



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: May 29, 1986

In reply refer to: M-86-41 through -43

Mr. Frederick Townend
President
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On October 16, 1985, the U.S. self-propelled lift boat DMC-1 capsized and sank in High Island Block 144 in the Gulf of Mexico with 11 persons onboard. When the vessel capsized, it was drifting and the master was attempting to jack the vessel out of the water to effect a minor repair to the starboard main engine. Two persons, who were trapped within the vessel, were drowned, and the vessel, valued at \$600,000, was lost. 1/

Under normal conditions, the master could have used one of the main engines to hold the vessel stationary while he used the other main engine to operate the leg jacking machinery. However, in this case, the master had the use of only one main engine, which allowed the vessel to drift over the sea bottom while the legs were being lowered. Had the anchor been fitted with a cable, the master could have deployed the anchor to hold the vessel stationary while repairing the starboard main engine, and there would have been no reason to lower the legs. The lack of anchoring capability limited the options available to the master when the engine problem developed and may have influenced his decision to attempt to jack the vessel out of the water. The Safety Board, therefore, concludes that the inability to anchor the vessel contributed to the cause of this accident. Companies that operate lift boats should recognize that the need to anchor may arise at any time and should not allow their vessels to proceed to sea without the capability to anchor.

Although the vessel was outfitted with the usual navigation equipment necessary for safe operation, much of that equipment was not operating properly at the time of the accident. Navigation equipment deficiencies had no causal effect upon the capsizing of the vessel; however, under other circumstances, properly operating navigation equipment could have been vital to the safety of the vessel. The Safety Board believes that the navigation equipment deficiencies on the DMC-1 indicate a need for improved equipment maintenance procedures to ensure that vital navigation equipment is maintained in good working order.

1/ For more detailed information, read "Marine Accident/Incident Summary Report--Capsizing and Sinking of the U.S. Self-propelled Lift Boat DMC-1" (NTSB/MAR-86/01/SUM).

In this accident, the vessel capsized before the master could activate the general alarm system. Even if sufficient time had been available to activate the general alarm when the vessel started to capsize, there probably was insufficient time for the two deceased welders to have escaped from the deckhouse before it filled with water. Even the cook, who was preparing breakfast in the galley when the vessel capsized, barely escaped, and then only because he happened to surface in an air pocket with the other two welders when the deckhouse flooded and was able to escape through a broken porthole. The Safety Board believes the only action that the master could have taken to prevent persons from being trapped inside the deckhouse when the vessel capsized was to make sure that everyone was awake and outside the deckhouse before starting leg jacking operations.

Leg jacking operations to lift or lower a vessel are the most dangerous procedures carried out on lift boats. During such operations, lift boats are the most vulnerable to capsizing. Before such operations may be conducted safely, the master must determine that the vessel is not overloaded, that the weight loads are evenly distributed, and that all of the elevating gear is in proper working condition. After these determinations have been made, the master must ensure that the vessel is held as stationary as possible over the proposed jacking site before he starts to lower the legs to the sea floor. Movement of the vessel over the sea bottom during leg jacking operations can result in damage to the legs and footings when they contact the bottom, and such movement can, as was probable in this case, result in the vessel's capsizing.

During its investigation of the accident, the Safety Board reviewed the operation manual for the DMC-1 which set forth the procedure the master was to follow in jacking the vessel out of the water. According to the manual, the vessel "shall be positioned over the work site using the propulsion system" before the leg jacking system is engaged. This instruction is indefinite because it does not state that the vessel must be maintained in this position until leg jacking operations are completed, nor does the instruction explicitly prohibit leg jacking operations when the vessel is moving over the bottom. Furthermore, compliance with this instruction presupposes that the master has full use of both main engines that make up the propulsion system, so that he can use one main engine to hold the vessel in position while he uses the other main engine to power the leg jacking system. The instruction, therefore, implies that leg jacking operations to lift the vessel out of the water should not be conducted when the master has the use of only one main engine. The Safety Board believes that instructions to lift boat masters should be stated in a clear and precise manner so that they are easily understood and do not require interpretation. Had the master of the DMC-1 been given specific instructions not to jack the vessel out of the water when it is moving over the bottom or when he does not have full use of both main engines, he might not have attempted to do so, and this accident might have been avoided.

Therefore, the National Transportation Safety Board recommends that Drynorth (U.S.A.), Inc:

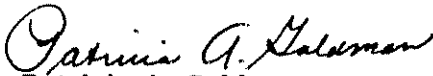
Establish remedial procedures to ensure that necessary navigation and vessel control equipment, including anchors and anchor cables, on company lift boats are on board and maintained in good operating condition. (Class II, Priority Action) (M-86-41)

Amend operating instructions to company lift boat masters to require them to make sure that all persons on board the vessel are awake and outside the deckhouse whenever leg jacking operations are in progress. (Class II, Priority Action) (M-86-42)

Amend operating instructions to company lift boat masters to prohibit them from conducting jack-up operations when the vessel cannot be held in a stationary position relative to the sea floor until such operations are completed. (Class II, Priority Action) (M-86-43)

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 recommendations in this letter. Please refer to Safety Recommendations M-86-41 through -43 in your reply.

GOLDMAN, Acting Chairman, and BURNETT, LAUBER, and NALL, Members, concurred in these recommendations.


By: Patricia A. Goldman
Acting Chairman