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NATIONAL TRANSPORTATION SAFETY BOARD WASHINGTON, D.C.

ISSUED: April 7, 1980

Forwarded to:

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

SAFETY RECOMMENDATION(S)

M-80-18 through -21

At 1756 c.s.t., on April 1, 1978, the four-barge tow of the Motor Vessel STUD collided with the eastern fixed span of the Southern Pacific Railroad bridge over the Atchafalaya River near Berwick Bay, Louisiana. The collision knocked the span from its supporting piers into the river but did not damage the barges. Damage to the STUD was estimated to be \$4,000. Property damage was estimated to be \$1,400,000, including the cost of replacing the bridge span and rerouting rail traffic for 8 days. There were no deaths or injuries. 1/

The STUD was traveling downriver with a strong downriver current, at the time and had to pass under three bridges. The tow struck a glancing blow to the right descending support pier of the first bridge, the Long Allen highway bridge, passed under the second bridge, and collided with the railroad bridge. The master, who was operating the STUD at the time of the accident, approached the bridges along the right descending bank in the stronger river currents. He had transited the Berwick Bay bridges more than 100 times in towboats, including the STUD. The Safety Board determined that the STUD's approach along the right bank placed the tow in an out-of-shape condition to pass under the railroad bridge.

The master of the STUD was not aware of the Atchafalaya River stage and current before he committed the tow to the bridge passage. The Berwick Bay Vessel Traffic Service (VTS) operating procedures require a master to determine if local conditions will permit safe passage through the service area. Although the personnel at the Vessel Traffic Center (VTC) record both the river gauge reading and the current velocity at the railroad bridge at least once daily, the VTS policy does not provide for transmitting this information to participating vessels. A Coast Guard VTS representative testified that there would be little practical value in providing river stage and current information to participating vessels because the information would be stale and because the existing

1/ For more detailed information read "Marine Accident Report—Collision of the M/V STUD with the Southern Pacific Railroad Bridge over the Atchafalaya River, Berwick Bay, Louisiana, April 1, 1978" (NTSB-MAR-80-5).

current at the railroad bridge might differ vastly from the current in the bridge approaches. The Safety Board believes that a high river stage or a swift current on the Atchafalaya River could sharply reduce the tow's maneuverability to the point where the small margin for error during a bridge passage would be unacceptable to the master. To provide the towboat master with a more substantial basis for judging the local river conditions, the Coast Guard should coordinate with the Army Corps of Engineers to establish methods to provide continually updated information on river stage and current velocity to vessels transiting the Berwick Bay bridges.

Between 1946 and 1978, the Southern Pacific Railroad bridge or its protective structures were struck by vessels 534 times. A 1976 Coast Guard study on towboat bridge collisions identified the Southern Pacific Railroad bridge as the most-struck bridge included in the study. ^{2/} The majority of towboats colliding with the bridge had a ratio of horsepower to towwlength of less than 3 and were traveling southbound with the current during seasonal high water.

The existing Berwick Bay VTS operating procedures contained in the Eighth Coast Guard District Local Notice to Mariners No. 1-77 mainly impose conditions on the direction of travel through the bridges, on the configuration of the tow, and on the use of assistance vessels. The VTS operating procedures do not restrict the ratio of towboat horsepower in relation to the towwlength. The STUD's registered horsepower of 670 and the towwlength of 780 feet resulted in a horsepower-to-towlength ratio of less than 1. The Safety Board determined that this condition seriously limited the responsiveness of the tow during countermaneuvers near the bridges and that the STUD's horsepower in relation to the towwlength was inadequate for maneuvering in the existing river stage and current velocity. The Coast Guard should seek to reduce towboat accidents at the Berwick Bay bridges by imposing a limit on the minimum ratio of horsepower to towwlength on tows permitted to transit the bridges during high water conditions.

