

NATIONAL TRANSPORTATION SAFETY BOARD  
WASHINGTON, D.C.

ISSUED: March 1, 1979

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Forwarded to:  
  
Mr. W. H. Dempsey  
President  
Association of American Railroads  
1920 L Street, N.W.  
Washington, D.C. 20036  
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SAFETY RECOMMENDATION(S)  
  
R-79-5

About 10:25 p.m., on February 22, 1978, 23 cars of a Louisville and Nashville Railroad Company freight train derailed in Waverly, Tennessee. At 2:53 p.m., on February 24, 1978, a derailed tank car containing liquefied petroleum gas ruptured. The escaping gas ignited with an explosive force, and the ensuing fire resulted in deaths of 16 persons and injury to 43 others. Property damage was estimated at \$1,800,000.

The investigation disclosed that a broken wheel on the 17th car, which had been added to the train en route, first derailed about 6 miles before the point of the general derailment. The wheel contained evidence of above-normal heating which contributed to the wheel's cracking.

Two tank cars loaded with liquefied petroleum gas were derailed. The side of one of the tanks was scored and dented inward during the derailment by a wheel or some other component of the car. The scored mark appeared to be shallow and had not materially weakened the structure of the tank. Following the derailment the scored tank was moved to a position along the track structure, clear of the track, so that the commodity could be transferred into another vehicle.

The temperature on February 24, rose to the midfifties from a low in the upper teens on the 22nd.

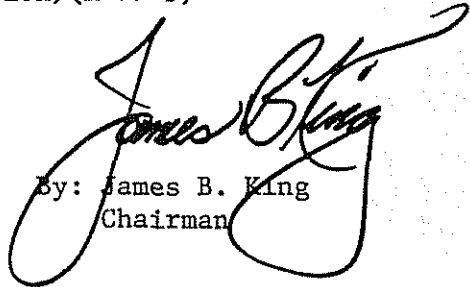
A metallurgical examination of the ruptured tank disclosed that a shallow surface crack was introduced in the tank sheet from the gouging during the derailment. This crack was propagated by stresses introduced into the tank either by the increase in pressure due to the raising temperature or by the movement of the tank for transfer. The crack continued to grow until the tank could no longer tolerate the pressure without rupturing. This occurred some 40 hours following the original damage.

(2)

The investigation disclosed that there was no one at the scene of this derailment, prior to the rupture of the tank, who could properly assess the mechanical damage to the tank. To attempt to train all railroad employees and firefighters who may be exposed to these problems appears to be a monumental task. The Safety Board believes that a group of experts trained in the handling of hazardous materials at accidents would be a more viable approach to the problem and one in which a certain degree of success may be attained. It is further believed that this could be accomplished for rail transportation through the direction of the Association of American Railroads.

Therefore, the National Transportation Safety Board recommends that the Association of American Railroads:

Provide guidelines to railroad employees to aid them in an assessment of tank car damage and procedures for the proper handling of tank cars.  
(Class II, Priority Action) (R-79-5)

  
By: James B. King  
Chairman

KING, Chairman, DRIVER, Vice Chairman, McADAMS and HOGUE, Members, concurred in the above recommendations.