



***Federal Railroad Administration
Office of Railroad Safety
Accident and Analysis Branch***

***Accident Investigation Report
HQ-2016-1115***

***Norfolk Southern Railway Company (NS)
Ripley, NY
March 1, 2016***

Note that 49 U.S.C. §20903 provides that no part of an accident or incident report, including this one, made by the Secretary of Transportation/Federal Railroad Administration under 49 U.S.C. §20902 may be used in a civil action for damages resulting from a matter mentioned in the report.

SYNOPSIS

Synopsis

An eastbound Norfolk Southern (NS) freight train derailed 18 railcars on March 1, 2016, at 9:27 p.m., EST. The accident occurred near the State Street crossing in the town of Ripley, New York, at NS Milepost B66.2 on its single main track on the Pittsburgh Subdivision. Train 310C901 consisted of 2 locomotives and 33 freight cars; 18 rail cars were loaded and 15 rail cars were empty. Cars 8 through 25 derailed as a result. There were no injuries to the public or train crew. There were three hazmat cars derailed. There was a release of hazardous materials from two railroad tank cars containing alcohols, N.O.S., Class 3, UN Number 1987 and approximately 45 people were evacuated. The estimated equipment damage is \$651,088. Track and wayside damages are estimated at \$215,000.

At the time of the accident, it was dark and snowing. The temperature was 27 °F. The accident was not PTC-preventable.

The probable cause of the derailment is a detailed fracture under shelling of the north stock rail in the area of the switch point. The cause code is T207 (Broken Rail - Detail fracture from shelling or head check). There were no contributing factors.

TRAIN SUMMARY

1. Name of Railroad Operating Train #1 Norfolk Southern Railway Company	1a. Alphabetic Code NS	1b. Railroad Accident/Incident No. 119566
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GENERAL INFORMATION

1. Name of Railroad or Other Entity Responsible for Track Maintenance Norfolk Southern Railway Company	1a. Alphabetic Code NS	1b. Railroad Accident/Incident No. 119566
2. U.S. DOT Grade Crossing Identification Number	3. Date of Accident/Incident 3/1/2016	4. Time of Accident/Incident 9:27 PM
5. Type of Accident/Incident Derailment		
6. Cars Carrying HAZMAT 4	7. HAZMAT Cars Damaged/Derailed 3	8. Cars Releasing HAZMAT 2
		9. People Evacuated 45
10. Subdivision Pittsburgh		
11. Nearest City/Town Ripley	12. Milepost (to nearest tenth) B66.2	13. State Abbr. NY
		14. County CHAUTAUQUA
15. Temperature (F) 27 °F	16. Visibility Dark	17. Weather Snow
18. Type of Track Main		
19. Track Name/Number Single Main Line	20. FRA Track Class Freight Trains-60, Passenger Trains-80	21. Annual Track Density (gross tons in millions) 13
		22. Time Table Direction East

