

**National Transportation Safety Board
Office of Railroad, Pipeline and Hazardous Materials Investigations**

Washington, D.C. 20594

Derailment and Fire with Hazardous Materials Release
CSX Railroad
Lynchburg, Virginia
April 30, 2014

DCA 14 FR 008

Mechanical Group Factual Report

Mechanical Group

David E. Watson
National Transportation Safety Board

Chair

Jeffrey G. Apple
Federal Railroad Administration

Bruce Rose
CSX

Allen Smith
CSX

Synopsis

On April 30, 2014, at about 1:54 p.m. eastern daylight time¹, an eastbound CSX Transportation Bakken crude oil unit train, identification number K08227, with two locomotives, one buffer car, and 104 tank cars, derailed 17 tank cars at about milepost CAB 145.7 on the James River Subdivision in Lynchburg, VA. One tank car that ended up partially submerged in the James River was breached spilling crude oil that caught fire and also released into the river. There were no injuries resulting from the derailment and fire. There was a local evacuation of about 6 blocks in the area of the derailment effecting about 350 residents and about 20 businesses to the south of the derailment along the river front. The fire was extinguished at about 4:00 p.m. and the evacuation was lifted about 6

¹ All times in this report are eastern daylight time.

p.m. The train was travelling at 24 mph. The maximum speed through the derailment area is 25 mph.

Initial damage estimates to the equipment provided by CSX are \$720,000. The weather at the time of the incident was partly cloudy skies with a temperature of 65°F.

Parties to the investigation include: Federal Railroad Administration, CSX Transportation, Brotherhood of Locomotive Engineers and Trainmen, United Transportation Union/SMART, and the Brotherhood of Maintenance of Way Employees Division².

Train Consist

CSX train K08227 consisted of two locomotive units, one loaded hopper car and 104 tank cars loaded with petroleum crude oil. The train weighed 14,107 tons and was 6,353 feet long. Both locomotive units were located at the front of the train and arranged for multiple-unit operation. The lead locomotive, BNSF 7485, was configured to be the controlling unit. There was no distributed locomotive power associated with this train.

Pre-Accident Inspection

The train originated in Ross, North Dakota. Records indicate it was given a Class 1 air brake test and end of train device test at Minot, North Dakota on April 26, 2014 at 0100 hours by the Burlington Northern Santa Fe Railway. It is designated an extended haul train for brake testing purposes. When the train arrived in Chicago, Illinois one locomotive unit was removed from the train.

At Columbus, Ohio the air brakes and end of train device were tested again at 1115 am on April 29, 2014.

The train passed multiple detectors. The last three were reviewed by the investigative signal group. They report that the first of those three and the last of those three reported no defects. According to signal records the middle detector malfunctioned under the train and failed to deliver a report. The train crew indicated they were passing another train slowly at the time and received a report of no defects from both the detector and the other train.

Train K082-27 passed a CSX “supersite” detection location at Lowell, West Virginia at 12:30 a.m. April 30, 2014. The site inspects and records data for passing trains, including wheel bearing temperature readings, optical geometry detection (OGD), wheel impact load detection (WILD) and wheel profile detection (WPD). There were no exceptions taken for the mechanical condition of any cars on the train.

The train crew reported the train handled as expected during all acceleration and deceleration situations.

² ‘Employees’ is a spelling from the Old English language.

Post-Accident Inspection

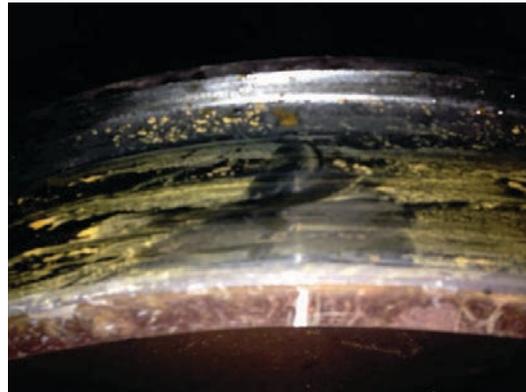
Shortly after the accident the locomotive units and 34 head cars were moved a short distance from the derailment site to keep them clear of the fire. The operating crew involved in that movement made a Class 1 air brake test prior to moving the cars. No brake pipe leakage was reported. The air brakes set and released on each car.

The next day, May 1, 2014 qualified CSX mechanical inspectors inspected the locomotives units and 34 head cars where they had been positioned after being moved away from the fire. Another Class 1 air brake test was performed. The results paralleled those of the previous day; no leakage was observed and the air brakes set and released on each car.

The 34th head car, CTCX 735749, was placed in the CSX Lynchburg yard for inspection. On May 2, 2014 the mechanical group inspected the car. Significant abrasion was observed on the L1 wheel. The abrasion was pronounced from the top of the flange to the tread. Metal had been extruded from the scour marks and was curled around the edges at multiple locations. There was no corresponding mark on the R1 wheel. The number one axle was the trailing axle on the trailing truck in the direction of travel at the time of the derailment. Members of the mechanical group had inspected the car on the night of the accident; the L2 wheel had displayed a light horizontal abrasion across the tread. The car had been moved about one mile to the Lynchburg yard at the time the full mechanical group inspected it on May 2nd. Only minor evidence remained on the L2 tread at that time.



L1 Wheel



L2 Wheel

The 52nd through 104th cars were pulled away from the fire shortly after the accident. CSX operating personnel performed a Class 1 air brake test on the cars before they were moved. No brake pipe leakage was reported and the air brakes set and released. The next day, qualified CSX mechanical inspectors inspected the cars and performed another Class 1 air brake test. The results parallel those of the previous day. No brake pipe leakage was observed and the air brakes set and released.

“BNSF 430560”. The B-end truck side frame was cast by ASF in January 1967; the A-end side frame was cast by Ride Control in August 1968. The car was stenciled on both sides with white paint “BUFFER SVC ONLY Do Not Load”.



BNSF 808360