

# NATIONAL TRANSPORTATION SAFETY BOARD

WASHINGTON, D.C.

LAX 97 FR 003  
DERAILMENT  
BURLINGTON NORTHERN SANTA FE  
THERMOPOLIS, WYOMING  
JANUARY 11, 1997

On January 11, 1997, at approximately 6:00 a.m., mountain standard time, a Burlington Northern Santa Fe Railroad freight train, Extra 8520 West, derailed 22 cars at milepost (MP) 326.5. The crew was uninjured. Estimated damages were \$72,800.

Extra 8520 West originated at Casper, Wyoming, MP 202.2. When the locomotives passed MP 327.25 at 30 mph, the train experienced an emergency brake application. The conductor inspected the train and discovered that the 36<sup>th</sup> car through the 57<sup>th</sup> car derailed. Two tank cars slid down the bank towards the river and came to rest with one end of a tank car touching the water. The tank car touching the water contained molasses. The remaining cars were either on their sides, parallel to the track, or upright.

Several pieces of broken rail were found at the point of derailment. These sections were sent to a laboratory for analysis. The rail had broken at an angle from the top of the rail to the base at two locations. Small points of discoloration were noted just inside the gage side of the ball of the rail at the fracture surfaces.

Evidence of shelling appeared on the gage side of the rail at the derailment site. The broken rail that displayed signs of battering had a detail fracture as a result of the shelling. The battering meant the rail had been broken during the passage of several trains. This alone would not have resulted in the derailment; however, with the rail broken, it added vertical stress and a lever/fulcrum effect across the nearest crosstie, breaking the rail at the second location. When the second break in the rail occurred the train derailed.

The electronic inspection performed over this section of rail 5 months earlier was unable to detect the defect in the rail. This may be a result of the shelling and the inability of the detection system to accurately scan the internal portion of the rail with a disfigured surface.

## **PROBABLE CAUSE**

The National Transportation Safety Board determines that the probable cause of this accident was the rail breaking as a result of an internal defect referred to as a detail fracture. Contributing to the cause of the accident was the inability of the ultrasonic rail detection equipment to readily identify internal defects in rail with surface defects.

Adopted: August 18, 1998