

Log M-222

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: August 16, 1983

Forwarded to:

Lt. General Joseph K. Bratton
Chief of Engineers
Department of the Army
Washington, D.C. 20314

SAFETY RECOMMENDATION(S)

M-83-58 and -59

The investigation and analysis of a marine accident on December 14, 1982, disclosed that 10 hopper barges were moored to trees growing on a small island close to the right descending bank of the Arkansas River in an unauthorized fleeting area about 1/2 mile upstream from an authorized fleeting area where 37 other barges were moored. About 2030 c.s.t. on December 4, during a period of high river flows, the downriver end of the island washed away and, as a result, the trees were uprooted and the 10 barges in the unauthorized fleeting area came adrift. They drifted into collision with the 37 barges in the authorized fleeting area, causing 25 of the barges to break away from their moorings. The barges drifted downstream and collided with a State highway bridge and a grain dock, where three more barges were set adrift. Ultimately, a total of 38 barges were adrift in the river. Some barges grounded, some sank, and some drifted into dam No. 2 at mile 17 of the Arkansas River. Barges blocked 12 of the dam's 16 spill gates causing the water level upstream of the dam to rise 7.4 feet and setting up turbulent, asymmetrical flow over the dam which scoured material from the river bed and undermined the dam's foundation. No one was injured, but resultant property damage, including salvage costs, was estimated at over \$12 million.^{1/}

Under the authority of Section 10 of the River and Harbor Act of 1899 (33 U.S.C. 403) a permit must be obtained from the U.S. Army Corps of Engineers (COE) before any work can be accomplished that will affect the course, location, condition, or capacity of the navigable waters of the United States. Before the construction of the barge fleeting area at mile 25 of the Arkansas River, the owners of the fleet requested and received such a permit from the COE. No COE personnel inspected the construction site to verify that the fleet was constructed in accordance with the permit. It was not COE policy in the Little Rock District to undertake such verification.

After the barges broke away from the fleet, U.S. Coast Guard (USCG) and COE personnel inspected the fleet and found several instances of noncompliance with the terms and conditions of the permit. Although the Safety Board could find no evidence that any of the instances of noncompliance materially contributed to the cause of the accident, they indicate that there is a need for District Engineers to verify that the terms and conditions of construction permits for barge fleeting areas are observed.

^{1/} For more detailed information read, "Marine Accident Report--Breakaway of 38 Barges, Arkansas River, December 4, 1982" (NTSB MAR-83-5).

During a recent high water period the New Orleans District of the COE became concerned about the threat posed by breakaway barges to the Old River Control Structure on the Mississippi River near Simmesport, Louisiana. To counteract the threat, the COE stationed a towboat near the structure. The crew of the towboat monitored the river on a 24-hour basis for breakaway barges and was prepared to get underway at any time to prevent drifting barges from striking the structure. The solution is by no means the only, or for that matter, the most effective solution to the problem of breakaway barges, but it does show that the COE can take action to protect public works from being damaged by breakaway barges.

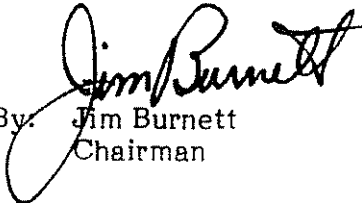
The McClellan-Kerr Arkansas River Navigation System is a valuable asset to the Arkansas-Oklahoma region, and to the country as a whole. Millions of tons of cargo are moved on the waterway every year and millions of tons more will be moved as the region becomes more developed and the volume of traffic approaches the design capacity of the system. The expected commercial growth could be seriously jeopardized by damage to, or destruction of, a lower lock and dam installation. In this accident, dam No. 2 was seriously damaged. The blocked spill gates caused asymmetrical currents, which undermined and washed away part of the sandy river bed that forms the foundation of the dam, and threatened to cause the dam to fail. Dam No. 2 is only one of five dams similarly constructed atop a sand base on the downstream portion of the navigation system. All five dams are susceptible to severe damage by turbulent flow caused by blocked spill gates. If any one of the dams were to fail, the entire navigation system would be disrupted until a new dam, costing many millions of dollars could be constructed. Since the most likely cause of spill gate blockage at these dams is breakaway barges during high water periods, the Safety Board believes that the Corps of Engineers should develop a means to protect the dams from this threat.

Therefore, the National Transportation Safety Board recommends that the Army Corps of Engineers:

Institute a monitoring program for District Engineers to verify that the terms and conditions of construction permits issued for barge fleeting areas by the Corps of Engineers are met. (Class II, Priority Action) (M-83-58)

Develop a means to protect dams of the McClellan-Kerr Arkansas River Navigation System from the danger presented during periods of high water by breakaway barges. (Class II, Priority Action) (M-83-59)

BURNETT, Chairman, GOLDMAN, Vice Chairman, and BURSLEY and McADAMS, Members, concurred in these recommendations. ENGEN, Member did not participate.


By: Jim Burnett
Chairman