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National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: DEC -6 1996

In reply refer to: M-96-11 through -19

Admiral Robert E. Kramek
Commandant
U.S. Coast Guard
Washington, D.C. 20593-0001

On August 21, 1994, a disabled 18-foot Questar motorboat with the vessel's owner and one passenger aboard capsized while being towed by the Coast Guard Auxiliary vessel PUPPET immediately south of Shelter Island, Lynn Canal, near Juneau, Alaska. The Questar's owner, who was mildly disabled, was trapped inside the vessel's cabin and was drowned. The passenger was not injured.[1]

The National Transportation Safety Board determined that the probable cause of the Questar's capsizing was the flooding of the vessel due to use of improper towing procedures by the Coast Guard Auxiliary operator of the PUPPET. Contributing to the capsizing was the failure of the PUPPET's operator to properly assess risk before deciding to tow the vessel in hazardous sea conditions. Contributing to the loss of life was the failure of the PUPPET's operator to remove the Questar's operator and passenger before towing the vessel.

The Questar had been taking part in the 1994 Golden North Salmon Derby. The Coast Guard estimated that up to 1,000 boats participated in the annual event. The weather was overcast with showers, the wind was from the south at 25-30 knots, and the seas were 3-5 feet. Sea water temperature was about 55 °F. The National Weather Service in Juneau had issued a small craft advisory for the area.

While the Questar was tied next to a fish packing vessel, it began to take on water over its side from boarding seas. As the Questar pulled away from the fish packing vessel, its outboard engines stopped. The non-radio-equipped motorboat drifted for 30-45 minutes as the crew made numerous unsuccessful attempts to restart the engines. The first distress call regarding the Questar was transmitted by a passing recreational vessel using VHF/FM channel 16. Because of the high volume of radio traffic on channel 16, this call did not reach the Coast Guard. The call was,

[1]For more detailed information, read Marine Accident/Incident Summary Report--*Capsizing of Questar Motorboat and Drowning of Operator, South of Shelter Island near Juneau, Alaska, August 21, 1994* (MAR-96/01/SUM).

however, overheard by an off-duty Coast Guard Chief Radioman who was a guest on the Coast Guard Auxiliary vessel PUPPET. The PUPPET was under the tactical control of Coast Guard Station Juneau in support of the derby and was standing by in the Saginaw Channel on the west side of Shelter Island. The Chief Radioman radioed the 17th District Communication Center that the PUPPET was proceeding to assist the Questar.

When the PUPPET arrived on scene and prepared to take the Questar in tow, the PUPPET's operator did not discuss alternatives to being towed, the Questar's condition, or the physical condition of the Questar's operator and passenger. The Auxiliary operator of the PUPPET was unaware that the Questar had flooded and was susceptible to flooding from rough seas and that the Questar's operator had medical disabilities.[2] After advising the vessel's occupants to don their personal flotation devices, the PUPPET's operator and the Chief Radioman passed the towline to the passenger on the Questar's bow, directing him to tie the towline around the anchor windlass. The operator of the PUPPET then directed the Chief Radioman to advise the Questar's two occupants to go to the stern of the vessel; they were to wave their hands to communicate with the crew of the PUPPET if a problem developed during the tow. The PUPPET's operator did not set a towing watch.

The Chief Radioman, who was not trained in small-boat search and rescue (SAR) and was not aboard the PUPPET in any official capacity, recalled that as the tow was getting under way, he looked back on the Questar and determined that everything looked "OK" to him. He admitted that he had difficulty seeing what was happening on the Questar at the end of a 150-foot towline. He did notice that only one of the Questar's crewmembers was still at the vessel's stern. The vessel's owner had gone into the cabin, a box-like structure fitted with smoked glass windows.

