

Log M-243

**NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.**

ISSUED: February 8, 1984

Forwarded to:

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

SAFETY RECOMMENDATION(S)

M-84-4

About 0230 on September 5, 1980, the U.S. self-propelled, jack-up, work barge STAR 2 capsized and sank during a storm in the Gulf of Mexico about 60 nmi south of New Orleans, Louisiana; 10 persons were aboard. One person is missing and is presumed dead. The estimated value of the STAR 2 was \$650,000.

On September 4, 1980, the STAR 2, owned by Milky Way Barges, Inc., was in its jacked-up mode near an unmanned fixed platform owned by Chevron USA, Inc., (Chevron) about 5 nautical miles (nmi) off the Louisiana coast. The master, a deckhand, and eight other persons were aboard. The uninspected work barge had been time-chartered by Chevron to serve as a work platform and to provide accommodations for personnel of the Land and Offshore Company which had been contracted by Chevron to sandblast and paint some of their offshore platforms. The STAR 2's estimated total load was 32 tons prior to the accident.

About 0530 on September 4, the master and part owner of the STAR 2 reported to the Chevron dispatcher in Leeville, Louisiana, for transportation by boat to the STAR 2 to relieve the alternate master who was also part owner of the STAR 2. The master and dispatcher briefly discussed the weather, but the master did not request a weather forecast and the dispatcher did not provide one. About 0800, the master relieved the alternate master who, after a brief discussion, returned to Leeville on the same boat which had transported the master. Sometime between 0800 and 0900, the Chevron dispatcher broadcast a weather forecast prepared by A. H. Glenn and Associates for Chevron which was received by the master of the STAR 2. The forecast, which covered the time period of 0600 September 4 to 0600 September 5, called for above normal tides, waves from 3 to 7 feet, and scattered showers and thunderstorms with temporary wave increases of 4 to 6 feet in the most severe thunderstorms.

During the day, no painting or sandblasting was done due to the inclement weather. The master estimated that during the afternoon and evening the waves were 5 to 6 feet high and the distance from the mean water level to the bottom of the STAR 2 (air gap) was about 12 to 15 feet. He stated that he did not know the depth of water but that about 20 feet of each leg extended above the barge, and he determined the air gap "by looking at the distance from your water to your hull." Before the master went to bed at 0100 on September 5, he estimated the waves at 7 to 8 feet high, but about 0125, he was awakened by waves striking the bottom of the work barge. The master attempted to raise the

barge, but one of its three legs stuck, and he was not able to raise the barge above the striking waves. The master then told the Land and Offshore Company workmen to put on lifejackets and go onto the fixed platform. He raised the stern leg 3 feet, which moved the work barge laterally closer to the fixed platform, to facilitate the workmen's departure. The master and deckhand then went to the engine room to try to determine what was causing the problem with the jacking mechanism. When they could not determine why the port forward leg would not jack down, the master ordered the deckhand to abandon the work barge. The master then made a final check of the barge and found the paint foreman, one painter, and the cook still aboard. He told them to abandon the barge immediately, but as the four crewmembers proceeded across the deck about 0300, a large wave struck the barge. The barge floated free of the ocean bottom and then capsized to port. The master, the painter, and the cook were thrown into the water and were later rescued. The painter foreman has not been seen since, nor has his body been recovered, and he is presumed dead.

The STAR 2 was not built to any recognized standards nor was it inspected or required to be inspected by the U.S. Coast Guard. However, the owner's insurance company imposed a 40-foot operating depth restriction on the STAR 2. The owners believed that the vessel's maximum allowable load was 85 to 90 tons, but no calculations had been performed.

The master of the STAR 2 was documented by the U.S. Coast Guard as an able-bodied seaman but was not required to have any document or license. He had 2 1/2 years' experience operating liftboats similar to the STAR 2.

The accident occurred at a 29°00'33" north latitude, 90°08'98" west longitude where the low water datum is about 50 feet and the bottom is hard sand. A hindcast prepared by A. H. Glenn and Associates after the accident indicated that at 0300 on September 5, at the accident location, the significant wave height was 8 feet and the wind speed was 30 mph with gusts to 60 mph. The hindcast noted that 60-mph wind gusts would cause a temporary increase in the significant wave height of 2 feet. On the morning of September 5, there was a 2-foot high tide in the area.

An examination of the salvaged wreckage of the STAR 2 by U.S. Coast Guard marine inspectors indicated that about 22 feet of the legs extended above the upper deck of the hull and the hull was about 6.2 feet deep. There was no evidence of any structural failures before the capsizing.

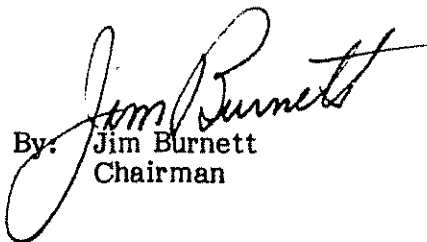
Assuming a water depth of 50 feet and a 2-foot tide, and with the barge jacked up with 22 feet of the legs extending above the upper deck, there would have been an air gap of about 8 to 9 feet versus the master's estimate of 12 to 15 feet. However, there were no markings on the legs for the master to determine how high the hull was above the bottom of the ocean, although there was a 6-foot yellow band at the top of each leg denoting the maximum safe jacking height. The 8-to 9-foot air gap was reduced by increases in the mean water depth due to the storm. The Safety Board believes that in an 8-foot significant sea, temporarily increased to 10 feet by wind gusts, there would have been waves of sufficient height (19 to 22 feet) to lift the STAR 2 off the bottom and to cause it to capsize. The cause of the jacking mechanism not functioning on one leg cannot be determined, but it might have become jammed as a result of the wind and wave conditions. The waves striking the bottom of the barge and the wind blowing on the barge might have twisted the barge so that the port bow leg jacking gear became jammed.

The Safety Board believes that this accident might have been prevented if the master had been better informed regarding the operational limits of the vessel and the master had jacked up the STAR 2 on September 4 to provide a greater air gap. The master had no specific guidance regarding the required air gap versus sea conditions and assumed that the air gap on September 5 was sufficient. Although the STAR 2 might not have capsized if the master had been able to jack up the hull at about 0215, when waves started hitting the underside of the hull, the STAR 2 was already in an emergency situation. The STAR 2 should have been jacked up before the sea conditions reached these wave heights.

At the time of the accident, the STAR 2 was not required to be inspected by the U.S. Coast Guard. On October 6, 1980, the U.S. Coast Guard inspection and manning laws were amended to include offshore supply vessels similar to the STAR 2. An offshore supply vessel regularly carries goods, supplies, or equipment in support of exploration, exploitation, or production of offshore mineral or energy resources. Therefore, the National Transportation Safety Board recommends that the U.S. Coast Guard:

Require that jack-up offshore supply vessels, performing activities in support of exploration, exploitation, or production of offshore mineral or energy resources, be equipped with an approved operating manual that contains guidance to the master for the safe operation of the vessel including maximum deck load, maximum water depth, and the minimum air gap required for expected sea conditions. (Class II, Priority Action)
(M-84-4)

BURNETT, Chairman, GOLDMAN, Vice Chairman, and BURSLEY, ENGEN, and GROSE, Members, concurred in this recommendation.


By: Jim Burnett
Chairman