## M - WWW. NATIONAL TRANSPORTATION SAFETY BOARD 206 WASHINGTON, D.C.

ISSUED: July 6, 1983

Forwarded to:

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

SAFETY RECOMMENDATION(S)

On March 31, 1982, the Liberian tank vessel M/V ARKAS was upbound in the Mississippi River carrying a cargo of crude oil, and passing the upbound towboat M/V CREOLE GENII, which was pushing three barges carrying No. 6 oil, when the vessels collided near Thirty-five Mile Point, at mile 130, Above Head of Passes, Mississippi, at The collision ruptured the ARKAS' hull, and escaping crude oil was ignited. Because the ARKAS' crew feared an explosion, they anchored the vessel along the east riverbank and then abandoned it. Damage was estimated to be \$50,000 to the CREOLE GENII tow, \$15 million to the ARKAS, and more than \$71,000 to the environment. No one was seriously injured. 1/

The CREOLE GENII was pushing three tank barges in a line ahead. The raked bow barge BOBBIE was in the lead followed by the TIM and the GIRL. The tow, including the towboat, was 815 feet long and 50 feet wide. Each of the barges was loaded to about a 9-foot draft carrying a total of 50,000 barrels of No. 6 oil, and the towboat's draft was about 9 feet 6 inches, according to the operator.

Although the BOBBIE sustained insignificant damage, the tank barge's raked bow penetrated the ARKAS' hullside, thereby causing the crude oil cargo to be discharged. The ignition of the crude oil cargo is attributed to sparks which generated when the metal hulls contacted and the ARKAS' hull ruptured. Had the BOBBIE's bow been designed with a rounded or deeper headlog, been equipped with suitable protective bumpers, or been fitted with a combination of these features, the rupturing of the ARKAS' hull and ignition of the crude oil cargo might have been averted and the hull damage diminished.

Tank barges operating on the U.S. inland waterways are involved in a significant number of collisions, explosions or fires annually. As of December 31, 1980, there were 4,156 tank barges in the U.S. dry cargo and tank barge fleet of 31,582 yessels, and 3,445 of these tank barges operated in the Mississippi River/Gulf of Mexico area. U.S. Coast Guard data for fiscal year 1979 show the following: Of the casualties involving inspected tank barges, 55 percent (543 of a total of 981) involved collisions, explosions, or fires;

<sup>1/</sup> For more detailed information, read Marine Accident Report--"Collision of U.S. Towboat CREOLE GENII and Liberian Tank Vessel ARKAS, near mile 130, Mississippi River, March 31, 1982" (NTSB/MAR-83/93).

61 percent (1,282 of a total of 2,109) of the casualties involving uninspected tug/towing vessels, which are involved in most tank barge movements, involved collisions, explosions, or fire. Regarding accident locations, the Western Rivers, with 732 total casualties, ranked third in number after inland-Gulf (1,128) and inland-Atlantic (808). Of the 732 casualties, 331 (45 percent) involved collisions, explosions, or fire. Significantly, 50 percent (4,072 of a total of 8,159) of all commercial vessels in all types of casualties have a gross tonnage of 300 tons or less. Although these data do not identify raked bow tank barge involvement, a sampling study of barge damage which was prepared for another purpose reveals that 30 to 34 percent of all incidents involve rake or end-void barge damage. Another sampling study of barge damage that can be temporarily repaired reveals a frequency of raked bow damages at 14.8 percent and of box-end damage at 14.2 percent.

The Safety Board believes that because of the potential damage that raked bow barges can cause to other vessels, bridges, and waterfront facilities, and because of possible environmental damage, consideration should be given to modifying the design of raked bow barges or to the use of protective bumpers so as to minimize such damage.

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

Study the collision damage caused by raked bow barges currently operating in the navigable waterways of the United States to determine if a modified bow design or fendering would improve vessel safety. (Class II, Priority Action) (M-83-45)

If the conclusions of the study made in response to recommendation M-83-45 reveal that vessel safety can be improved thereby, take action to require modifications of raked bow barges currently in service and those entering the U.S. barge fleets. (Class II, Priority Action) (M-83-46)

BURNETT, Chairman, GOLDMAN, Vice Chairman, McADAMS, BURSLEY, and ENGEN, Members, concurred in these recommendations.

By: Jim Burnett Chairman