Log M-381

National Transportation Safety Board

Washington, D. C. 20594

Safety Recommendation

Date: November 17, 1992

In Reply Refer To: M-92-54 through -56

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

At 0839 on January 11, 1991, the fishing vessel SEA KING reported to the U.S. Coast Guard that it was taking on water and needed assistance. Search and rescue units were immediately dispatched to the scene. Coast Guard personnel and dewatering pumps were later transferred to the vessel in an attempt to control the flooding. Because the SEA KING was also having difficulty keeping its main engine and steering gear operating, the Coast Guard dispatched the 52-foot motor lifeboat TRIUMPH to take the stricken vessel in tow.[1]

The Coast Guard made two unsuccessful attempts to tow the SEA KING across the Columbia River Bar. It was during the second attempt that the vessel rolled to port, submerged its port bulwark into the sea, capsized, and sank. Of the seven persons on board at the time of the accident three, two crewmembers and one Coast Guardsman, drowned.

The National Transportation Safety Board determines that the probable cause of the sinking of the fishing vessel SEA KING was the Coast Guard's failure to determine the source and scope of the flooding and to dewater the vessel before attempting to tow it across the Columbia River Bar and the operator's failure to inform the Coast Guard of the status of the vessel's drainage system. Contributing to the loss of life was the failure of the on-scene commander (Commanding Officer, IRIS) to remove all unnecessary people from the SEA KING before the second attempt to tow it across the bar.

After the Coast Guard SAR units arrived on scene, all subsequent efforts were directed to dewatering the SEA KING's engineroom. This occurred despite reports that flooding had also occurred in the vessel's fish hold and lazarette. The flooding

[1]For more detailed information, read Marine Accident Report--*Capsizing and Sinking of the Fishing Vessel SEA KING Near Astoria, Oregon on January 11, 1991* (NTSB/MAR-92/05).

continued unabated up to the time of the accident. It was the cumulative effect of the flooding of these compartments that later caused the vessel to capsize and sink.

In examining the circumstances surrounding this accident, the Safety Board found two major areas of concern: the Coast Guard's management of the SAR mission and the degree of Coast Guard oversight of the fishing vessel industry.

It is critical to the success of any SAR mission to determine the nature of the problem, conduct a risk assessment, and decide on a course of action that minimizes the risk to life and property. The Coast Guard's failure to ask the operator questions about conditions aboard the SEA KING or to use the information it already had (that the lazarette and the fish hold were both flooding) impeded its management of the SAR mission in three ways: it distorted the Coast Guard's understanding of the problem; it limited the ability of the people in charge of the mission to evaluate the risks to personnel associated with each of the two attempts to tow the SEA KING across the bar; and it hindered the Coast Guard's efforts to thoroughly assess the risks associated with alternative actions.

Early in the SAR mission, the duty officer, Station Cape Disappointment, the operations duty officer, Air Station Astoria, and the coxswains aboard the TRIUMPH and MLB 44301 were aware that the SEA KING's engineroom and lazarette were flooded. Yet, despite the possibility that the source of the flooding of the two compartments might be related and despite subsequent reports that the vessel's fish hold was also flooding, the Coast Guard failed to question the SEA KING's crew further about the source and scope of the flooding or to take any action to dewater either the fish hold or lazarette. Had they done so, they would have learned the following:

- That the lazarette had a drainage valve that was open and letting seawater drain into the fish-hold bilge;
- That because of the ongoing flooding of the fish hold, efforts to close the lazarette drainage valve had been unsuccessful; and
- That water in the fish hold was draining into the engineroom through the aft fish-hold drain and the fish-hold bilge.[2]

The operator knew all these facts. The Safety Board believes that it would have been reasonable to expect him to volunteer this information to the Coast Guard; however, he did not offer it, and the Coast Guard did not ask.

Not only did the Coast Guard SAR personnel have a problem collecting information, they failed to ensure that the information they did have about the source of the flooding was disseminated to all pertinent SAR personnel and, particularly, to those people whose safety could have been affected by such information (the people aboard the SEA KING).

For example, interviews with the Commanding Officer, Station Cape Disappointment, the OSC (Commanding Officer, IRIS) and the three Coast Guard

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[2]The bulkhead between the engineroom and the fish hold was not watertight. Thus, these two compartments shared a common bilge.

survivors revealed that up to the time of the capsizing they had not been aware that the operator had reported that the lazarette was flooded. The commanding officer of the IRIS later stated that he was not told of the flooding of the fish hold and lazarette and that had he known, he would not have decided to make a second attempt to cross the bar before ensuring that the vessel had been dewatered.

