M-170

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: July 23, 1981

Forwarded to:

Admiral John B. Hayes
Commandant
U.S. Coast Guard
Washington, D.C. 20593

SAFETY RECOMMENDATION(S)

M-81-74 and -75

About 0842 c.s.t., on January 22, 1980, the upbound Brazilian bulk carrier M/V FROTALESTE, with a New Orleans-Baton Rouge pilot aboard, collided with the anchored Portuguese freighter M/V CUNENE near Bonnet Carre Point, Louisiana, on the lower Mississippi River. As the FROTALESTE was overtaking the upbound U.S. registry tug-barge combination M/V ALICE ST. PHILIP/FAUSTINA, the tugboat's steering system failed. The ALICE ST. PHILIP turned to the right, which led the pilot to turn the FROTALESTE to the right and into a collision with the CUNENE. The hull of the CUNENE was damaged extensively and the bow of the FROTALESTE received moderate damage. Neither the ALICE ST. PHILIP nor the FAUSTINA was damaged. There were no deaths or injuries caused by the accident. 1/

Shortly after rounding Bonnet Carre Point, about 0840, the operator of the ALICE ST. PHILIP observed the rudder angle indicator moving to starboard, while the steering control lever was indicating "amidship." The chief engineer ran to the after steering compartment where he found the male threaded starboard hydraulic actuator rod had separated from the female threads of the rod eye connecting the rod to the rudder tiller arm.

The pilot of the FROTALESTE saw the ALICE ST. PHILIP starting to veer radically to the right and ordered the rudder of the FROTALESTE hard right. As the ALICE ST. PHILIP veered to the right, the FROTALESTE turned to the right. About 30 seconds after the hard right order, the pilot ordered the rudder hard left and, about 20 to 45 seconds later, ordered emergency full astern. The FROTALESTE struck the CUNENE at 0842 at about a 45° angle, measured from the stern to the port clockwise, at about 8 to 9 mph, according to the estimate of the pilot of the FROTALESTE.

The steering system of the ALICE ST. PHILIP had been repaired during a routine drydocking and repair period at Gulf-Tampa Drydock, Tampa, Florida, in November 1979. The invoice from Gulf-Tampa states:

1/ For more detailed information read "Marine Accident Report--Brazilian Bulk Carrier M/V FROTALESTE Collision with Portuguese Freighter M/V CUNENE, Lower Mississippi River, near Bonnet Carre Point, Louisiana, January 22, 1980" (NTSB-MAR-81-10).

> Steering gear rams disconnected and removed steering gear rams from ship to machine shop. Completely dismantled one (1) steering gear ram (port). Installed owner furnished new plunger rod, seals, etc. Reassembled as original and in good order. Owners furnished new and/or rebuilt ram for starboard side ram. Contractor furnished material and fabricated, fit, and installed new pins for each port and starboard steering gear ram. Upon completion of shop repairs, returned steering gear rams aboard vessel and reinstalled as original and in good order, connecting up new and/or existing flexible hydraulic hoses. Tested and proved rams and hoses tight to all parties concerned while under hydraulic pressure. Renewed pedestal holding down bolts on each port and starboard ram pedestal.

While the ALICE ST. PHILIP/FAUSTINA was anchored at the right descending bank after the collision, the chief engineer isolated the starboard hydraulic actuator by securing both hydraulic line valves at the hydraulic cylinder and by supporting the hydraulic actuator from the overhead. The ALICE ST. PHILIP/FAUSTINA resumed its voyage during the afternoon of January 22 with the starboard hydraulic actuator secured and proceeded upriver to Uncle Sam's Dock, about mile 157, for offloading and repairs. A welder was hired to assist the chief engineer in repairing the steering system. The chief engineer reported that he checked various parts of the steering system and replaced both port and starboard hydraulic actuator rod eye pins and one port rudder bearing. After the pins were replaced, the welder welded restraining flat bars in place above and below the pins. These bars are not called for in the design prints. The design detail for pin restraint was not followed in the pin replacements.

