

Log M-250

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: September 27, 1984

Forwarded to:

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

SAFETY RECOMMENDATION(S)

M-84-31 through -34

About 1630, c.s.t., on November 9, 1983, the U.S. offshore supply vessel LAVERNE HEBERT departed the Brown and Root Company dock, Port O'Connor, Texas, with a load of deck cargo bound for an oil drilling rig off the Texas coast. Sometime during the night the LAVERNE HEBERT capsized, and five of its six crewmembers were killed. Damage to the vessel, including salvage costs, has been estimated at \$1.2 million. ^{1/}

Postaccident calculations performed by the Coast Guard established that, with no flooding and with all watertight doors secured, the LAVERNE HEBERT had a maximum righting arm of 1.43 feet and an angle of vanishing stability of 66 degrees. However, with the starboard stack enclosure door to the engineroom open, the vessel could roll only 10.4 degrees before water would begin to flood the engineroom, and the creditable righting energy would be reduced to only 6.4 foot-degrees. The calculations showed that the righting energy would continue to decrease as the amount of flooding increased, until the engineroom was flooded to about 8 feet, at which point no appreciable amount of righting energy would remain. At this point the vessel would capsize if inclined from the upright position by any significant overturning moment due to either wind forces or wave forces.

If the starboard stack enclosure door to the engineroom had not been open, the engineroom would not have flooded and this accident would not have happened. Even though the engineroom was designed for unattended operation, the chief engineer probably spent a number of hours each day in the engineroom performing routine maintenance. The starboard stack enclosure door to the engineroom may have been left open to help ventilate the engineroom which was probably uncomfortably hot because of the inoperative intake ventilation blowers. It is also possible that it was left open inadvertently after someone passed through the doorway in the course of routine operations on the vessel.

^{1/} For more detailed information, read Marine Accident Report—"Capsizing of the U.S. Offshore Supply Vessel LAVERNE HEBERT, Gulf of Mexico, November 9-10, 1983" (NTSB/MAR-84/06).

The flooding of the engineroom could have been halted by closing the starboard stack enclosure door. The reason why this was not done remains unknown. However, it may be that the door was not closed simply because it was not known that it was open. This door was located in an area which was not readily accessible from the main deck when the main deck was loaded with cargo. Additionally, since the door was in the aft end of the stack enclosure, it was not readily visible from the forward part of the vessel where the crew was located. While the foregoing may explain why the door was open, it does not excuse the fact that it was allowed to remain open, even after water was discovered in the engineroom.

Warning of engineroom flooding was provided by a high-water bilge alarm. According to the testimony of the alternate chief engineer, the alarm would sound when the engineroom flooded to a depth of about 3 feet and would be heard throughout the vessel. The Safety Board has no evidence as to whether or not this alarm sounded on the night of the accident. The cook testified that he heard no alarms. However, the alarm could have been silenced purposely by a member of the navigation watch before the cook awakened. Since the ship's generators were mounted only about 3 1/2 feet above the bottom plating, the engineroom would have had to receive only about 6 more inches of flooding from the time that the high-water bilge alarm first sounded before the generators would have grounded out and the alarm would have ceased. Depending upon the rate of flooding, there might not have been enough time to control the flooding before the vessel lost electric power. Inspected oceangoing vessels with unmanned enginerooms should be outfitted with bilge pumps capable of being started automatically when flooding occurs, and these pumps should be provided with a means to indicate when the influx of liquid is greater than the capacity of the pump. If the LAVERNE HEBERT had been fitted with such an automatic bilge pump, the engineroom flooding might have been controlled and the accident might have been avoided.

The mate on another offshore supply vessel, the LADY NORMA, testified that she overheard four separate radio transmissions, each of which made a request, reportedly by the master of the LAVERNE HEBERT, to stay in port until the weather abated. She further testified that each one of these requests was denied by the dispatcher. The dispatcher testified that he never received any transmissions of this nature from the LAVERNE HEBERT and that it was the master's decision as to whether the vessel should proceed to sea. The Safety Board has received no evidence that would support or refute either person's testimony and, therefore, cannot make a conclusion as to whether the master of the LAVERNE HEBERT was coerced into proceeding to sea against his better judgment.

The master of the LADY NORMA testified that in his experience he had seen instances where this type of coercion occurred, and that masters who refused to be coerced were sometimes discharged from employment. He further testified that he was not aware of any instances of coercion involving supply vessel masters operating out of Port O'Connor.