Shortly thereafter, the PUPPET's Auxiliary crewmember noticed that the Questar was down by the bow and alerted the PUPPET's operator to slow down. After a wave suddenly broke over the Questar's bow, the vessel assumed a bow-down attitude, flooding the foredeck. The passenger, who was sitting at the stern of the Questar, stated that he shouted to the Questar operator to get out of the cabin, but that before the operator could exit the cabin, a second wave broke over the bow, causing the bow to submerge. Water swept aft, collapsing the deckhouse front accordion door and flooding the cabin. The passenger later stated that he tried unsuccessfully to pull the operator out of the cabin and that the next thing he knew, he was floating in the channel. Shortly thereafter, he observed the Questar, now full of water, slowly roll to starboard and capsize. The passenger was rescued within minutes by a nearby fishing boat, but the Questar's owner was trapped inside the cabin and would later be pronounced dead from drowning.

The master of a nearby fish packing vessel observed the towing operation. He stated that he noticed the PUPPET increasing its speed, and he became concerned. He said he tried to use VHF/FM radio channel 16 to radio the Auxiliary operator of the PUPPET to slow down, but before he could get through, the Questar capsized.

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[2]The Questar's operator had mild cerebral palsy, was under medication for epileptic seizures, and had a left clubfoot.

The Safety Board investigation found serious deficiencies in Coast Guard communications during the 1994 Golden North Salmon Derby that compromised the Coast Guard's ability to effectively discharge its SAR mission responsibilities in the Juneau area. The Coast Guard had estimated that there were be approximately 1,000 vessels participating in the derby, yet it made no attempt to minimize inappropriate use of channel 16 on August 21, 1994. Legitimate radio traffic, such as the initial call for assistance for the Questar, was suppressed by the sheer volume of radio operators using channel 16 and by operators with more powerful radios. Coast Guard planning for the use of one or more public working frequencies during special events such as the derby could have alleviated the congestion on channel 16.

During the derby, a period of high-volume VHF/FM traffic, the 17th District Communication Center became a choke point for the flow of radio communication information. When reports of the Questar's capsizing were being radioed, a second Coast Guard Auxiliary vessel, the FAERING, also assigned to Station Juneau for patrol during the derby, was responding to a medical case in the Shelter Island area. The FAERING reported to the 17th District Communication Center that it was under way to Auke Bay with a patient. This report was the first one indicating that a second Auxiliary vessel was responding to an assist case, and the Coast Guard did not quickly resolve the confusion among SAR personnel over which victim was associated with which incident. In addition, more than 2 hours passed before SAR controllers realized that the Questar's passenger had not been accounted for after the Questar capsized. In fact, the passenger had already been transported to Auke Bay and questioned by Station Juneau personnel. Station Juneau did not inform Group Ketchikan or 17th District SAR personnel of this fact.

During its review of communication records, the Safety Board found that SAR personnel accepted and passed on inaccurate information without question or verification. At one point, Group Ketchikan, the SAR mission coordinator, briefed 17th District SAR personnel that a helicopter from Coast Guard Air Station Sitka, Alaska, was on the way to the accident site, that the FAERING was transporting the Questar's passenger to rendezvous with an ambulance, and that Station Juneau's 25-foot patrol boat was en route to Auke Bay to pick up a dive team, none of which was accurate. No one individual in the SAR communication network verified and assessed the streams of information for quality or significance during the Questar response.

Coast Guard Group Ketchikan had issued a 1994 Golden North Salmon Derby operational order that assigned Coast Guard Station Juneau as patrol commander of all support units, including four Coast Guard Auxiliary vessels, in its area of tactical control. Station Juneau's primary means of communication with units under its control was VHF/FM radio. However, Station Juneau was unable to communicate with its units reliably because of poor VHF/FM radio reception attributable to the location of its antenna and high mountains in the area that blocked radio signals. For all practical purposes, Station Juneau was unable to exercise command over resources responding to marine incidents in its area.

Before the Questar capsized, Station Juneau was unaware that two of its Auxiliary vessels, the PUPPET and the FAERING, were proceeding with assist cases. Moreover, the PUPPET's operator did not confirm with Station Juneau, the patrol commander, his intention to tow the Questar, although both the 1994 Golden North Salmon Derby operational order and a directive issued by the derby's Juneau Auxiliary Flotilla Commander required that he do so. The

operator of the FAERING, also attached to Station Juneau, failed on several occasions to obtain authorization from Station Juneau before providing assistance to boaters in distress.