The ALICE ST. PHILIP got underway from Uncle Sam's Dock about 1700 on January 22. About 2000, the newly welded restraining flat bar on the underside of the port tiller arm failed at the weld, and the pin holding the port hydraulic actuator rod eye to the tiller arm dropped out of position. Steering control was lost, and the rudders moved hard to port. The ALICE ST. PHILIP was then anchored, and the chief engineer replaced both the port and the starboard pins and rewelded the restraining flat bars.

The pins replaced by the chief engineer had restraining caps welded to the top as did the replacement pins. This welded cap arrangement is not the restraining plate arrangement called for in the original design. The chief engineer was uncertain if the original pin, which was installed in November 1979 and which he replaced at Uncle Sam's Dock, conformed to the manufacturer's design configuration.

A later examination of the hydraulic actuator rod by a Safety Board investigator revealed that the rod and its threaded male end were in good condition. A similar examination of the rod eye revealed female threads in poor condition, a missing set-screw, a missing grease fitting, and evidence of foreign material in the joint. The connection did not appear to have had the welded securing bar. The bar should be rigidly welded to the the rod eye and against the hydraulic actuator rod shoulder to prevent the rod from turning in the eye. The chief engineer could not confirm that this condition did not exist before the accident.

There is no direct evidence indicating that the failure of the starboard hydraulic actuator rod to the rod eye connection on the ALICE ST. PHILIP occurred at the time of the right rudder excursion before the accident. However, the reaction of the rudders, when considered with the coupling failures discovered shortly after the subsequent reported excursions, indicates that the rod eye connection failed and some combination of that failure and rudder control manipulations resulted in the rudder moving to the right.

The precise reason why the rudder moved to the right and did not streamline could not be determined.

The starboard hydraulic actuator had been furnished to the drydock company by the owner of the ALICE ST. PHILIP and installed under the supervision of the chief engineer. While a classification society surveyor is reported to have been present at the drydocking, the Safety Board could not determine his involvement in the steering system overhaul. The inspections of shipyard repair of the steering system by the surveyor and the chief engineer did not prevent the failure of the connection less than 2 months later.

Further evidence of the lack of proper maintenance and inspection was the subsequent loss of steering on two occasions while the ALICE ST. PHILIP was en route to the general anchorage at New Orleans. While the chief engineer replaced pins in the system, he did not follow design details and his jury-rigged system also failed. This cannot be considered good marine practice.

The inapplicability of the marine inspection laws to a combination such as the tugboat ALICE ST. PHILIP and the barge FAUSTINA exemplifies a potential transportation safety problem. Inspected barges carry large quantities of products, which in many instances may be extremely hazardous, throughout U.S. navigable waters. In many instances, the combined gross tonnage involved may exceed that of a self propelled vessel which is fully subject to the Coast Guard's inspection authority. However, uninspected tugboats or towboats towing the inspected barges are largely exempt, except for licensing of the crew, from Federal safety requirements such as the Coast Guard's requirements for steering systems.

As a minimum, steering systems of uninspected vessels being used to move inspected barges should be brought under full Coast Guard plan review and inspection because of the potential for disaster if a steering system fails in restricted waters. If the steering system of the ALICE ST. PHILIP had been required to be routinely inspected by the Coast Guard, as is the steering system of an inspected self propelled vessel of even lesser tonnage than many tug-barge combinations, this accident may not have occurred.

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

> Expand the "towboat boarding program" nationally and include a routine limited examination, by a qualified "marine inspector," of uninspected tugboats and towboats that tow inspected U.S. barges in U.S. navigable waters, with particular emphasis on establishing that the tugboats or towboats have reliable, well-maintained, and well-designed steering systems. (Class II, Priority Action) (M-81-74)
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> Seek statutory authority to bring the steering systems of uninspected U.S. tugboats and towboats that transport inspected U.S. vessels in U.S. navigable waters under the inspection authority of the U.S. Coast Guard. (Class II, Priority Action) (M-81-75)

KING, Chairman, DRIVER, Vice Chairman, McADAMS, GOLDMAN, and BURSLEY, Members, concurred in these recommendations.

By: James B. King
Chairman