

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: October 2, 1979

Forwarded to:

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Vice President of Operations
Louisville & Nashville Railroad Company
P.O. Box 1198
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SAFETY RECOMMENDATION(S)

R-79-64

About 8:00 a.m., on April 8, 1979, 29 cars, including 26 placarded tank cars containing hazardous materials, of Louisville & Nashville Railroad Company freight train No. 403 derailed while moving around a 4°02' curve between Milligan and Crestview, Florida. Two tank cars of anhydrous ammonia ruptured and rocketed. Twelve other cars containing acetone, methyl alcohol, chlorine, carbolic acid, and anhydrous ammonia ruptured, and their contents either burned or were consumed by fire. Fourteen persons were injured as a result of the release of anhydrous ammonia and other materials or during the evacuation of about 4,500 persons. Property damage was estimated to be \$1,258,500. ^{1/}

Investigation of the accident disclosed questionable train handling and train makeup characteristics which were the speed of the train, type of brake applications, tank cars without baffles, large trailing tonnage, inadequate locomotive power, and the intermittent shutdown of the locomotive's fifth unit. These factors adversely affected coupler forces between the cars as the train negotiated the numerous grades and curves through the derailment area. Resulting slack action created large lateral forces between the 36th and 37th cars that caused the outside rail to tip and derail the train while it moved through a 4°02' curve.

Train No. 403 had 114 cars and was 7,550 feet long. The ability of long, heavy tonnage trains to negotiate varying curves and grades has been examined within the industry's track train dynamics (TTD) program. Since maximum forces acting upon car couplers are affected by train tonnage, speed, and grades, the TTD program developed recommendations concerning these variables. For trains traveling 30 mph over 1 percent grades, such as train No. 403, the TTD program recommends a maximum of 8,000 trailing tons. This recommended tonnage is less than the 10,628 trailing tons estimated to have been on train No. 403 when it departed Pensacola, and the 11,360 trailing tons actually on train No. 403 at the

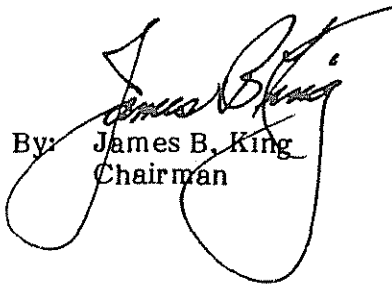
^{1/} For more detailed information, read "Railroad Accident Report--Louisville & Nashville Railroad Company Freight Train Derailment and Puncture of Hazardous Materials Tank Cars, Crestview, Florida, April 8, 1979" (NTSB-RAR-79-11), and "National Transportation Safety Board Spill Map, Crestview, Florida, April 8, 1979."

time of its derailment. Unusual impact markings on the striker casting and the broken coupler knuckle between the 36th and 37th cars were influenced by the 3,360 trailing tons on train No. 403 that were over the TTD-recommended maximum.

Therefore, the National Transportation Safety Board recommends that the Louisville & Nashville Railroad Company:

Establish train makeup and operation guidelines according to track train dynamics principles for trains carrying hazardous materials and operate the trains accordingly. (Class II, Priority Action) (R-79-64)

KING, Chairman, DRIVER, Vice Chairman, McADAMS, GOLDMAN, and BURSLEY, Members, concurred in the above recommendation.


By: James B. King
Chairman