The Coast Guard personnel transferred to the SEA KING before the hoist mishap were not familiar with the design and operation (including basic stability) of fishing vessels, nor were they told the kind of information that was needed, why it was needed, or how to go about getting it. The primary mission of the ASM3, MK3, and BM3 was to help the SEA KING's crew operate the dewatering pumps. Thus, they were entirely dependent on the SMC and the OSCs for guidance. The Safety Board believes that because they were not given such guidance by either the SMC, their Commanding Officer, Station Cape Disappointment, or the OSCs, numerous opportunities to determine the source and scope of the flooding were squandered.

The transfer of pumps to the SEA KING was appropriate because the action did not increase the risk to the vessel or its crew and it did provide a potential mechanism for saving both. However, because the SMC and OSCs failed to determine the source and scope of the flooding, they were unable to fully assess the risks associated with the second attempt to cross the bar. As a result, Group Astoria SAR personnel became focused over time on saving the vessel rather than on the risks faced by the people aboard the vessel.

Because the mission utilized multiple units, various commands, and some of the Coast Guard's most experienced SAR personnel, the Safety Board believes that the Coast Guard's failure to collect, analyze, and disseminate all available information to all appropriate SAR personnel indicates the need for the Coast Guard to reemphasize in its training of SAR personnel the importance of ensuring that all available information is gathered and disseminated. Only then can potential risks to people be properly evaluated and decisions made to reduce the risk of injury to personnel involved in an SAR mission.

The Board was also concerned about the OSC's decision to allow people to remain inside the deckhouse during the second attempt to cross the bar.

By 1525, SAR personnel aboard the escorting vessels were aware that the tow was being set toward the most hazardous part of the bar. Unfortunately, sea conditions were such that any attempt to turn the tow around at this time would have likely increased the danger to the people aboard both the TRIUMPH and the SEA KING. Both the OSC and the coxswains of the TRIUMPH and MLB 47200, collectively, had accumulated hundreds of hours of experience operating on this very bar. Of all the Coast Guardsmen at the scene, they alone understood the unpredictable nature of the bar and the possibility that circumstances could easily force the rapid evacuation of the SEA KING. None of the seven persons aboard the SEA KING was qualified as coxswain or surfman; thus, they could not have fully appreciated the danger that their being set toward the Middle Ground posed to their safety.

When the SEA KING heeled over, the ability of the helmsman, the injured crewmember, and the two Coast Guardsmen inside the deckhouse to escape the sinking vessel was hindered because of the speed with which the vessel capsized, the obstruction of the pilothouse weathertight door by the fish finding sonar,[3] the loose debris in the deckhouse, and the need to release the injured crewman from the confines of the litter.

Under normal circumstances, unstrapping someone from a litter takes about 10 seconds. In this case, however, 10 seconds was about all the time the people inside the deckhouse had to get free of the vessel. The ASM3, who was the only person able to successfully escape the deckhouse, stated that he was able to escape only because he happened to be standing at the entrance to the weathertight door on the port side aft and that as the vessel went over and water began to stream into the deckhouse, he was somehow sucked out of the cabin.

The Safety Board believes that the OSC was responsible for ensuring that the people aboard the SEA KING were prepared to evacuate the vessel at a moment's notice. The Safety Board also believes that when it became clear that the tow was being set toward the Middle Ground and Peacock Spit that the OSC should have alerted the SEA KING to this new development and stressed the need for the people on board to position themselves to leave the vessel in an expeditious manner. Had this been done, the number of lives lost as a result of this accident might have been reduced.

The accident also heightened the Safety Board's concern about the Coast Guard's oversight of the fishing vessel industry. For example, the repairs and modifications made to the SEA KING preceding the accident were not unlike those frequently made to many fishing industry vessels operating along the northwest coast of the United States. This is due to the fact that these vessels routinely operate under severe weather and sea conditions.

The owner's decision to permanently affix a fish finding sonar in front of the starboard pilothouse door, rendering it impassable, especially in an emergency, and the fact that neither he nor the operator recognized the importance of the aft engineroom bulkhead being watertight showed poor judgment on their parts. The Safety Board believes that such a situation could exist is due partly to the Coast Guard's past reluctance to seek legislative oversight of uninspected fishing industry vessels.

