



# National Transportation Safety Board

Washington, D.C. 20594

## Safety Recommendation

**Date:** June 5, 1998

**In reply refer to:** R-98-17

Ms. Jolene M. Molitoris  
 Administrator  
 Federal Railroad Administration  
 400 7<sup>th</sup> Street, S.W.  
 Washington, D.C. 20590

At approximately 8:00 p.m., mountain standard time, on January 27, 1997, Apache Railway<sup>1</sup> train APA No. 81 derailed 46 cars, 2 miles south of Holbrook, Arizona.<sup>2</sup> The 46 cars were part of a 78-car train. The crew was removing one car from the train, when the remaining 77 cars of the train rolled 14 miles down a 1.7-percent descending grade and derailed on a 6-degree curve. Two tank cars were involved in the derailment. One tank car containing hydrogen peroxide was compromised and released its entire contents. A fire ignited in the wreckage; it was generally confined to cars containing recycled waste paper. Local emergency responders evacuated 150 people from a nearby residential area until the morning of January 28, 1997.<sup>3</sup> There were no fatalities or injuries. The estimated damage was \$2.06 million.

The Safety Board investigation revealed that the train rolled away unattended because the conductor had trapped the air in the train braking system, an action referred to as "bottling the air." Bottling the air can cause an undesired release of the brakes on a standing train.

The Apache Railway, like most railroads in the United States, has specific rules prohibiting this action. The Federal Railroad Administration (FRA), however, does not have a regulation specifically prohibiting railroad employees from bottling the air on a standing train.

<sup>1</sup> The Apache Railway is owned by the Stone Container Company (paper products). The 44 miles of railroad creates a connection between the Burlington Northern Santa Fe Railroad's mainline at Holbrook, Arizona, and the Stone Container Company's paper mill at Snowflake, Arizona. Primary traffic on the railroad are inbound and outbound bulk commodities.

<sup>2</sup> For additional information read Railroad Accident Brief—*Derailed of Apache Railway Company Train, Holbrook, Arizona, January 27, 1997* (LAX97FR005); copy enclosed.

<sup>3</sup> The primary reason for the evacuation was excessive smoke, which hindered the abilities of the local responders from being able to determine the products involved.

Since 1989, the Safety Board has investigated five accidents in which the probable cause was determined to be an employee bottling the air. Total cost to the railroads for those cases has been more than \$8 million.<sup>4</sup>

Furthermore, FRA statistics show that in 1994, six accidents were attributed to an employee bottling the air and in 1995, another four accidents resulted from this practice.<sup>5</sup> Together, these accidents cost an additional \$600,00 in damages.

Thus, the accident history indicates that operating rules alone are insufficient to prevent a railroad employee from using this procedure. To hold operating crews more accountable for their actions and to deter railroad employees from using this procedure, the Safety Board believes that the FRA should incorporate a specific prohibition against bottling the air in the Code of Federal Regulations.

Therefore, the National Transportation Safety Board recommends that the Federal Railroad Administration:

*Issue a regulation that requires the brake pipe pressure to be depleted to zero and an angle cock to remain open on standing railroad equipment that is detached from a locomotive controlling the brake pipe pressure. (R-98-17)*

Please refer to Safety Recommendation R-98-17 in your reply. If you need additional information, you may call (202) 314-6430.

Chairman HALL, Vice Chairman FRANCIS, and Members HAMMERSCHMIDT, GOGLIA, and BLACK concurred in this recommendation.

By:   
Jim Hall  
Chairman

---

<sup>4</sup> For more information see Railroad Accident Report—*Collision and Derailment of Montana Rail Link Freight Train with Locomotive Unit and Hazardous Materials Release, Helena, Montana, February 2, 1989* (NTSB/RAR-89-05); Railroad Accident Reports—*Brief Format of 1990 Accidents* (NTSB/RAB-93/01) Spokane, Washington, Accident, April 29, 1990, p. 88; Railroad Accident Reports—*Brief Format of 1991 Accidents* (NTSB/RAB-93/02) Waterfall, Wyoming, Accident, March 4, 1991, p. 34; Railroad Accident Reports—*Brief Format of 1993 Accidents* (NTSB/RAB-96/02) Hudson, Colorado, Accident, August 11, 1993, p. 95, and Dubuque, Iowa, Accident, December 21, 1993, p. 155.

