

Log M-377



National Transportation Safety Board

Washington, D. C. 20594

Safety Recommendation

Date: February 7, 1992

In Reply Refer To: M-92-1 through -4

Admiral J. William Kime
Commandant
U.S. Coast Guard
Washington D.C. 20593-0001

On November 6, 1990, the 723-foot-long U.S. tank ship STAR CONNECTICUT completed loading cargo and began unmooring operations from the single point mooring (spm) buoy off Barbers Point, Hawaii; the spm buoy was owned by Hawaiian Independent Refinery, Inc., (HIRI). The mooring master, who was in charge of maneuvering the vessel during the unmooring operations, was stationed on the ship's bow. The ship's master and the junior third mate were on watch in the pilothouse. An able bodied seaman (AB) was at the helm. A mooring master-in-training was also in the pilothouse in an observer status.

After the ship released the mooring chain and became free of the spm buoy, the mooring master passed the conn to the navigation bridge where the ship's master assumed control. The master maneuvered the vessel to pass inshore of the spm buoy. He then slowed the vessel and stopped the engine to allow a launch to come alongside. After several unsuccessful attempts, the launch operator maneuvered the launch alongside the tanker and the cargo gauger, the ship's agent, and the mooring master-in-training disembarked. Once the launch cleared the STAR CONNECTICUT, a service vessel came alongside the tanker and the mooring master disembarked. As soon as the service vessel cleared the tanker's side, the master began to turn the STAR CONNECTICUT to the south to head for deep water. Moments later the vessel's stern grounded on a reef.

Although no loss of life or personal injury resulted from this accident, the STAR CONNECTICUT suffered approximately \$4 million in damages. The grounding also posed a risk of a major oil spill which could have caused great environmental harm to the Hawaiian Islands. After the STAR CONNECTICUT was refloated and damage was assessed, the vessel was declared a constructive total loss.¹

¹For more detailed information, read Marine Accident Report--"Grounding of the U.S. Tankship STAR CONNECTICUT Pacific Ocean, Near Barbers Point, Hawaii November 6, 1990." (NTSB/MAR-92/01).

Among other safety issues, this report addresses Federal pilotage requirements at offshore oil transfer facilities; adequacy of vessel operating procedures for departing from the spm buoy at Barbers Point, Hawaii; need for regulations governing the operation of offshore oil transfer facilities within the United States' territorial sea similar to those which regulate the operation of deepwater ports (33 CFR 148-150); and need for tank ships that moor and unmoor at offshore oil transfer facilities to have instrumentation capable of measuring shallow water depths.

Prior to this accident, the area surrounding the HIRI spm buoy was not a designated State or Federal pilotage area. Although HIRI required the mooring masters to possess a valid Coast Guard issued master's license as a condition of employment, the mooring masters were not serving under the authority of their licenses. Therefore, the Coast Guard had no authority over a mooring master's license in the event that his negligence caused an accident. After the STAR CONNECTICUT accident, the Coast Guard COTP in Honolulu issued an order that designated the area surrounding the HIRI and the nearby Chevron offshore moorings as a Federal pilotage area for U.S. vessels engaged in coastwise trade. This means that a vessel to which this order applies now is required to be under the navigational control of a duly licensed federal pilot whenever the vessel operates within the designated area. Moreover, prospective pilots are now required to meet professional standards established by the Coast Guard and to pass a professional examination administered by the Coast Guard before they can serve as a pilot on such a vessel.

The order resulting from the STAR CONNECTICUT grounding did not apply to U.S. vessels in foreign trade or to foreign vessels. Title 46 U.S.C. 8503 provides that the Secretary of Transportation may require a Federally licensed pilot on self-propelled vessels when State law does not require a pilot and the vessel is engaged in foreign commerce and operating on the navigable waters of the United States. Additionally, the statute provides that Federal authority to require a pilot on such vessels is terminated when the State having jurisdiction establishes pilotage and notifies the Secretary of that fact.

As of January 1992, the State of Hawaii, which did not enforce State pilotage in the area of the offshore moorings, has not objected to the establishment of Federal pilotage in the area. To extend the pilotage requirement to all tank ships that operate to and from the Barbers Point offshore oil transfer facilities, in June 1991, local Coast Guard authorities requested that Coast Guard Headquarters initiate a regulatory project to require pilotage for U.S. tank ships in foreign trade and for foreign tank ships that call at the spm buoy or at the nearby Chevron mooring. In a similar action, the Eleventh Coast Guard District requested that Coast Guard Headquarters initiate a similar regulatory project for the 10 offshore moorings located off the California coast.

