

NATIONAL TRANSPORTATION SAFETY BOARD  
 WASHINGTON, D.C.

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ISSUED: October 2, 1979

Forwarded to:

Honorable John M. Sullivan  
 Administrator  
 Federal Railroad Administration  
 400 Seventh Street, S.W.  
 Washington, D.C. 20590

SAFETY RECOMMENDATION(S)

I-79-13

About 8 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/

The engineer of train No. 403 had to depend on his memory when he told investigators what actions he took before the derailment. To provide more precise information in case of an accident, and to enable railroads to determine better train-handling procedures, the Safety Board recommended on July 31, 1978, that the Federal Railroad Administration (FRA) require that certain locomotives be equipped with operating event recorders. The recommendation was made following the Safety Board's investigation of an accident at Pensacola, Florida, on November 9, 1977. 2/ The FRA has not yet taken any action on this recommendation.

Investigation of the Crestview accident disclosed questionable train handling and train makeup practices 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

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."

2/ "Railroad Accident Report--Louisville & Nashville Railroad Company Freight Train Derailment and Puncture of Anhydrous Ammonia Tank Cars, Pensacola, Florida, November 9, 1977" (NTSB-RAR-78-4).

action created large lateral forces between the 36th and 37th cars that caused the outside rail to overturn 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 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. On July 31, 1978, as a result of the Pensacola accident, the Safety Board recommended that the FRA require railroads to limit the length and tonnage of trains carrying hazardous materials to train makeup principles developed under the TTD program. The FRA has not yet taken any action on this recommendation.

Only the conductor had a document that showed the names of commodities in each tank car. The L&N had not followed its own procedures that require crewmembers to be knowledgeable of the train consist and to have the train consist information immediately available for firefighters. Firefighters experienced a 45-minute delay in obtaining the waybills and consist information with pertinent hazardous materials emergency information. This delay could have had serious consequences, particularly if they had gone in to fight the fire before a second explosion that occurred 20 minutes after the derailment. The firefighters should have known immediately where to find the train's hazardous materials information. Also, if the crewmembers had been injured, a longer delay in obtaining the information would have occurred. If the crewmembers had been killed or injured, there was no identified location where the consist information must be kept.

The quick action on the part of rescue personnel in evacuating nearby Milligan after obtaining the train consist information prevented the lethal cloud from injuring more residents downwind from the derailment. The availability of train consist information with pertinent emergency information is imperative for providing emergency forces with prompt information. In its report on the Pensacola accident, the Safety Board also recommended that the FRA require railroads to provide pertinent hazardous materials information on waybills that would be available to public emergency personnel. The FRA has not yet taken any action on this recommendation.

Despite the use of self-contained breathing apparatus and short work shifts to limit exposure, 10 wreck-clearing workers were overcome by fumes. Some of these workers were hospitalized. Other workers complained of nausea, dizziness, and eye and pulmonary irritation during the operation. The injuries during wreck-clearing operations demonstrate the continuing vulnerability of wreck-clearing employees to hazardous materials releases and the need to develop adequate protective measures for such employees. The Safety Board has previously discussed the wreck-clearing safety problem and on August 30, 1978, requested the Association

of American Railroads to: "Complete development and documentation of safety procedures for identifying and assessing hazardous materials dangers, and for coordinating wreckage-clearing operations with local public safety officials. (Class I, Urgent Action) (I-78-14)" As yet, these safety measures have not been developed.

In addition to anhydrous ammonia and chlorine, fumes from the carbon tetrachloride, acetone, methyl alcohol, and carbolic acid cars, and possible residues or reaction of byproducts from the mixing or burning of the escaping chemicals, existed at the scene. Physicians were uncertain about the medical treatment of exposed employees; exposures must be known before treatment can be prescribed. No systematic records of exposures were maintained for these employees. Some exposure records may be necessary for these employees to determine health risks from both one-time and repeated exposure to hazardous materials releases. In addition, the field practices of wreck-clearing crews should be examined to determine needed health safeguards and operating precautions.

Therefore, the National Transportation Safety Board reiterates the following recommendations which were made to the Federal Railroad Administration on July 31, 1978, as a result of the Pensacola accident:

"Promulgate regulations to require locomotives used in trains on main tracks outside of yard limits to be equipped with operating event recorders. (Class II, Priority Action) (R-78-44)

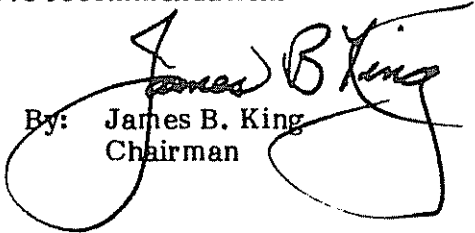
"Promulgate regulations to require railroads to limit the length and tonnage of trains carrying hazardous materials to train makeup principles developed under the track train dynamics program. (Class II, Priority Action) (R-78-46)

"Promulgate regulations to require railroads to provide pertinent hazardous materials information on waybills and to make this information available to public emergency personnel. (Class II, Priority Action) (R-78-47)"

— and as a result of the Crestview accident recommends that the Federal Railroad Administration:

Analyze risks to wreck-clearing personnel during wreck-clearing operations involving hazardous materials releases to determine needed health safeguards, operating precautions, and medical treatment capabilities for hazardous materials exposures, and establish appropriate safety requirements based on its findings. (Class II, Priority Action) (I-79-13)

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

By:  James B. King  
Chairman