BROTHERHOOD OF LOCOMOTIVE ENGINEERS AND TRAINMEN

A DIVISION OF THE RAIL CONFERENCE
INTERNATIONAL BROTHERHOOD OF TEAMSTERS

SAFETY TASK FORCE

CLEVELAND, OHIO

BEFORE THE NATIONAL TRANSPORTATION SAFETY BOARD

NTSB Accident Number: DCA-14-FR-008
Class: Major

April 30, 2014

Proposed findings, probable cause, and safety recommendations, in connection with the derailment and fire, on CSX train K08227, April 30, 2014 in Lynchburg, Virginia.

Stephen J. Bruno, BLET-Safety Task Force, National Chairman

David Rose, BLET-Safety Task Force, Party Spokesman

ACCIDENT SYNOPSIS

On April 30, 2014, at about 1:54 p.m. eastern daylight time, CSX crude oil unit[1] train, train number K08227 which originated in Ross, North Dakota, destined for Yorktown, Virginia, derailed seventeen (17) tank cars loaded with Bakken crude oil at about mile-post (MP) 146.45 on the CSX James River Subdivision in Lynchburg, VA. One of three tank cars that ended up partially submerged in the James River was breached, spilling approximately 30,000 gallons of crude oil that caught fire and also released product into the river. The ensuing fire caused a temporary evacuation of parts of the city. Initial damage estimates provided by CSX are about $1,000,000, which includes environmental remediation. The weather at the time of the incident was cloudy skies with light rain and a temperature of 53°F.

CSX train K08227 consisted of two (2) locomotive units, one (1) loaded Maintenance of Way hopper car[2] (buffer car)[3]and one hundred and four (104) tank cars (Post 2011models)[4] loaded with petroleum crude oil. The train weighed fourteen thousand one hundred and seven (14,107) tons and was six thousand three hundred and fifty-three (6,353) feet long. Both locomotive engines were located at the front of the train, with the BNSF 7485 as the controlling locomotive, BNSF 7658 trailing.

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[1] Unit train**:** a freight train composed of cars carrying a single type of commodity that are all bound for the same destination.

[2] Marked on the sides of the BNSF 430560 covered hopper railcar "BUFFER SVC ONLY-Do Not Load."
[3] Buffer is a term used for a railcar that is non-hazardous being placed in a train in order to be in compliance with 49 CFR§174.85.

[4] *CPC stands for Casualty Prevention Circular. The AAR (Association of American Railroads) issued Circular letter CPC-1232 which specifies new rail tank cars standards for transporting crude oil or ethanol. As of October 10, 2011, new tank cars built for transporting crude oil and ethanol comply with these new specifications: Half-Height Head Shields, Thicker tank and head material, Normalized steel, Top fitting protection, and Pressure Relief Device (recloseable type).*

Train KO8227's crew consisted of a certified Locomotive Engineer and a certified Conductor. They were travelling East on Main track No. 2 in Dynamic Brake[5] handle position No.1 when the train experienced an undesired emergency brake application ("UDE") while moving at twenty-four (24) miles per hour (MPH). Maximum authorized speed at that location is twenty-five (25) MPH.

Once stopped, the crew observed fire and smoke coming from their train and, after reporting this by radio to their dispatcher, started out on foot to the Lynchburg yard office for safety. There were no injuries resulting from the derailment and fire. Fire and explosions resulted in a temporary evacuation of about six (6) blocks in the area of the derailment, affecting about three hundred fifty (350) residents.

The Point of Derailment (POD) was determined to be at MP 146.45 in an area where a twenty per cent (20%) Traverse Detail Defect (TDD)/< 5% Reverse TDD was discovered using a Sperry Car during a routine ultrasonic inspection of the rail the previous day, April 29, 2014. The rail fractured at the defect, causing the derailment.

CFR Part 213.113 *Defective Rails,* Remedial action C, addresses TDDs by requiring that the defect on Class 2 track be repaired within ten (10) days of discovery. There was no requirement for a Temporary Slow Order (TSO) because the applicable temporary speed restriction contained in 213.113(c) is for thirty (30) MPH and the maximum allowable speed on that section of track is twenty-five (25) MPH.

CSX policy is to repair the same type of defect within five (5) days and the repair was scheduled for May 1, 2014.

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[5] Dynamic Braking: A train brake system where the traction motors are used to provide a braking force.

