



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: October 26, 2006

In reply refer to: I-06-02

Chief Jim Harmes
President
International Association of Fire Chiefs
4025 Fair Ridge Drive, Suite 300
Fairfax, Virginia 22033-2868

The National Transportation Safety Board is an independent Federal agency charged by Congress with investigating transportation accidents, determining their probable cause, and making recommendations to prevent similar accidents from occurring. We are providing the following information to urge your organization to take action on the safety recommendation in this letter. The Safety Board is vitally interested in this recommendation because it is designed to prevent accidents and save lives.

The recommendation addresses the emergency preparedness of communities for transportation accidents involving the release of hazardous materials. The recommendation is derived from the Safety Board's investigation of the October 15, 2005, collision of two Union Pacific Railroad (UP) freight trains within the UP's Texarkana rail yard,¹ and is consistent with the evidence we found and the analysis we performed. As a result of this investigation, the Safety Board has issued four recommendations, one of which is addressed to the International Association of Fire Chiefs. Information supporting this recommendation is provided below. The Safety Board would appreciate a response from you within 90 days addressing the actions you have taken or intend to take to implement our recommendation.

The Accident

At 4:56 a.m. on October 15, 2005, westbound UP train ZYCLD 13² collided with the rear of standing UP train MPBHG 15 in the UP rail yard in Texarkana, Arkansas. The collision resulted in the puncture of a railroad tank car containing propylene, a compressed flammable

¹ For additional information, see National Transportation Safety Board, *Collision of Two Union Pacific Railroad Freight Trains in Texarkana, Arkansas, October 15, 2005*, Railroad Accident Brief NTSB/RAB-06/04 (Washington, DC: NTSB, 2006).

² Each train will be identified by the letters in its identifier without the number.

gas.³ The propylene was heavier than air and flowed near the ground into a nearby neighborhood. The flowing gas reached a house where an unknown ignition source ignited the gas, and the house exploded. The single occupant was killed. The fire moved quickly along the flowing gas back to the punctured tank car. A second, unoccupied, home was destroyed in the fire, and a wooden railroad trestle burned completely. Approximately 3,000 residents within a 1-mile radius of the punctured tank car were advised to evacuate the area. The two crews and the employees working at the Texarkana yard were not injured, and they evacuated the area safely.

The National Transportation Safety Board determined that the probable cause of the October 15, 2005, collision of Union Pacific Railroad train ZYCLD 13 with Union Pacific Railroad train MPBHG 15 in Texarkana, Arkansas, was the failure of the crew of train ZYCLD 13 to remain attentive and alert and thereby able to stop short of an observable standing train. Contributing to the severity of the accident was the puncture of a tank car during the collision, which resulted in the release of propylene and a fire.

Emergency Response

When train ZYCLD struck the rear car of train MPBHG, the forces of the striking train derailed the rear three cars of train MPBHG, but the cars remained upright. Then the forces were transmitted through the next 12 cars without derailing them. The 18th car was forced out of the train completely, and the 17th car⁴ continued forward until it struck the end of the 19th car (tank car TIMX 33429) and punctured the head of the tank car with its uncoupled coupler. The tank car was loaded with liquefied propylene gas, and immediately after it was punctured, about half of its propylene load was released. The propylene did not ignite immediately, however. Eyewitnesses said that after the collision they saw fog-like conditions near the track, and a local law enforcement officer stated that he saw the fog-like substance reach a local residence, which then exploded. The ignition and explosion of the propylene and the subsequent fire, the explosion of a home, and the fatal injuries to the occupant occurred at 5:08 a.m., about 12 minutes after the first reports of chemical odors came in to the Texarkana 911 communications center.

Although the Texarkana fire and police departments responded immediately, and the UP yardmaster attempted to assess the condition of the two trains, several adverse conditions, such as darkness and the restricted visibility of the accident scene from the yard tower, hampered the efforts of the emergency responders and the UP to immediately assess the accident. The possibility that flammable propylene had been released was not discussed until the first communication between the yardmaster and the 911 dispatcher, which occurred at 5:04 a.m., 8 minutes after the accident and 4 minutes before the propylene ignited and exploded. Consequently, the UP and Texarkana emergency responders did not have sufficient time to assess the scope of the accident in order to implement measures that might have averted the ignition and explosion of the propylene.