<sup>5</sup> U.S. Department of Transportation, Federal Railroad Administration, *Accident/Incident Bulletin No. 163 Calendar Year 1994*, August 1995, and *Accident/Incident Bulletin No. 164 Calendar Year 1995*, August 1996.

# NATIONAL TRANSPORTATION SAFETY BOARD

WASHINGTON, D.C.

LAX 97 FR 005  
DERAILMENT  
APACHE RAILWAY COMPANY  
HOLBROOK, ARIZONA  
JANUARY 27, 1997

At approximately 8:00 p.m., mountain standard time, on January 27, 1997, Apache Railway train APA No. 81 derailed 46 cars, 2 miles south of Holbrook, Arizona. The 46 cars were part of a 78-car train. The crew was removing one car from the train when the remainder of the train rolled down a 1.7-percent descending grade, finally derailling on a 6-degree curve. Two tank cars derailed. One tank car containing hydrogen peroxide was compromised and released its entire contents. A fire ignited in the wreckage; it was generally confined to cars containing waste paper. Local emergency responders evacuated 150 people from a nearby residential area until the morning of January 28, 1997. There were no fatalities or injuries. Damages were estimated at \$2.06 million.

At 6:25 p.m., train No. 81 had departed Holbrook, Arizona, milepost (MP) 0, on a return trip to the railroad's main yard, 38 miles away. At MP 16, the crew stopped the train to set out one loaded car of feed for a pig farm. The car was five cars behind the engine.

The conductor explained that he turned the angle cock at the rear of the fifth car. Then he said he closed the angle cock at the lead end of the sixth car, which was part of the train that would be left standing on the main track. When the conductor closed the angle cock on the lead end of the sixth car, he trapped the air in the portion of the train that would be left standing. This procedure is commonly called "bottling the air" in the railroad industry and is prohibited by carrier operating rules. Had the conductor not bottled the air, the brakes on the remaining portion of the train would have had an emergency application that would not have been released until the locomotives were reattached.

Later, during the interview with the crew, investigators found that the conductor and engineer had discussed bottling the air before performing the switching. They concluded that when the initial stop at the pig farm was made, it would be important for the engineer to make a heavy brake application on the train before the conductor separated the cars. The conductor and engineer agreed that this heavy brake application should prevent the train from

unintentional movement, even though the air pressure would be trapped in the brake pipe.

When the conductor had completed the necessary tasks to place the rear car onto the side track, he instructed the engineer to back the locomotives and four remaining cars toward the location where the brakeman was waiting on the main track. The rear brakeman boarded the leading end of the fourth car and proceeded toward the location where they had left the train. The brakeman stated that he looked back toward the train they had left on the main track. The train was not there. The brakeman remarked that he notified the engineer that the train was no longer standing where they had left it. The brakeman suggested they increase the speed and maybe they could "catch" the train. When they had gone approximately 1 mile, the brakeman expressed concern that if the free-moving train suddenly stopped, they might collide with it. The brakeman further explained that since he was on the front of the four cars attached to the locomotives, the rear headlight of the locomotives was unavailable to assist in the darkness.

When the conductor closed the angle cock on the remainder of the train, the brake pipe initiated an increase in pressure that propagated back toward the rear of the train and released the brakes. Because the train was standing on an ascending grade, once the brakes were released, the 73 cars rolled away freely. The accident would probably have been avoided if the conductor had left the angle cock open.

#### PROBABLE CAUSE

The National Transportation Safety Board determines that the probable cause of this accident was the conductor's closing of the angle cock and bottling the air on the remaining portion of the train, which prevented the emergency brakes from being applied. Contributing to the accident was the engineer supporting the actions of the conductor.

**Adopted: April 23, 1998**