The Coast Guard recognizes the effect of swift currents often associated with the high water season in Berwick Bay, and imposes high water limitations on vessel operations in the VTS area when the activation criteria are met. The activation criteria for imposing the limitations require a sustained elevated river stage of 3 feet above mean sea level or more for 5 consecutive days, plus the prediction that the river stage will remain at 3 feet above mean sea level or more for an additional 5 consecutive days. Consequently, the activation criteria for commencing the vessel operating restrictions will permit unrestricted vessel operations for at least 5 days within the VTS area during the initial high water condition even though the navigational hazard is not unlike the restricted period. The Safety Board determined that the existing criteria for commencing the high water limitations are inadequate for preventing bridge collisions in Berwick Bay. The Coast Guard should reassess the criteria used to commence high water limitations in the Berwick Bay VTS area and implement limitations based on the reassessment.

The Coast Guard sought to enhance the safety of navigation through the Berwick Bay area by issuing special orders in 1973 and 1974 which applied to vessels transiting the bridges and by establishing the Berwick Bay VTS in 1974. Subsequently, the Coast Guard initiated rulemaking procedures in 1974 to amend 33 CFR 161 to establish Berwick Bay VTS regulations. The Notice of Proposed Rulemaking is scheduled to be issued by the middle of 1980. Although the number of Berwick Bay bridge collisions was not determined

^{2/} U.S. Coast Guard, "Analysis of Bridge Collisions, Volume I, May 1976" (Report No. CG-D-77-76) and "Analysis of Bridge Collisions, Volume II, December 1976" (Report No. CG-D-118-76).

to be related to rulemaking or to the developmental status of the Berwick Bay VTS, the Coast Guard should expedite the rulemaking process. The Coast Guard should also seek to strengthen the regulatory language by: (1) imposing a specific limitation regardless of horsepower on the number of hazardous cargo barges permitted in a tow through the bridges; (2) requiring the VTC to inform participating vessels of the river stage and current velocity; and (3) imposing a minimum limit on the numerical ratio of towboat horsepower to towlength permitted during restricted periods.

The Safety Board believes that the Coast Guard should study the feasibility of improving navigational aids in the Atchafalaya River approaches north and south of the Berwick Bay bridges. Improved navigational aids could greatly aid towboat operators in perceiving, at an early stage, the sliding or rotating of the tow away from the desired sailing track through the bridges. The use of proven visual aids in conjunction with the operator's experience, knowledge of the tow configuration and performance, and knowledge of local river conditions would improve the operator's chances of a safe bridge transit.

Also, additional navigational information should be provided so that the towboat master will have a more positive means of assessing the Atchafalaya River conditions before committing the tow to pass under the bridges. Regular advisories by the Berwick Bay VTC conveying the prevailing river stage and current information would assist the operator in meeting the VTS requirement of ascertaining safe passage through the VTS area. The use of additional river current sensing devices and river gauge instruments should be considered for furnishing the VTC with a continuous indication of the local river conditions, thereby eliminating the reliance on stale data. The distribution of the river currents may initially require certain adjustments or accommodations before fully implementing a practical current sensing system, but experience should lead to an acceptable method. The inaccuracies involved in measuring river currents precisely should not outweigh the practical value of measuring the approximate main channel velocity of the current in the Berwick Bay bridge approaches.

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

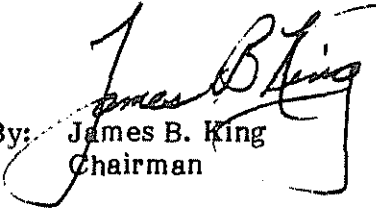
In cooperation with the U.S. Army Corps of Engineers, establish methods to measure and to make available continually updated information on river stage and current velocity to vessels transiting the Berwick Bay bridges. (Class II, Priority Action) (M-80-18)

Improve navigational aids for vessels transiting the Berwick Bay bridges. (Class II, Priority Action) (M-80-19)

Reassess the criteria used to commence high water limitations in the Berwick Bay Vessel Traffic Service area and implement limitations based on the reassessment. (Class II, Priority Action) (M-80-20)

Expedite the issuance of the Notice of Proposed Rulemaking to codify the Berwick Bay Vessel Traffic Service operating procedures. (Class II, Priority Action) (M-80-21)

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


By: James B. King
Chairman