



National Transportation Safety Board

Washington, D.C. 20594
Safety Recommendation

LOG# 325B

Date: February 18, 1987

In reply refer to: M-87-6

Captain Steve Wedlock
Society of Professional Sailing
Vessel Masters
c/o Landmark School
Pride's Crossing, Massachusetts 01965

On May 14, 1986, the U.S. sailing vessel PRIDE OF BALTIMORE capsized and sank in the Atlantic Ocean, about 250 nmi north of Puerto Rico while en route from St. John, U.S. Virgin Islands, to the Chesapeake Bay, Maryland. The vessel, a replica of a Baltimore clipper, was returning to Baltimore, Maryland, after an extended European good will tour promoting the port of Baltimore.

The PRIDE OF BALTIMORE left St. John about 1100 on May 11, 1986, and after clearing the harbor, set sails and proceeded out to sea. After experiencing some calm periods during the first night, the wind filled in during the nights of May 12 and 13 and by the morning of May 14, the wind had increased to about 25 to 28 knots. The sails were shortened accordingly and all hands, except for the cook, were on deck coiling lines, clearing away gear, and securing all but two of the sails.

Shortly after noon, a sudden gust of wind struck the PRIDE OF BALTIMORE heeling it to port until it was on its beam end with the masts and sails lying on the water. Crewmembers were thrown into the water and the cook managed to escape from below. Two inflatable liferafts deployed but did not remain inflated. One raft was damaged by the ship's rigging while the second raft deflated through the open topping-off valves. The PRIDE OF BALTIMORE, valued at \$1,080,000, flooded and sank in a matter of minutes.

After about 6 hours, the eight surviving crewmembers managed to inflate one of the six-man liferafts by mouth. After drifting for over 4 days, the survivors were rescued on May 19, 1986, by the crew of the M/V TORO, a Norwegian tanker, who notified the Coast Guard of the accident. 1/

The manner in which life preservers were stowed aboard the PRIDE, below deck in the crew's quarters, precluded their availability following the knockdown and rapid sinking of the vessel. At the time of the accident, only four life preservers were available to the crew on the deck, and they were stowed and secured in the inflatable, rigid-hulled, rescue boat.

This below deck stowage of life preservers prevented their retrieval by the crew, since all but one crewmember were on deck when the knockdown occurred. Their retrieval from below, as generally agreed by the survivors, would require a minimum of

1/ For more detailed information read Marine Accident Report--"Capsizing and Sinking of the U.S. Fishing Vessel PRIDE OF BALTIMORE in the Atlantic Ocean, May 14, 1986" (NTSB/MAR-87/1).

30 seconds to accomplish--time which was not available to the crew during the emergency. Although there were a total of 28 life preservers (16 Type I and 12 Type III) aboard the vessel, none were easily accessible or unsecured so as to float free, and therefore, the equipment sank with the vessel.

According to the builders and former masters of the vessel, life preservers had not always been stowed in this manner aboard the PRIDE. Wooden deck boxes previously had been used for stowing life preservers which enhanced their availability. At the time of the accident, these deck boxes were used for stowage of other equipment. The accessibility of life preservers in the severe environmental conditions that existed at the time of the knockdown is considered critical to the ability of the crewmembers to survive the accident. The loss of at least one crewmember, the carpenter, and possibly all who perished, may have been avoided if life preservers had been stowed on deck and readily accessible.

The stowage of life preservers at muster station locations or close to the exterior of all vessels, not only passenger vessels, would improve access to them during emergency situations. In addition, the life preservers could float free in case of a rapid sinking. The application of such stowage should be considered for all vessels, regardless of size or service.

The two manually activated EPIRB transmitters aboard the PRIDE had been stowed below deck adjacent to hatch openings which made them inaccessible from the deck in this emergency. The unit stowed inside the aft cabin hatch was secured by a metal clasp and was prevented from floating free. The other unit, stowed in an open box inside the main hatch, was not fastened to the ship and could not float free because the main hatch was secured at the time of the knockdown. Even if the main hatch had been open, it is uncertain if the unit would have floated out of the interior of the ship; in addition, it would had to have been manually switched on to function. EPIRBs carried by Coast Guard inspected ocean-going merchant vessels are required to be a Class A type, self activating in a float free stowage. A Class A EPIRB, mounted in the required manner on the PRIDE, would have provided a more timely distress notification and for the initiation of the search and rescue operation. Although the amendment to Title 46 U.S. Code Section 4102 now requires uninspected fishing vessels to be equipped with an EPIRB, other vessels in the uninspected category are still not included in the requirement. The Safety Board believes that all uninspected vessels should be equipped with EPIRBs and therefore, the Board urges the Coast Guard to seek authority to require those remaining uninspected vessels that operate offshore to carry EPIRBs.

Another concern of the Safety Board is the use of safety harnesses and lines. The master and crew of the PRIDE believed that use of safety harnesses and lines provided the necessary freedom of movement required for sailing and working aloft in the rigging. The safety afforded by the harness would be enhanced by providing a release at both ends of the tether. Such a device would enable the wearer to release himself from the vessel without cutting or releasing the outer end of the tether. Safety harnesses that incorporate compact inflatable devices for emergency flotation have recently been developed which can afford increased protection.

The protection provided by the two Zodiac MPUS-6 standard liferafts aboard the PRIDE was considered sufficient for open ocean survival. The design and equipment incorporated in this model were believed to be adequate for the rigorous requirements of

ocean service by the manufacturer as described in their product literature. The replacement of these liferafts with models containing additional equipment more suitable for "deep-sea" or long range ocean service (a radar reflector, rain water catchment devices, and floors offering thermal protection) would have been prudent and advisable. This may not have been considered by the operator or the master(s) due, perhaps to a belief that the PRIDE's liferafts were adequately designed for long range ocean service.