The Safety Board believes that compulsory pilotage will significantly increase the Coast Guard's oversight of tank ship operations at offshore oil transfer facilities and the safety of the navigation in these areas. As demonstrated by the grounding of the U.S. tank ship EXXON VALDEZ in Prince William Sound, Alaska, in 1989, an accident involving a modern tank ship can result in the loss of hundreds of thousands of barrels of oil and cause catastrophic pollution to the environment. The areas where these offshore oil transfer facilities are located are environmentally sensitive and action should be taken to decrease the likelihood of serious tank ship accidents. The Safety Board agrees that the areas surrounding the offshore oil transfer facilities

in Hawaii and off the California coast should be designated as Federal pilotage areas so that tank ships mooring and unmooring from such facilities will be under the navigational control of properly licensed Federal pilots. Moreover, the Safety Board believes that the pilotage requirements should extend to all tank ships that call at these offshore facilities. The Safety Board urges the Coast Guard to expedite action to require Federal pilotage for the areas surrounding these offshore oil transfer facilities.

During the accident investigation, the STAR CONNECTICUT's master testified that there were no formalized procedures for unmooring from the HIRI spm buoy similar to those for mooring to the buoy. The Safety Board agrees that a predeparture conference between a master and a mooring master is a necessary procedure. The Safety Board believes that before the unmooring operation commenced, the master and the mooring master should have discussed what procedures they would follow for departing from the spm buoy, the manner and timing of the transfer of the conn, the intended direction from which the ship would leave the buoy, the timing and location for the transfer of personnel to the launch and any other matters relevant to the safety of operations.

The Safety Board has found that the problem of poor communication and planning between ships' masters and pilots prior to executing a potentially jeopardous maneuver continues to be a direct and/or contributory cause of major marine accidents. As early as 1974, as a result of its investigation of the AFRICAN NEPTUNE² accident where a U.S. freighter rammed the Sidney Lanier Bridge at Brunswick, Georgia, the Safety Board recommended that the U.S. Coast Guard:

M-74-15

Require that every master of an ocean-going vessel inform himself of the pilot's plan to maneuver his ship in or out of a harbor and that the master determine, with the pilot's assistance, the critical aspects of the maneuver, including the pilot's plan for emergencies.

Most recently, as a result of its investigation of the collision between the Greek tank ship SHINOUSSA and the U.S. Towboat CHANDY N,³ the Safety Board recommended that the Coast Guard:

M-91-28

Amend 33 CFR 164.11(k) to require that masters and pilots discuss and agree beforehand to the essential features and relevant checkpoints of maneuvers they expect to undertake.

Between 1974 and 1991, the Safety Board has repeatedly made recommendations to the U.S. Coast Guard and several pilots associations regarding

²For more detailed information, read "SS AFRICAN NEPTUNE: Collision with the Sidney Lanier Bridge at Brunswick, Georgia, on November 7, 1972, with Loss of Life (NTSB/MAR-74/04).

³For more detailed information, read "Collision Between the Greek Tankship SHINOUSSA and the U.S. Towboat CHANDY N and tow Near Red Fish Island, Galveston Bay, Texas, July 28, 1990" (NTSB/MAR-91/03).

the need for discussions between masters and pilots prior to executing maneuvers in no fewer than eight major accident reports. Poor planning/communication is obviously a recurring problem that continues to result in major marine accidents. The Safety Board views the role of the mooring master in the same light as that of a ship's pilot. The Safety Board therefore believes that the Coast Guard should require that masters of all tank ships arriving and departing from offshore oil transfer facilities conduct prearrival and predeparture conferences with the mooring masters to plan intended maneuvers.

Because the master of the STAR CONNECTICUT had an established reputation as a careful, disciplined, and competent shiphandler, the Safety Board believes that his uncharacteristic lack of attention to the ship's position after the unmooring resulted from his attempt to handle too many tasks concurrently. By taking on all navigation and maneuvering decisions himself, he compromised his ability to maintain situational awareness or an overview of all conning tasks. As is often the case in high workload situations, he increasingly focused on details to the detriment of the overall situation.

In the course of the Safety Board's accident investigations, we have frequently identified operational breakdowns, coordination lapses, lack of communication, and poor task allocation which clearly reflect failures in the organization and use of available resources.

In the report of our investigation of the grounding of the tank ship WORLD PRODIGY off the coast of Rhode Island,⁴ the Safety Board stated:

Neither the U.S. Coast Guard license regulations nor the provisions contained in the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 (STCW) require bridge resource management training for applicants seeking to obtain an original, an upgraded, or a renewed deck license. The Safety Board believes that the maritime industry has not yet embraced these concepts nor endorsed their application to the operation of merchant ships, although it has begun to explore the relationship between vessel crew interaction and accident causation.

The Safety Board believes that providing bridge resource management training, which embodies the cockpit resource management concept, to licensed deck officers can prevent the type of crew interaction difficulties evident in the [WORLD PRODIGY] accident without eroding command authority or accountability.

On February 21, 1991, as a result of the WORLD PRODIGY investigation, the Safety Board issued the following recommendation to the Coast Guard:

⁴For more detailed information, read Marine Accident Report--"Grounding of the Greek Tankship WORLD PRODIGY off the Coast of Rhode Island June 23, 1989" (NTSB/MAR-01/01).

