M-245

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: April 5, 1984

Forwarded to:

Admiral James S. Gracey
Commandant
U.S. Coast Guard
Washington, D.C. 20593

SAFETY RECOMMENDATION(S)

M-84-17 through -19

About 0945 on September 10, 1983, the U.S. Coast Guard Cutter POLAR SEA (WAGB-11), an icebreaker returning from a shakedown cruise in Puget Sound, Washington, approached its regularly assigned berth at Pier 37, U.S. Coast Guard Base, Seattle, Washington, with two commercial tugs assisting. On the first attempt to berth, the wind and current set the POLAR SEA against a mooring dolphin located at the outer end of the pier and toward two barges moored against the end of the pier. As the vessel was backed clear of the berth, it grazed the outboard barge. On a second attempt to berth, the POLAR SEA again was set down against the dolphin. When it was backed clear, the icebreaker's stern struck a passing barge under tow about 1008. After ahead thrust on the POLAR SEA's propellers, which had been ordered in an attempt to avoid impact with the barge astern, the bow of the POLAR SEA again struck the outboard barge at the end of the pier, damaging it and the inboard barge and parting the outboard barge's mooring lines and destroying its deck cargo. The POLAR SEA then was maneuvered into Elliott Bay, and the service of a third tug were requested. The third attempt to berth was successful with the use of the additional tug. The damage to the three barges and the deck cargo was estimated at approximately $95,000. There was no damage to the POLAR SEA other than scraped paint. 1/

Two commercial tugs, the CREOLE SUE and the BLARNEY, had been standing by awaiting the arrival of the POLAR SEA. Both tugs were owned and operated by the Haida Marine Corp. of Seattle. An initial call to request orders was made by the CREOLE SUE to the POLAR SEA on VHF radio, Channel 13. The tug was told to stand by until the icebreaker was further into the harbor, at which time the vessels would shift to a working frequency and the tugs would be given orders.

About 0935, after radio communications had been established on VHF Channel 74, the CREOLE SUE was ordered to make fast to the POLAR SEA's starboard bow with two lines, and the BLARNEY was ordered to stand by at the port quarter. By 0945, the CREOLE SUE had two lines on the starboard bow of the POLAR SEA; one line led through the tug's bull nose 2/ to the fourth chock, about 100 feet aft of the bow; and a slack quarter line led from the tug's aft towing bitts to a chock on the main deck of the

1/ For more detailed information, read Marine Accident Report--"U.S. Coast Guard Cutter POLAR SEA, Collision with barges, Seattle, Washington, September 10, 1983" (NTSB/MAR-84/03).

2/ A closed fairlead on the bow of the tug.

POLAR SEA, just aft of the bridge wing. As the POLAR SEA approached Pier 37 on a southeasterly heading, the BLARNEY was ordered to come alongside the port quarter in position to push against the hull. A single headline was passed through the bull nose on the bow of the BLARNEY and through a chock on the port side of the POLAR SEA's main deck, about 40 to 50 feet forward of the stern. The line was made fast.

The operator of the BLARNEY stated that the amount of power applied was left to his discretion and that he had used "slow to moderate ahead." He did not receive any orders from the POLAR SEA during the approach to the berth to increase power over what he chose to use. The CREOLE SUE, assisting on the starboard bow, was instructed in the amount of power to apply, and during the initial phase of the maneuver was ordered to "come ahead easy." The tug operator recalled using "ahead easy" to "ahead half" on his engines during this initial phase of the maneuver. As the POLAR SEA started to turn into the berth, it prematurely was set toward a mooring dolphin at the end of the pier and the barges MANSON 48 and MANSON 59, which were moored across the end of Pier 37. The conning officer elected to abort the berthing attempt and back out for another attempt, and the CREOLE SUE was then ordered "full astern" in an attempt to hold the bow off the mooring dolphin and the barges.

Meanwhile, the tug CLAUDIA FOSS, towing the barge FOSS 253 alongside, was approaching the entrance to the East Waterway from the west. Even though the icebreaker's pitch control levers were placed on "ahead full," or maximum pitch ahead, as the POLAR SEA cleared the slip it was evident to the executive officer that the stern of the POLAR SEA would hit the FOSS barge. The POLAR SEA responded quickly to the engines, and sternway had been reduced when the collision occurred with the FOSS 253 barge at approximately 1008. The POLAR SEA then started to come ahead, and it struck the barge MANSON 48, damaging the barge and destroying its deck cargo, parting its mooring lines, and setting it adrift. The inboard barge MANSON 59 also was damaged. The POLAR SEA again backed full and, when all forward motion was checked, the pitch control levers were placed on zero. The ship then was swung to port until it headed north, at which time it proceeded slowly into Elliott Bay with both tugs still made fast alongside.