As a result of its study of uninspected commercial fishing vessel safety,[4] the Safety Board determined that such vessels need to be inspected and certified. On September 1, 1987, the Safety Board issued the following recommendation to the Coast Guard:

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[3]Following the accident it was learned that a fish finding sonar had been installed in front of the starboard pilothouse door rendering it impassable.

[4]Safety Study--*Uninspected Commercial Fishing Vessel Safety* (NTSB/SS-87/02).

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.

* The Safety Board applies this term to all uninspected commercial fishing vessels, fish processing vessels, and fish tender vessels.

This safety recommendation is currently on the Safety Board's list of most wanted safety improvements.

In its March 11, 1988, reply, the Coast Guard did not concur: "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 after its investigations of the sinking of the UYAK II,[5] the WAYWARD WIND,[6] and the ALEUTIAN ENTERPRISE.[7]

To reduce the loss of life and property in the fishing industry, Congress passed the Commercial Fishing Industry Vessel Safety Act (CFIVSA). The act addresses the issue of inspecting uninspected fishing vessels by requiring the Secretary of Transportation to use the National Academy of Science to conduct a study of the safety problems on fishing industry vessels and to make recommendations about 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 NRC study that was later conducted at the behest of the Department of Transportation (DOT) proposed a number of potential options for the inspection of commercial fishing industry vessels:

- o Inspection by Owner or Operator.--Would permit an owner or operator to conduct self-inspection of their vessels using a prescribed checklist or other inspection guide to determine whether the vessel was fit for service.

- o Third-Party Inspection.--Would require vessel inspections to be conducted by a independent, nongovernment (a Coast Guard-qualified vessel classification society) in lieu of self-inspection.

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[5]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).

[6]Marine Accident Report--*Sinking of the U.S. Fishing Vessel WAYWARD WIND in the Gulf of Alaska near Kodiak Island, January 18, 1988* (NTSB/MAR-89/01).

[7]Marine Accident Report--*Capsizing and Sinking of the Fish Processor ALEUTIAN ENTERPRISE in the Bering Sea, March 22, 1990* (NTSB/MAR-92/03)

- Coast Guard Inspection--Would provide for more stringent inspection alternatives. Coast Guard personnel would presumably take the responsibility for the inspection and certification of fishing vessels.

The Commercial Fishing Industry Vessel Safety Advisory Committee, using the NRC study, recommended to the Coast Guard that fishing vessels be inspected by their owners. As of August 25, 1992, the Coast Guard had not yet submitted its recommendations to Congress.

The Safety Board is opposed to a self-inspection program because the existing Coast Guard safety programs that rely on the fishing industry to police itself have not been successful. The Safety Board believes that fishing vessels should be periodically inspected and certified by the Coast Guard or by a Coast Guard-approved third party other than the vessel owner. Such inspections would ensure, among other things, that these vessels meet minimum standards for hull integrity, stability, machinery, and structural standards. Had the SEA KING been an inspected vessel, the vessel's watertight integrity probably would have been maintained and the effectiveness of its bilge system improved, which could have prevented the accident. Moreover, the owner probably would not have been allowed to install a fish finding sonar in front of the starboard pilothouse door.

As a result of the SEA KING sinking, the Safety Board has retained Safety Recommendation M-87-64 as "Open--Unacceptable Response" and has reiterated the recommendation pending the Coast Guard's report to Congress concerning the nature and scope of the fishing vessel inspection program it recommends. The Safety Board, however, urges the Coast Guard to propose to Congress an expanded vessel inspection program that includes some type of outside inspection to be performed by either the Coast Guard or a qualified third party.

The need to train and license uninspected fishing vessel operators has been also a safety issue in previous accidents investigated by the Safety Board. In 1987, following the investigation of the AMAZING GRACE, the Safety Board recommended that the Coast Guard:

> M-85-68
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> Seek legislative authority to require the licensing of captains [operators] of commercial fishing vessels, including a requirement that they demonstrate minimum qualifications in vessel safety, including rules of the road, vessel stability, fire fighting, watertight integrity, and the use of lifesaving equipment.