Probable Cause

The Brotherhood of Locomotive Engineers and Trainmen ("BLET") finds that the probable cause in the derailment and subsequent fire on CSX train K08227 in Lynchburg, Virginia on April 30, 2014 was a broken rail caused by a <5% Reverse Transverse Detail Defect located at MP 146.45.

Contributing Factors

Human Performance:

This Organization does not find the actions of the crew to be a contributing or causal factor in this incident.

Operations:

This Organization does not find any operational factors to be a contributing or causal factor in this incident.

Mechanical:

Although the structural strength of the tank car did not contribute to the derailment, the BLET asserts that the tank cars used to transport crude oil, even those with improved features such as head shields and protected valves (CPC-1232 / Post 2011 models), have not proven to be robust enough to ensure safe transport as evidenced by breach of the tank car and ensuing fire caused by the relatively low speed (24 MPH) of the train at the time of derailment.

Although there were no exceptions taken to the mechanical condition of the buffer car, the use of this Maintenance of Way covered hopper for buffer service raises concerns that this railcar is to be used solely for Maintenance of Way service, not revenue service, as it was used for in this accident.

Signal System:

This Organization does not find that the signal system was a contributing or causal factor in this incident.

Track:

The BLET finds that the primary cause of the derailment was a track defect discovered but not specifically recorded on April 29, 2014 at MP 146.45 characterized as a <5% Reverse Transverse Detail Defect. It has been noted that FRA did not require a Temporary Slow Order (TSO) on Class 2 (25 MPH) track for such a defect and, at the time, allowed the Carrier ten (10) days to repair the nearby 20% TTD. CSX adopted a more stringent standard of five days for repair yet did not require a TSO at such defect locations until July 1, 2014, when it issued instructions to its Maintenance forces that a ten (10) MPH TSO be placed on all future defects until repairs are made by installing joint bars on the defective area.

Conclusion

The BLET finds that FRA Track Safety Standards are not stringent enough to provide the necessary assurance of safe transportation for volatile and hazardous cargo and that a speed of 24 MPH over the defect is capable of derailing a train and compromising the integrity of the tank cars.

FRA must recognize that the current tank car designs are under engineered as evidenced by the conflagration resulting from a low speed derailment and take appropriate steps to lower speeds for crude oil and other volatile cargo over defective track to a speed commensurate with the absolute survivability of the car and cargo.

Additionally, FRA must determine this commensurate speed and act immediately to regulate Carrier operations accordingly.

Proposed Recommendations

To the Federal Railroad Administration (FRA):

1. Prohibit all Carriers from operating Key Trains[6] on Class 2 track unless a "continuous search for internal defects" on such track is performed to Class 3 standards.
2. Require visual inspection by a §213.7 qualified individual and a 10 MPH TSO be placed on all detected Transverse Detail Defects below 20% of the railhead for all Key Trains after it is determined to continue the track in use. Require subsequent visual inspection at no more than 24-hour intervals until the defect is repaired or replaced.
3. Amend 49 CFR §174.85 to require railroads to provide a minimum of 5 non-placarded buffer cars between the locomotive and placarded unit train consists carrying crude oil or other hazardous materials. This action will ensure a greater temporal margin of egress and escape by crewmembers.
4. Issue a Safety Advisory detailing the prohibition (§215.3(c)) against using MW-stenciled cars (§215.305) in revenue service.

[6]A Key Train is one of the following items: 1) One or more loads of spent nuclear fuel or high level radioactive waste; 2) One or more loaded tank car containing TIH (toxic inhalation hazard) and/or anhydrous ammonia; 3) A combination of 20 or more loaded haz-mat cars including loaded intermodal tanks of TIH, flammable gas, anhydrous ammonia, Class 1.1 or 1.2 explosives, any PG I (packing group 1) haz-mat or environmentally sensitive chemicals.

To the Association of American Railroads (AAR):

1. Redesign and incorporate improvements on tank car design to further strengthen the hull against rupture and to recess all valves, lids, and covers to ensure survivability in a derailment.

CERTIFICATE OF SERVICE

I certify that on March 5, 2015 I have electronically s e r v e d u p o n Mr. Jim Southworth (southwj@ntsb.gov), Investigator in Charge, National Transportation Safety Board, a complete and accurate copy of these proposed findings regarding the Derailment and subsequent fire of CSX train K 08227, (NTSB Docket No. DCA 14 FR 008).

National Transportation Safety Board
c/o Mr. Jim Southworth
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Sincerely yours,

[redacted]

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