The commanding officer of the POLAR SEA was the conning officer when the accident occurred on September 10th. He positioned the CREOLE SUE and the BLARNEY alongside, and directed their movements throughout the berthing operation. There was no pilot or docking master aboard the POLAR SEA. The POLAR SEA is not equipped with an automatic course recording device or means to record engine orders automatically. No record of the headings of the vessel or engine maneuvers was made after the navigation plot was suspended at 0929, when the special sea detail was set.

When tugboat assistance is used by a larger vessel under power, the primary function of the assisting tugs is to provide a force to change the heading of the vessel at slow speeds, when the vessel's rudder is ineffective. The use of tugboats in this manner reduces the hazard associated with too much way on the vessel when there is limited maneuvering room. The positioning of tugs is an important factor in their ability to perform their expected task. The most efficient locations to apply external forces to turn a vessel are at its bow and stern. However, due to the configuration of vessels' hulls, such as flared bows and overhanging sterns, some compromise is necessary and a less desirable position must be used. A tugboat working close to a vessel's bow requires less power to exert a given turning force than one performing a similar function 1/4 to 1/3 of the vessel's length aft of the bow. The CREOLE SUE could have better assisted a vessel the size and displacement of the POLAR SEA if it had been made fast further forward. Such positioning was feasible in this case.

The MANSON barges, berthed across the end of Pier 37, prevented the use of the mooring dolphin off the corner of the pier in effecting a ready recovery after the first unsuccessful attempt to enter the slip. Had the conning officer on the POLAR SEA been able to land his vessel against the dolphin, he could have pivoted on it and then proceeded into the berth, if the MANSON barges had not been there. The MANSON barges also interfered with the most effective use of the BLARNEY on the port quarter by limiting the tug's maneuvering room in turning the POLAR SEA parallel to the pier. If the interference caused by the barges had not existed, and if the mooring dolphin had been available to pivot the vessel when the forward tug could not hold it against the wind, the first attempt to berth the POLAR SEA might have been successfully salvaged. The Safety Board believes that the conning officer on the POLAR SEA should have anticipated the interference to the effective use of the BLARNEY and the mooring dolphin which was created by the MANSON barges moored at the end of the pier.

Because the commanding officer of the POLAR SEA, acting on advice of counsel, declined to answer questions regarding the accident, his prior knowledge of shiphandling using assisting tugs is not known. However, this accident indicates his expertise in this situation probably was limited. The executive officer stated that he had little experience in using assisting tugs in shiphandling. This accident points out that additional training would benefit commanding officers of larger Coast Guard vessels. Although it is recognized that only a few areas of Coast Guard operations require tug assistance, the training of prospective commanding officers to use tugs in handling larger vessels in close quarters would greatly enhance the safe berthing of these vessels. In some areas, the employment of a docking pilot might provide the necessary initial familiarization and knowledge of local conditions. The Safety Board believes that docking pilots should be employed when larger Coast Guard vessels use commercial tugs in berthing, at least until the commanding officers of those vessels gain the necessary skills in using tugs and knowledge of local conditions to berth their vessels safely.

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

> Install on the USCGC POLAR SEA and other Coast Guard vessels of similar size a means of automatically recording engine orders during maneuvering and a means of automatically recording the vessel's headings. (Class II, Priority Action) (M-84-17)
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> Require the commanding officers of U.S. Coast Guard vessels using commercial tugs for assistance in berthing to retain the services of a qualified docking pilot until they are knowledgeable of local conditions. (Class II, Priority Action) (M-84-18)
>
> Provide training for commanding officers and prospective commanding officers of larger Coast Guard vessels in the use of tugs. (Class II, Priority Action) (M-84-19)

BURNETT, Chairman, GOLDMAN, Vice Chairman, BURSLEY and GROSE, Members, concurred in these recommendations. ENGEN, Member, did not participate.

By: Jim Burnett
Chairman