was struck by a hard object that deformed the canister halves enough to pinch the painter.

Although the Elliot liferaft canister has been redesigned to eliminate the problem, the existing ones can still pinch the painters. Therefore, the Safety Board believes that the existing Elliot liferaft canisters should be retrofitted during annual servicing to prevent their pinching painters.

During the previous two voyages, according to some crewmembers, several persons had taken drugs and alcohol. Therefore, the AAFC's prohibition of drugs and alcohol, at least on board the ALEUTIAN ENTERPRISE, appears not to have been completely effective.

The efforts made by the AAFC to conduct postaccident drug and alcohol testing were deficient when compared to its own policy. For example, the AAFC sent the employment manager to Dutch Harbor to meet the rescue vessel, but did not provide a urine specimen collection and shipping kit or a breath testing device. Additionally, the rescue vessels' crews had not been trained in collecting specimens. The master of the ALEUTIAN ENTERPRISE was rescued within 15 minutes of his entering the water. Yet, a urine specimen was not obtained from him until approximately 42 hours after the vessel sank and 4 to 5 hours after the rescue vessel arrived in Dutch Harbor. Finally, the urine specimen was not delivered to the laboratory until 54 hours after it had been collected. The delay in delivery to the laboratory was unnecessary and could have been avoided.

The AAFC's postaccident testing policy is closely patterned after the Coast Guard's regulations in 46 CFR Parts 4 and 16. However, it is the Coast Guard's position that the drug testing regulations in Parts 4 and 16 do not apply to the ALEUTIAN ENTERPRISE.

The Safety Board believes that it is possible to interpret the postaccident chemical testing requirements of 46 CFR Parts 4.06 and Part 16.240 as applying to the ALEUTIAN ENTERPRISE. The AAFC instituted its postaccident testing policy because it believed these regulations applied.

However, the language of the regulation is confusing. For example, Part 4.06-1b calls for mandatory testing for each "individual" directly involved in a serious incident. Part 16.240 calls for testing of all "persons" involved in an accident. Other portions of Part 16 refer to "crewmembers." Only the term "crewmember" is defined (in Part 16). A "crewmember" is defined as an individual acting under the authority of a license, certificate of registry, or merchant mariner's document or an individual engaged or employed on a vessel owned in the United States that is required by law or regulation to engage, employ, or be operated by an individual holding a license, certificate of registry, or merchant mariner's document.

The confusing nature of the regulations prompted the Safety Board to request an interpretation from the Coast Guard. In a letter dated March 10, 1992, the Coast Guard stated that Parts 4 and 16 apply only to "crewmembers" (as defined above)



and that the Coast Guard currently lacks the statutory authority to require licensing of operators of fishing vessels of less than 200 gross tons. The letter states, "Therefore, the ALEUTIAN ENTERPRISE at 195 gross tons was not subject to the drug testing rules found in 46 CFR Parts 4 and 16."

The Safety Board believes that the determination of impairment due to drug or alcohol use is critical for a full investigation of an accident. The Safety Board also believes that the Coast Guard has an obligation to assist in determining whether or not drug and alcohol use/impairment was involved in order to know what preventive measures are necessary to keep those factors from contributing to accidents in the future. The Safety Board is pleased to note that the Coast Guard has recently made a proposal to Congress to license fishing vessel operators and that once that occurs, Parts 4 and 16 will apply to vessels like the ALEUTIAN ENTERPRISE by virtue of the fact that a licensed operator will be required. However, the process involved to institute licensing will take several years to complete. The Safety Board believes that postaccident drug and alcohol testing is important enough to be required now.

The Safety Board believes the Coast Guard can and should revise its current regulations in Parts 4 and 16 so that they apply to uninspected fishing vessels that are not required to be operated by an individual holding a license, certificate, or document. Until such a revision is completed, the Safety Board urges that the postaccident chemical testing be conducted under the authority of 33 CFR Part 95.

Therefore, the National Transportation Safety Board recommends that the U.S. Coast Guard:

Seek legislation that bases the requirement for load lines for fishing, fish tender, and fish processing vessels on the hazards and risks involved rather than on such unrelated factors as the fish processing methods. (Class II, Priority Action) (M-92-25)

Until new legislation is passed basing load line requirements on hazards and risks, implement a policy that requires owners of each new fish processing vessel to obtain a load line before being issued a certificate of documentation. (Class II, Priority Action) (M-92-26)

Require that existing Elliot liferaft canister halves be retrofitted during annual servicing to prevent their accidentally pinching painters. (Class II, Priority Action) (M-92-27)

Require that fishing vessel trim and stability booklets contain a caution that weathertight and watertight doors should be kept closed while underway and never lashed or otherwise obstructed. (Class II, Priority Action) (M-92-28)

Revise the postaccident chemical testing sections of 46 CFR Parts 4 and 16 so that they apply to uninspected fishing vessels that are not required to have a licensed, certificated, or documented operator. (Class II, Priority Action) (M-92-29)

Pending the revisions to 46 CFR Parts 4 and 16 referred to in M-92-29 utilize 33 CFR Part 95 to implement the postaccident chemical testing requirements. (Class II Priority Action) (M-92-30)

The Safety Board is also reiterating the following recommendations issued to the U.S. Coast Guard:

M-86-11

Seek legislative authority to require that stability tests be conducted and that complete stability information be provided to the masters of commercial fishing vessels.

M-87-52

Seek legislative authority to require uninspected commercial fishing vessel captains/owners to provide safety training to all crewmembers.

M-87-64

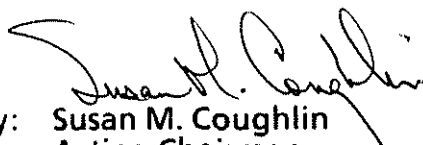
Seek legislative authority to require that all uninspected commercial fishing vessels be certified and periodically inspected by the Coast Guard or its recognized representative to ensure that the vessels meet all applicable Federal safety standards.

M-88-31

Require a placard with donning instructions for exposure suits to be posted in a conspicuous place on all fishing vessels that carry such suits.

Also, the Safety Board issued Safety Recommendations M-92-31 through-37 to the Arctic Alaska Fisheries Corporation, Inc.

COUGHLIN, Acting Chairman, and LAUBER, HART, HAMMERSCHMIDT, and KOLSTAD, Members, concurred in these recommendations.

  
By: Susan M. Coughlin  
Acting Chairman