The liferaft malfunction, specifically the deflation of the liferafts after they were initially deployed and inflated, is related to the design and service requirements of the topping-off valve (plug) assembly. The topping-off valve design, which is not used on rafts currently manufactured by Zodiac, caused the difficulty the survivors experienced in keeping the plugs seated when they were adrift in the ocean. Once the plugs are removed from the valve, which is routinely required for increasing air pressure in the raft due to ambient temperature variations, they are difficult to re-seat securely. When they are not re-seated securely, they are susceptible to accidental dislodging with resultant pressure loss.

The difficulty in securing the plug manually in the valve opening is addressed in the Zodiac Liferaft Manual servicing instructions. These instructions require that during servicing, the plugs must be inserted in the topping-off valve openings using a special procedure with a mallet. This procedure assures that the valve plugs are properly seated in the valve openings during initial inflation. Experiments conducted at the headquarters of Zodiac of North America indicated that the liferaft malfunction described by the survivors could be traced to the servicing of the liferafts conducted in Algeciras, Spain, 3 months before the accident. Once again, the design of the topping-off valve assembly is considered to have indirectly contributed to the liferaft malfunction reported by the crew of the PRIDE. The design of the plug precluded any positive closure, which a threaded fitting would provide. Without a threaded or similar type fitting to ensure proper closure of the valve opening, the seating of the plugs in the PRIDE's liferafts could not be taken for granted. As a result of the experiments it is concluded that the topping-off valve plugs were not inserted into the topping-off valve during servicing in accordance with the requirements of the servicing manual. This is further substantiated when the damaged liferaft deflated completely instead of retaining air in the undamaged chambers according to its design. The liferaft deflation can be attributed to the failure of servicing personnel to install the plugs resulting in the loss of pressurized air through the opening and deflation.

Zodiac liferafts incorporating this topping-off valve assembly design are no longer manufactured, but it is estimated that over 300 of these liferafts are currently in use in the U.S. Although proper servicing of this equipment may eliminate the potential for deflation following deployment of the raft, it would be appropriate for Zodiac to require a retrofit installation of a valve assembly with a different design when servicing rafts that are currently in use. A valve design, which eliminates the problems encountered as a result of hand-seating the valve plug after removal for topping-off purposes is available and would eliminate the design-induced limitations of the equipment.

The drowning of the ship's carpenter can be attributed to the failure of the liferafts to function properly and his lack of survival swimming skills. Although he was in the water for 30 minutes before he was located and he appeared to be suffering from the effects of ingestion of seawater, he may have survived the immersion if a liferaft had been available. It is doubtful, however, if he could have withstood the rigors of 4 days in the overcrowded liferaft. The Safety Board believes that the ship's carpenter would not have drowned if the liferaft malfunction had not occurred, but his chances of survival in the overcrowded liferaft were minimal.

The loss of various items of survival equipment stowed in the liferaft also could be attributed to improper servicing as a result of a failure of servicing personnel to properly tie and secure the equipment bags to the interior of the raft. However, it is more likely that survivors may have inadvertently released the equipment during their initial attempts to board the liferafts.

Therefore, the National Transportation Safety Board recommends that the Society of Professional Sailing Ship Masters:

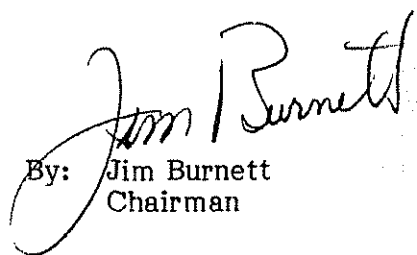
Urge the members who serve as masters aboard sailing vessels to take the following steps to ensure the safety of their passengers and crew while underway: (Class II, Priority Action) (M-87-6)

- o Provide on-deck float-free stowage for life preservers.
- o Equip the vessel with a Class A (self-activating and float-free stowage) Emergency Position Indicating Radio Beacon (EPIRB).
- o Provide crewmembers with safety harnesses that incorporate compact inflatable devices for emergency flotation and tethers that also unclip at the harness.
- o During future servicing of any Zodiac inflatable Model MPUS-6 standard liferafts that may be in service aboard your vessels, specify that the liferafts be retrofitted with improved inflation/deflation valves as recommended by Zodiac.
- o Specify that inflatable liferafts be Coast Guard-approved rafts or equipped according to International conventions (SOLAS).
- o Disseminate to the members of your society, the details of this accident report including the associated recommendations.

Also, as a result of its investigation, the Safety Board issued Safety Recommendations M-87-1 through -4 to the Coast Guard, M-87-5 to Zodiac of North America, Inc., M-87-7 and -8 to Pride of Baltimore, Inc., and M-87-9 and -10 to the National Weather Service.

The National Transportation Safety Board is an independent Federal agency with the statutory responsibility ". . . to promote transportation safety by conducting independent accident investigations and by formulating safety improvement recommendations" (Public Law 93-633). The Safety Board is vitally interested in any actions taken as a result of its safety recommendations and would appreciate a response from you regarding action taken or contemplated with respect to the recommendation in this letter. Please refer to Safety Recommendation M-87-6 in your reply.

BURNETT, Chairman, LAUBER and NALL, Members, concurred in this recommendation. GOLDMAN, Vice Chairman, did not participate.


By: Jim Burnett
Chairman