The Safety Board believes that had Station Juneau been provided with reliable radio communication capability, allowing it to talk with units in its patrol area, the Coast Guard's confusion in responding to the Questar's request for assistance and subsequent capsizing could have been minimized.

The Safety Board found that the Coast Guard 17th District does not have a policy on use of the Auxiliary in assist cases involving hazardous weather and sea conditions. The Executive Petty Officer at Station Juneau stated that the station limits such assist operations to calm seas and daylight hours. The Coast Guard's *Auxiliary Boat Crew Qualification Guide*, COMDINST M16798.21, defines "calm seas" as waves of 1 foot or less. It defines "heavy seas" as waves of 4 feet or more. At the time of the accident, Group Ketchikan had a draft document[3] specifying that under no circumstances should Auxiliary vessels be used in severe or adverse conditions. Neither "adverse" and "severe" were defined.

The National Weather Service in Juneau was predicting winds up to 25 knots and seas as high as 5 feet, for the Juneau area on the day of the accident. Before the capsizing of the Questar, Station Juneau had reminded Group Ketchikan that the station's 25-foot boat was on patrol near Shelter Island and was available for use. Coast Guard boat crews are regularly trained and tested in towing under hazardous conditions. Auxiliary operators, on the other hand, must meet a much less demanding training requirement to maintain qualification.

Nonetheless, the Auxiliary vessel PUPPET was allowed to respond to the Questar's request for assistance without SAR personnel having made a proper assessment of the Auxiliary operator's capabilities and limitations, the risks involved, or other response options available, as is required under Coast Guard SAR procedures.[4] The PUPPET's operator stated that the decision whether or not to tow was entirely his to make. He was unaware that Station Juneau and Group Ketchikan had policies restricting his authority to accept assist cases.

The Coast Guard, responding to downsizing pressure, plans to shift more of its small boat operational workload from regular Coast Guard units to Auxiliary resources. The Safety Board believes that this accident demonstrates a need to clearly define limits in the use of Auxiliary resources when weather and sea dictate the use of better trained and equipped regular Coast Guard units.

The Safety Board is concerned that existing Coast Guard policy on removal of passengers before towing allows on-scene response personnel too much discretion. Although its SAR towing doctrine gives primacy to the safety of passengers during a towing operation, the Coast Guard does not have a policy for mandatory removal of passengers from towed vessels, assuming

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[3]Appendix 8 to annex E from Group Ketchikan's standard operating procedure, which was in draft at the time of the Questar accident, reflected Group Ketchikan's policy for use of the Auxiliary. Since the accident, the 17th Coast Guard District has reorganized, and Group Ketchikan has been eliminated.

[4]*Coast Guard National Search and Rescue Manual*, COMDTINST M16120.5A.

conditions are safe to do so. Rather, its policy[5] is to remove all occupants from the disabled boat, if necessary.

The Auxiliary operator of the PUPPET assumed he had been directed to tow the Questar to Auke Bay. He discussed the upcoming tow with his guest, the Coast Guard Chief Radioman, and, based on the information available to him, decided not to remove the operator and passenger. He neither determined the physical condition of the Questar or its crew nor asked the Questar's crew whether they had any concerns about being towed.

Safety considerations did not preclude removal of the Questar's crew. The Questar was moored in the lee of a fish packing vessel, and transferring personnel from the Questar to the PUPPET would have been routine. In fact, little benefit was to be gained from leaving the Questar's crew on their vessel during the tow. The PUPPET lacked an effective means of communicating with the Questar. Additionally, the crew of the Questar, which was at the end of 150 feet of towline, would have been unable to rapidly alert the PUPPET's crew to an emergency on the Questar or to assist the PUPPET's operator in managing the tow.

The Safety Board believes that the occupants of a disabled vessel should be removed, if removal can be done safely, before the vessel is towed and that the Coast Guard needs to revise its policies on removal of occupants during towing operations to reduce the risk associated with on-scene response personnel making decisions based on incomplete information.