On January 8, 1986, the Coast Guard said that it did not concur and that it believed a voluntary safety awareness program aimed at crewmembers would be an effective alternative to mandatory licensing of operators. In response, the Safety Board classified the recommendation as "Open--Unacceptable Response" and strongly urged the Coast Guard to reconsider its position.

The Safety Board reiterated Safety Recommendation M-85-68 several times following its investigations of fishing vessel accidents involving the WAYWARD WIND, UYAK II, SANTO ROSARIO, AMERICAS, ALTAIR, and NORDFJORD[8] The recommendation was later placed on the Safety Board's list of most wanted safety improvements.

The Safety Board believes that in order to increase commercial fishing vessel safety, operators should be required to demonstrate a *minimum level of* professional competency. The Board also believes that the Coast Guard's establishment of safety training standards similar to those included in Safety Recommendation M-85-68 as part of any prospective plan to license fishing vessel operators will largely determine the success or failure of any future licensing program. Because the Coast Guard has recently presented a licensing plan to Congress, the Board has reclassified Safety Recommendation M-85-68 as "Open--Acceptable Alternate Action."

In 1987, as a result of its study of uninspected fishing vessel safety, the Safety Board recommended that the Coast Guard:

> M-87-51
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> Establish minimum safety training standards for all commercial fishermen, commensurate with their responsibilities, for all types of uninspected fishing industry vessels.

On March 11, 1988, the Coast Guard replied:

> [Safety Recommendation M-87-51] is partially concurred with. The establishment and use of industry training courses as discussed in the "Voluntary Standards for U.S. Uninspected Commercial Fishing Vessels" (NVIC 5-86) and the use of the *Vessel Safety Manual* will accomplish this goal. The *Vessel Safety Manual*, which was written by and for fishermen, establishes training standards or emergency procedures for fire prevention, detection, and extinguishment and for other safety practices aboard fishing vessels. Accordingly, no further Coast Guard action on this recommendation is anticipated, and we therefore request that it be classified as closed.

On June 7, 1988, the Safety Board classified Safety Recommendation M-87-51 as "Open--Unacceptable Action." The Safety Board later reiterated the recommendation following its investigation of the disappearance of the NORDFJORD and the sinking of the UYAK II.

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[8]Marine Accident Report--*Sinking of the U.S. Fishing Vessel SANTA ROSARIO About 35 Miles East of New Smyrna Beach, Florida, July 23, 1984* (NTSB/MAR-86/04); 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); Marine Accident Report--*Disappearance of the U.S. Fishing Vessel NORDFJORD in the Gulf of Alaska, Kodiak, Alaska September 19, 1987* (NTSB/MAR-88/07). Bibliographic information about the investigations of the other accidents are in earlier footnotes

The Commercial Fishing Industry Vessel Safety Act of 1988 required the Coast Guard to develop a plan for licensing operators of commercial fishing vessels. The Coast Guard submitted the plan to Congress on January 22, 1992. It includes the development of professional competency standards that would be used to establish criteria for two new licenses. One would be for operators of vessels of less than 100 gross tons and one would be for vessels greater than 100 gross tons but less than 200 gross tons. Under the plan, the Coast Guard would certify and test operators to ensure they meet the professional competency standards that it would develop. However, Congress has yet to grant the Coast Guard the necessary authority to implement the plan.

Many accidents involving uninspected fishing industry vessels occur because operators fail to account for structural and/or equipment modifications to the vessels and for their effects on stability and because operators fail to recognize safety hazards affecting the vessel or its crew.[9]

The SEA KING's operator did not appreciate the consequences of opening the lazarette drainage valve because he did not understand the effect of free surface on stability. It is apparent that his more than 10 years' experience in the industry had not prepared him for the situation he faced. His training and experience were not unlike those of many commercial fishermen. His background included no formal training or experience in how to respond adequately to flooding and its attendant stability issues, nor was he required to have a Coast Guard license or certificate or a merchant mariner's document.

The circumstances of this accident indicate that the SEA KING's operator lacked the knowledge necessary to operate a fishing vessel safely. Specifically, he failed to appreciate the need to keep all means of egress clear of obstructions and the vessel's bulkheads watertight. His understanding of the effect of the flooding on the SEA KING's stability was particularly deficient.

The Safety Board continues to believe that it is necessary to establish minimum safety standards for all commercial fishermen commensurate with their responsibilities for all types of uninspected fishing industry vessels and hereby reiterates Safety Recommendation M-87-51.