M-91-6

Require bridge resource management training for all deck watch officers of U.S.-flag vessels of more than 1,600 gross tons.

The Safety Board is still awaiting the Coast Guard's response to this recommendation.

Current U.S. Coast Guard regulations (33 CFR 164.35(h)) require that a vessel have on board an "echo depth sounding device" and a device to continuously record depth readings. However, the regulations do not define the range for which the required devices must be able to sense and record depths. The recording fathometer that was on board the STAR CONNECTICUT at the time of the accident fulfilled the requirements of the regulations, however, it was not suitable for use in shallow water areas and was not being used by the navigation watch standers to monitor the water depth because it did not generate a readout on the bridge.

Although the lack of a suitable depth monitoring device with readout capability on the navigation bridge was not causal to the grounding of the STAR CONNECTICUT, the Safety Board believes that if the vessel had been outfitted with such a device, the master and the junior third mate would have had an additional cue that the tank ship was approaching dangerously close to a shoal. Such a device may have spurred them to have taken earlier action to avoid the grounding.

In the Safety Board's opinion, the safety of tank ship navigation would be enhanced if vessels were required to carry a depth sounding device suitable for shallow water which has readout capability on the navigation bridge. Catastrophic environmental harm and expensive clean-up operations can result from a tank ship grounding. The 1989 costs to clean up spilled oil from the grounding of the EXXON VALDEZ were estimated at \$1.85 billion. As long as oil and oil products are carried by ships, the potential for a recurrence of this type of disaster exists. However, in the Safety Board's view, providing navigating watch standers on tank ships with additional cues to warn them of impending shoal areas may lessen the likelihood that such an accident will occur.

At the time of this accident, the HIRI and the Chevron offshore oil transfer facilities, as well as similar offshore facilities located off the Coast of California, were required to meet operational regulations designed for shoreside facilities. These regulations do not contain standards for mooring masters or shipboard procedures involved with mooring and unmooring. These facilities present unique operational risks and the potential for serious pollution accidents.

The Coast Guard has regulatory authority over a similar type of operation, the Louisiana Offshore Oil Port (LOOP), located in the Gulf of Mexico. The regulations applicable to the LOOP, which are contained in 33 CFR 148-150 (Deepwater Ports), address the safety of dynamic shipboard operations as well as the more static facility operations. These rules govern such procedures as traffic control, communications, weather monitoring, and support vessel operations. In December 1990, as a result of the grounding of the STAR CONNECTICUT, the Honolulu COTP requested that Coast Guard Headquarters initiate a project to promulgate regulations for offshore oil transfer facilities located inside the territorial sea that would be analogous to deepwater ports regulations. The Safety Board agrees that a need for such regulations exists. The Safety Board believes that the safety of tank ship operations

at offshore oil transfer facilities inside the territorial sea and the protection of the environment will be greatly enhanced by the promulgation of these regulations and urges the Coast Guard to expedite completion of the project.

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

Promulgate regulations for tank vessel operations at offshore oil transfer facilities located within the territorial sea similar to those presently applied to deepwater ports. (Class II, Priority Action) (M-92-1)

Require all tank ships mooring or unmooring at offshore oil transfer facilities located off the coasts of Oahu and California to be under the navigational control of a Federal pilot. (Class II, Priority Action) (Class II, Priority Action) (M-92-2)

Require that shipmasters and mooring masters conduct a pre-arrival and predeparture conference to discuss the prevailing wind and sea conditions, intended maneuvers, manner and timing for transferring the conn, and any other matters relevant to the safety of operations before mooring and unmooring from offshore oil transfer facilities located within the territorial sea of the United States. (Class II, Priority Action) (M-92-3)

Require tank ships mooring and unmooring at offshore oil transfer facilities located within the territorial sea of the United States to have on board a shallow water fathometer that has readout capability on the navigation bridge. (Class II, Priority Action) (M-92-4)

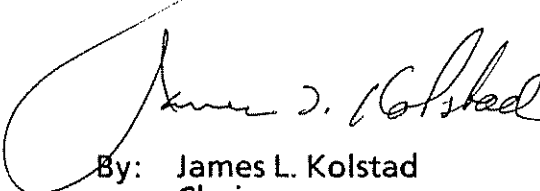
The Safety Board is also reiterating its recommendation that the U.S. Coast Guard:

M-91-6

Require bridge resource management training for all deck watchofficers of U.S. flag vessels of more than 1,600 gross tons.

Also, the Safety Board issued Safety Recommendation M-92-5 to the Hawaiian Independent Refineries, Inc.; and Safety Recommendations M-92-6 through -8 to the Texaco Marine Services, Inc.

KOLSTAD, Chairman, COUGHLIN, Vice Chairman, and LAUBER, HART and HAMMERSCHMIDT, Members, concurred in these recommendations.



By: James L. Kolstad
Chairman