The Safety Board is concerned that the PUPPET's operator failed to properly assess the risk to the Questar's operator and passenger in attempting to tow the motorboat. The Safety Board has addressed the issue of risk assessment by Coast Guard SAR personnel in its investigations of the capsizing and sinking of the SEA KING, RITE OF PASSAGE, and BIG ABALONE. Although the Coast Guard is training its active duty SAR personnel in risk assessment, Coast Guard Auxiliary personnel are not receiving this training. The Safety Board believes that the Coast Guard should have applied the lessons learned from the above accidents to its response in the Questar incident. It is critical to the success of any SAR mission that on-scene response personnel determine the nature of the problem, do a risk assessment, and decide on a course of action that minimizes the risk to life and property.

The PUPPET's operator also allowed a guest aboard his vessel to become involved in Auxiliary patrol activities contrary to Coast Guard Auxiliary operational policy.[6] While his guest, a Coast Guard Chief Radioman, was experienced in communications, he had no practical experience in SAR and towing operations. Even if the operator thought that the Chief Radioman was experienced in small boat SAR, the Safety Board believes that he should not have allowed a guest on his vessel to assume the responsibilities properly assigned to the PUPPET's Auxiliary boat crewmember.

The PUPPET's operator did not ask about the physical condition of the Questar's operator and passenger, in particular, whether anyone had special health problems or medical

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[5] *Boat Crew Seamanship Manual,* Commandant Instruction M16114.5A.

[6] *Coast Guard Auxiliary Operations Policy Manual,* COMDTINST M16798.3C.

disabilities. Had he done so, he probably would have determined that the Questar's operator had mild medical conditions that may have limited his mobility.

In addition, the operator failed to ascertain the condition of the Questar, what the original problem was, and what other problems the crew were experiencing with the vessel while waiting for assistance. The Questar's open fore and aft decks had minimal drainage, and the vessel had a low freeboard in relation to the waves it was encountering. Moreover, the Questar's high wind profile in relation to her shallow draft made her susceptible to wind loading. Had the PUPPET's operator examined the Questar more closely and talked to her crew, he may have determined that the vessel's seaworthiness in the prevailing sea conditions was questionable.

Proper trimming of a vessel to be towed is one of the Coast Guard's principal towing safety precautions taught to SAR personnel. The PUPPET's 150-foot 5/8-inch double braided nylon towline, connected to the Questar's anchor windlass on the main deck, created a downward force that may have prevented the Questar's bow from riding over waves encountered during the tow. A shorter towline with less catenary may have reduced the downward force on the bow of the Questar during the tow. The PUPPET's operator did not consider using the Questar's trailer hitch stem padeye, which would have been a better connection point for the towline because of its lower position on the vessel.

Exacerbating the Questar's trim condition was the operator's move into the cabin as the tow was getting under way. Although the PUPPET's operator asked the Questar's crew to remain at the stern of the vessel, he did not monitor the crew's activities once the PUPPET was under way. The Questar operator's relocation into the deckhouse created a forward moment that increased the bow-down trim of the vessel. The PUPPET's operator did not set a towing watch that could have detected this condition. Setting an alert, dedicated towing watch that will maintain a constant watch and frequently account for all occupants on the towed vessel is critical during any towing operation and is recommended under Coast Guard towing doctrine.[7] The Chief Radioman aboard the PUPPET noticed that one of the Questar's crew had moved away from the vessel's stern, but the significance of the move was not apparent to him. The PUPPET's operator had not instructed the Chief Radioman in any towing safety precautions before getting the tow under way.

When the PUPPET began its tow of the Questar, the PUPPET's operator did not evaluate the motorboat's response to being towed in the prevailing seaway at low speeds. When he looked back at the Questar, after being prompted by his boat crewmember to slow down, the Questar was already being dragged under the first wave. By the time the PUPPET's operator was able to reverse his engines, the Questar was capsizing. If the PUPPET's operator had observed how the Questar was responding at slow towing speeds, he may have noticed that the Questar was not riding over the waves but into them.