Only one person, a deceased crewmember of the SEA KING, was tested (the results were negative). The Safety Board believes mandatory postaccident toxicological testing is critical in determining the effect of drugs and alcohol on accidents and the preventive measures that must be taken to keep these factors from contributing to accidents in the future. There was no evidence that any SEA KING crewmembers were impaired by either drugs or alcohol at the time of the accident. However, because only one of the crewmembers was subsequently tested, the impact of drugs or alcohol on this accident could not be fully assessed.

The Coast Guard's inability to obtain a specimen from the operator is noteworthy. It asked the operator for a sample, and he failed to comply. In addition, the owner failed to direct the operator to submit to a test, even though the owner could have done so under 33 CFR Part 95. The Safety Board believes that

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[9]U.S. Coast Guard, *A Plan for Licensing Operator's of Uninspected Federally Documented Commercial Fishing Industry Vessels*, January 1992.

the operator and owner failed to cooperate, in part, because Part 95 imposes no penalties on an owner for failure to direct testing and no administrative penalties on an unlicensed operator for failure to submit to testing. At the time of the accident only small fines and/or a prison term of a year or less could be levied against an operator who was found intoxicated. However, those potential penalties did not ensure compliance. Of greater importance to an operator is his freedom from interference to operate a fishing vessel. The Coast Guard can affect an operator's freedom to operate through administrative action, but only if the operator is licensed. The Safety Board believes that the licensing of operators would ensure the applicability of the mandatory drug and alcohol testing requirements (46 CFR Parts 4 and 16, as well as the policies and procedures for administrative actions contained in 46 CFR Part 5), which go beyond those in 33 CFR Part 95.

The applicability of 46 CFR Parts 4 and 16 without licensed operators of uninspected fishing vessels was raised by the Safety Board previously during its investigation of the capsizing and sinking of the fish processing vessel ALEUTIAN ENTERPRISE. It was the Coast Guard's position in that accident that 46 CFR Parts 4 and 16 did not apply because the Coast Guard lacked the statutory authority to require licensing of operators of fishing vessels of less than 200 gross tons. The SEA KING was less than 200 gross tons.

As a result of the ALEUTIAN ENTERPRISE investigation, the Safety Board issued Safety Recommendations M-92-29 and -30 to the Coast Guard on April 14, 1992:

> M-92-29
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> 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, certified, or documented operator.
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> M-92-30
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> 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.

The Coast Guard has not yet responded to either recommendation, and pending a response from the Coast Guard, they remain classified as "Open--Awaiting Response."

While the Safety Board believes that the licensing of operators will ensure the applicability of 46 CFR Parts 4 and 16, the Safety Board is also, however, concerned about the length of time that could be involved in developing and implementing a licensing program for operators. Several years could pass before the effort is complete. Notwithstanding impending efforts, the Safety Board believes that postaccident testing is important enough to be required now. Consequently, the Safety Board reiterates Safety Recommendation M-92-29.

Because of the circumstances surrounding this accident, the National Transportation Safety Board recommends that the U.S. Coast Guard:

Incorporate into the training of search and rescue (SAR) personnel procedures to ensure the gathering and disseminating of pertinent information by all appropriate SAR personnel to facilitate a thorough assessment of the potential risks to persons involved in a SAR mission. (Class II, Priority Action) (M-92-54)

Review and revise policies relating to Coast Guard air and surface units rendering assistance to vessels to ensure that all people remaining on board the vessels are situated so as to ensure their safe exit in the event of an emergency. (Class II, Priority Action) (M-92-55)

Inform your rescue coordination centers, group offices, air stations and cutters of the circumstances of the SEA KING accident. (Class II, Priority Action) (M-92-56)

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

M-87-51

Establish minimum safety training standards for all commercial fishermen, commensurate with their responsibilities, for all types of uninspected fishing industry vessels.

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-92-29

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, certified, or documented operator.

Also, the Safety Board issued Safety Recommendation M-92-57 to the North Pacific Fishing Vessel Owner's Association and to the National Council of Fishing Vessel Safety and Insurance.

VOGT, Chairman, COUGHLIN, Vice Chairman, and LAUBER, HART, and HAMMERSCHMIDT, Members, concurred in these recommendations.

By: Carl W. Vogt
Chairman