³ Propylene is regulated under the U.S. Department of Transportation's hazardous materials regulations, Title 49 *Code of Federal Regulations* 173.115, as a Division 2.1 flammable gas, which is defined as any material which is a gas at 68° F or less and 14.7 pounds per square inch, gauge, of pressure and has a flammable range of at least 12 percent.

⁴ The UP numbers the cars in a train from the rear of the train; therefore, the 17th car was behind the 18th car.

Local, county, and State law enforcement and emergency management agencies responded and provided support. Following their arrival about 10:30 a.m., UP contractors deployed air monitoring equipment, conducted a detailed assessment of the damaged tank cars, and developed a plan for removing the damaged tank cars. All of these actions contributed to the conclusion of the emergency about 19 hours after the accident. Although many of the emergency response actions worked well, with positive results, there were fundamental problems with notification, communication, and coordination on the part of the UP during the initial hours following the accident. The lack of coordination between the UP and Texarkana prompted the Safety Board to look at emergency planning and preparedness efforts of the UP and the city of Texarkana. Although the city had a copy of the 1997 systemwide UP emergency plan, it did not have the most current UP emergency plan. In addition, the UP did not have a copy of Texarkana's response plan for hazardous materials incidents. Regarding emergency planning, joint drills and exercises, including tabletop exercises, between the city and the UP had not been conducted for several years before the accident. Consequently, the lack of any emergency planning, particularly joint training exercises and drills, left Texarkana and the UP ill-prepared to effectively respond to the accident.

The Safety Board over many years has advocated and recommended structured planning and coordination between railroads and communities to minimize the danger and damage posed by hazardous materials released in a rail accident. In its 1991 safety study on the transport of hazardous materials by rail,⁵ the Board concluded that many railroads and community emergency response organizations had not jointly developed written emergency response plans and procedures and had not regularly participated in joint disaster drills of simulated emergencies.

The Safety Board recommended on July 1, 1991, that Class I railroads and railroad systems develop written emergency response plans, in coordination with communities adjacent to railroad yards and along hazardous materials routes, and conduct disaster drills or other appropriate methods to test the emergency response plans. The Board also recommended that the International Association of Fire Chiefs urge its members to develop written emergency response plans and procedures for handling releases of hazardous materials, in coordination with railroads that transport hazardous materials through their members' areas.⁶

The Safety Board's investigation of this accident also found that for at least 3 years before the accident, the city of Texarkana did not exchange information with the UP about emergency plans and response capabilities, and did not conduct joint training exercises. Other transporters of hazardous materials, in addition to the UP, have facilities in Texarkana. The city would be better prepared to respond to emergencies if it had coordinated plans in place with all transporters of hazardous materials. The Board is concerned that other communities have not coordinated regularly with transporters of hazardous materials in their localities, and have not conducted joint drills and exercises.

⁵ National Transportation Safety Board, *Transport of Hazardous Materials by Rail*, Safety Study NTSB/SS-91/01 (Washington, DC: NTSB, 1991).

⁶ Safety Recommendations R-91-15 and -22.

Therefore, the National Transportation Safety Board makes the following safety recommendation to the International Association of Fire Chiefs:

Using the circumstances of the accident in Texarkana, Arkansas, on October 15, 2005, reemphasize through your publications, web site, and meetings the importance of conducting periodic joint emergency response drills and exercises with regional and local transporters of hazardous materials, such as railroads and trucking companies, to help ensure effective communications and coordination when accidents occur. (I-06-02)

The Safety Board also issued one recommendation to the city of Texarkana, one to the UP, and one to the Association of American Railroads and the American Short Line and Regional Railroad Association. In your response to the recommendation in this letter, please refer to Safety Recommendation I-06-02. If you need additional information, you may call (202) 314-6177.

Chairman ROSENKER, Vice Chairman SUMWALT, and Members HERSMAN and HIGGINS concurred in this recommendation.

[Original Signed]

By: Mark V. Rosenker
Chairman