The Safety Board believes that had the operator of the PUPPET evaluated the risk more thoroughly, he would not have towed the Questar with its crew aboard. However, unlike their counterparts in the regular Coast Guard, neither he nor his crewmember had received Human Error Accident Reduction Training or similar risk assessment training. The Safety Board believes

[7] *Coast Guard Boat Crew Seamanship Manual*, COMDINST M16114.5.

that had the Auxiliary crew of the PUPPET been trained in SAR risk assessment, this accident may not have happened.

The Safety Board also investigated the issue of crew survivability during this capsizing. Had the PUPPET's operator monitored the actions of the Questar's operator and passenger and restricted their movements to the stern of the vessel, the Questar's operator may not have been trapped in the cabin when the motorboat capsized. In its investigation of the capsizing and sinking of the U.S. fishing vessel SEA KING, the Safety Board determined that the people who had remained on board in the cabin during the tow could not safely exit when the vessel capsized. Using lessons learned from the SEA KING and Questar accidents, the Coast Guard Auxiliary needs to revise its towing policies to ensure that people who remain on board a towed vessel are situated so as to ensure their safe exit in the event of an emergency.

During its investigation, the Safety Board found that neither the PUPPET's Auxiliary crew nor the Coast Guard SAR personnel whose job performance may have contributed to the accident were toxicologically tested after the accident. The Coast Guard designated this accident a class A mishap and invoked the provisions of its *Safety and Environmental Health Manual*, COMDTINST M5100.47, by convening a vessel mishap analysis board. The medical officer assigned to that board is responsible for ensuring that appropriate examinations and laboratory procedures, including complete physical examinations and toxicological tests, are conducted to establish which human factors were relevant to the accident. While toxicological testing after a class A mishap is routine for active duty personnel, the Coast Guard does not have a policy to require toxicological testing of Auxiliary personnel involved in vessel mishaps, even if they are operating under Coast Guard orders. The Coast Guard justifies this position on the grounds that Coast Guard Auxiliary personnel are volunteers and the "Good Samaritan Law" should apply.[8]

The Secretary of Transportation has published a directive (DOT Order 3910.1C) prescribing the department's policy and procedures for implementing Executive Order 12564, Drug-Free Federal Workplace. The directive calls for testing each employee, if his or her work performance may have contributed to an accident, for the presence of drugs following an accident involving one or more deaths. This policy applies to Coast Guard personnel.

The Safety Board believes that members of the Coast Guard Auxiliary, while operating on Coast Guard orders, also have significant responsibilities affecting public safety and should meet the same standards as full-time Coast Guard personnel; that is, they should be required to undergo full toxicological testing if there is a possibility that their work performance may have contributed to an accident.

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

> Improve Station Juneau's radio reception capability commensurate with its tactical responsibilities in the mission area. (M-96-11)

[8]Telephone conversation with COMMANDANT (G-HSE-4) on April 28, 1996.

Develop written policies that set limits, based on clearly defined weather and sea conditions, on the use of Coast Guard Auxiliary resources. (M-96-12)

Revise Coast Guard search and rescue policy to require or recommend removal of occupants from towed vessels before beginning the tow if it is safe to do so. (M-96-13)

Provide risk assessment training to all Coast Guard Auxiliary personnel involved in search and rescue missions. (M-96-14)

Revise Coast Guard Auxiliary policies on units rendering assistance to vessels to ensure that all people who remain on board a towed vessel are situated so as to ensure their safe exit in the event of an emergency. (M-96-15)

Revise Coast Guard regulations to require mandatory postaccident toxicological testing of Coast Guard Auxiliary personnel involved in marine accidents while operating under Coast Guard orders. (M-96-16)

Incorporate the lessons learned from this accident into a case study training exercise for Coast Guard search and rescue units, including Coast Guard Reserve and Auxiliary commands. (M-96-17)

Publicize the circumstances of this accident to all Coast Guard units responsible for search and rescue. (M-96-18)

Disseminate a copy of this report to all Coast Guard Auxiliary personnel involved in search and rescue missions. (M-96-19)

If you need additional information, you may call (202) 314-6490.

Chairman HALL, Vice Chairman FRANCIS, and Members HAMMERSCHMIDT, GOGLIA, and BLACK concurred in these recommendations.

By: Jim Hall
Chairman