Offshore supply vessel masters are vulnerable to discharge without recourse. The recent stagnation in the offshore oil and gas exploration industry, an industry to which the workboat industry is tied, has resulted in many crewboats and supply vessels being laid up. A recent article in a marine trade magazine ^{2/} addressed the over-tonnage problem in the workboat industry. The article stated that there were about 1,960 workboats in the

^{2/} Marine Engineering/Log, April 1984, "Offshore Outlook" by Gene D. Heil, Senior Editor.

United States domestic market, and that this fleet of workboats averaged a 70 percent utilization rate in 1983. If only 70 percent of the workboats were used, then a comparable percentage of the workboat masters probably were used as well. In such an employment market, it would be easy for a workboat owner to replace a master who refuses to take a heavily loaded vessel to sea in the face of adverse weather or sea conditions with an unemployed master who will not refuse. Since workboat officers generally do not belong to maritime labor unions, they do not have recourse to appeal management decisions. If the discharged master filed a complaint with the Coast Guard, it would be a relatively simple matter for the employer to fabricate a pretense for the firing.

The Safety Board does not know how prevalent this condition is in the workboat industry, but suspects that it is more widespread than workboat masters would freely admit. Even though the master of the LAVERNE HEBERT may not have been coerced to proceed to sea by the dispatcher, the reported practice of the coercion of offshore supply vessel masters operating vessels on the gulf coast to make decisions which adversely affect the safety of their vessels is of such importance as to warrant further investigation. The Coast Guard, the Federal agency charged with insuring commercial vessel safety, should investigate to determine the extent of the problem and take action to correct it.

The proper loading of deck cargo aboard a vessel like the LAVERNE HEBERT is critical to maintaining adequate stability. Because the design of offshore supply vessels poses stability problems that are particular to this class of vessel, the stability letter issued to the LAVERNE HEBERT was explicit concerning the maximum tons of deck cargo that could be carried on the vessel in relation to the amount of below-deck tonnage that could be carried at the same time. By the master's following the guidelines and by complying with the restrictions set forth in the stability letter, the LAVERNE HEBERT would at all times meet the stability criteria that the Coast Guard established for this vessel class.

The responsibility to ensure vessel stability rests with the vessel's master. The stability letter is issued to assist the master in carrying out this responsibility. However, in order to use the stability letter to insure that a vessel has adequate stability, it is necessary to know the total number of tons of cargo loaded. The alternate master of the LAVERNE HEBERT testified that he was unable to convert the information on the cargo manifest given to the master to the total tons of cargo loaded. Since he could not do this, it is conceivable that the master, who had only a seventh grade education, could not do it either. Simple calculations may be beyond the ability of someone with a limited education. The alternate master further testified that during his license examination he was not required to perform any type of calculation involving stability. The master of an oceangoing vessel should be able to perform the simple mathematics involved in converting quantities of standard weight items, such as drill pipe, to total tons loaded. If candidates for offshore supply vessel master's licenses were required to perform calculations of this nature during their license examination, they would be familiar with the method and capable of performing the calculations. They then would be competent to use the stability letter (or the simplified loading diagram which is currently provided by the Coast Guard to vessel owners at their option) to insure that their vessels are loaded properly with respect to stability.

The institution of an exercise in cargo weight calculation for use with stability letter information at the time of licensing, however, will not benefit those who already have received master's licenses and who cannot perform the calculations. The Safety Board believes that a similar instructional exercise should be performed by licensed supply vessel masters when they renew their licenses every 5 years. In that way, all licensed supply vessel masters would be required to perform the exercise.

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

Amend 46 CFR Part 56 to require inspected oceangoing vessels with unmanned enginerooms to be equipped with bilge pumps capable of being started automatically when flooding occurs and provided with a means to indicate when the influx of liquid is greater than the capacity of the pump. (Class II, Priority Action) (M-84-31)

Investigate the reported coercion of offshore supply vessel masters to take their vessels to sea against their better judgment during periods of adverse weather and sea conditions on the gulf coast of the United States. (Class II, Priority Action) (M-84-32)

Require applicants for an original master's license in the mineral and oil industry to perform, at the time of their license examination, cargo weight calculations for use with stability letters or simplified loading diagrams that are issued to offshore supply vessels. (Class II, Priority Action) (M-84-33)

Require licensed masters in the mineral and oil industry to perform, at the time of their license renewal, an instructional exercise in cargo weight calculation for use with stability letters or simplified loading diagrams that are issued to offshore supply vessels. (Class II, Priority Action) (M-84-34)

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

By: 
Chairman