

NATIONAL TRANSPORTATION SAFETY BOARD

WASHINGTON, D.C.

Railroad Accident Brief Report

ATL 96 FR 007
DERAILMENT
NORFOLK SOUTHERN
ELLETT, VIRGINIA
JANUARY 7, 1996

About 9:00 a.m., eastern standard time, on January 7, 1996, Norfolk Southern unit grain train Z48V405 derailed 79 of its 98 cars as it proceeded in runaway condition down a descending grade in Ellett, Virginia. The train consisted of a two-unit locomotive consist and 98 covered hopper cars loaded with corn, and was manned by an engineer and a conductor.

The train was 6,030 feet in length and had 12,683 trailing tons. Weather conditions at the time of the accident were heavy overcast skies and snow, with an ambient temperature of 21° F. Additionally, there was a snow accumulation of about 20 inches. There were no reported injuries as a result of this accident. Damages exceeded \$2.5 million.

The crew of Z48V405 reported for duty in Bluefield, West Virginia, at 11:55 p.m. on January 6, 1996. A severe winter storm was in progress and snow had been falling for the past 24 hours. The crew took charge of the unit grain train in Bluefield, and after waiting for more than 2 hours on the hill, the train departed at 3:50 a.m. The engineer stated he had difficulty controlling the train speed while descending the 1.6 percent grade departing at that location. He said he had to make successive brake applications in an attempt to hold the speed to the track speed of 15 mph. He said the train speed was not controlled as expected, resulting in heavier than normal brake applications. He estimated a total of 30 pounds of brake pipe reductions were made, resulting in the train eventually stalling 3 miles after leaving Bluefield. The engineer said he departed that location with a 10 to 14 pound reduction and more confidently held the train speed at 22 mph, while operating through an area restricted to 25 mph. The train then proceeded eastward without difficulty and with normal train handling to milepost (MP) V-292, where the engineer stopped by using the automatic brake to clear the brake shoes. After a brief stop the train continued eastward to ascend a 0.6 percent grade.

When the train stalled on the ascending grade at MP V-283, pusher locomotives were added to the rear of the train. The train departed this location and continued eastward, stopping at MP V-276.5, so the pusher locomotives

could cut off. The stop was made by use of the automatic brake with a 22 pound reduction.

The train departed on the 1.4 percent descending grade, which extends for 7 miles and has a speed restriction of 30 mph due to track curvature. The engineer stated he released the brakes and went into full dynamic braking, believing the brakes were heated up and clean. At about 8 mph he made a full service brake application. The train speed continued to increase and the engineer placed the brakes in emergency at a speed of about 37 mph. When the train speed was near 55 mph the locomotives broke away from the cars. After the locomotives broke away the speed of the locomotives reduced very quickly and the units came to a stop. The event recorder speed tape showed the speed reached 57 mph before it quickly dropped to zero.

The 1st through the 79th cars, all loaded covered hoppers containing corn, derailed. The derailed equipment came to rest perpendicular to the track within a 600 feet area.

A simulation of the accident, using information obtained from the Train Handling Recorder (THR) was conducted. The information obtained from the THR tapes and used in the simulation, revealed that at the time the train was descending the 1.4 percent grade and placed in emergency, the train had the equivalent of a 10-pound automatic brake reduction, when the actual reduction was 26 pounds. The severe winter weather conditions were a factor in this accident. Blizzard conditions and ambient temperatures in the low 20's resulted in frozen brake rigging, which reduced the braking efficiency of this train.

PROBABLE CAUSE

The National Transportation Safety Board determines that the probable cause of this accident was insufficient braking capabilities on the 98 loaded grain cars as the train proceeded on the 1.4 percent descending grade under severe weather conditions.

Adopted: August 18, 1998