OPERATING TRAIN #1

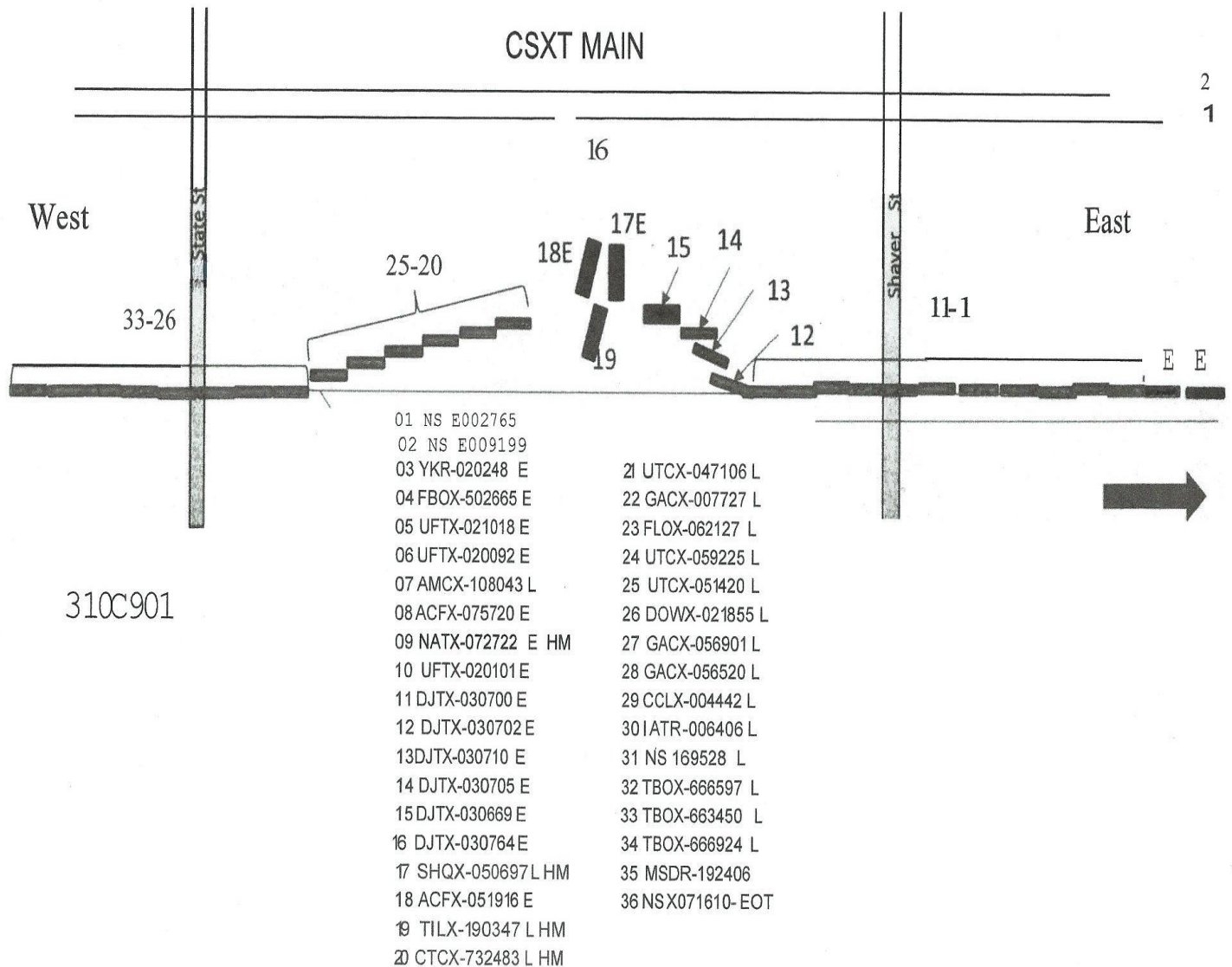
1. Type of Equipment Consist: Freight Train					2. Was Equipment Attended? Yes		3. Train Number/Symbol 310C901				
4. Speed (recorded speed, if available) R - Recorded 51 MPH E - Estimated		Code R	5. Trailing Tons (gross excluding power units) 2617		6a. Remotely Controlled Locomotive? 0 = Not a remotely controlled operation 1 = Remote control portable transmitter 2 = Remote control tower operation 3 = Remote control portable transmitter - more than one remote control transmitter					Code 0	
6. Type of Territory Signalization: <u>Signaled</u> Method of Operation/Authority for Movement: <u>Signal Indication</u> Supplemental/Adjunct Codes: <u>Q</u>											
7. Principal Car/Unit		a. Initial and Number		b. Position in Train		c. Loaded (yes/no)		8. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box		Alcohol	Drugs
(1) First Involved (derailed, struck, etc.)		UFTX020101		10		no					
(2) Causing (if mechanical, cause reported)		N/A						9. Was this consist transporting passengers?		No	
10. Locomotive Units (Exclude EMU, DMU, and Cab Car Locomotives.)											
11. Cars (Include EMU, DMU, and Cab Car Locomotives.)											
12. Equipment Damage This Consist											
13. Track, Signal, Way & Structure Damage											
14. Primary Cause Code											
15. Contributing Cause Code											
Number of Crew Members						Length of Time on Duty					
16. Engineers/Operators		17. Firemen		18. Conductors		19. Brakemen		20. Engineer/Operator		21. Conductor	
1		0		1		0		Hrs: 2 Mins: 27		Hrs: 2 Mins: 27	
Casualties to:		22. Railroad Employees		23. Train Passengers		24. Others		25. EOT Device?		26. Was EOT Device Properly Armed?	
Fatal		0		0		0		Yes		Yes	
Nonfatal		0		0		0		27. Caboose Occupied by Crew?		N/A	
28. Latitude 42.265721000				29. Longitude -79.707763000							

SKETCHES

HQ-2016-1115 Sketch Rev 1

HQ-2016-1115

Ripley New York derailment 3/1/2016



NARRATIVE

Circumstances Prior to the Accident

The crew of Norfolk Southern Railway's (NS) eastbound Train 310C901 included a locomotive engineer and a conductor. They first went on duty at 7:00 p.m., EST, on March 1, 2016, at Conneaut Yard in Conneaut, Ohio. This was the home terminal for this crew and all had received over 10 hours off-duty prior to reporting for duty.

The train was a mixed freight train and left Bellevue Yard heading east with 2 locomotives and 114 freight cars. A Class 1 brake test was performed at Bellevue, Ohio, at 9:25 a.m. before departing and the end-of-train device was tested at 9:05 a.m., at Bellevue. Train 310C901 re-crewed at Conneaut Yard after setting off 81 cars. The new crew was travelling east from Conneaut to Buffalo, New York, at the time of the derailment. The train was 2,080 feet long and weighed 2,617 tons with two locomotives, 18 loaded freight cars, and 15 empty freight cars travelling at 51 mph. At the time of the derailment, the Locomotive Engineer was seated in the engineer's seat on the south side of the locomotive cab facing east. The Conductor was in the conductor's seat on the north side of the locomotive and facing east.

In the area of the derailment, the track is tangent track with little grade (+0.06 to +0.08) and is constructed of 132-pound RE continuous-welded rail on 7-inch by 9-inch wood crossties. It is fastened with cut-spikes with two gage rail holding spikes, one field rail holding spike on 14-inch by 8-inch double shouldered plates. It was anchored every crosstie. The overall condition of ballast, ties, and surface not destroyed by the derailment was in sound condition and had adequate drainage. There was about 18 inches of ballast in the derailment area. The tie spacing on average was 19 inches.

The railroad timetable direction of the train was east. The geographic direction was northeast. Timetable direction is used throughout this report.

The Accident

Train 310C901 was operating on single main track and, according to the locomotive event recorder, was traveling at 50 mph as it approached the accident area. According to the train crew, they did not observe or feel anything unusual prior to the train going into emergency. The speed at the time the train went into emergency was 51 mph. Speeds were recorded by the event recorder on each locomotive. The maximum authorized speed at the derailment site is 60 mph, as designed in the current NS System Timetable. There were no speed restrictions for this train or the track at the time of the derailment.

The locomotives and the first seven cars stayed on the tracks. The next 18 cars in the consist derailed. The derailed cars include consist positions 10 through 27. The cars after Car 27 did not derail.

Immediately following the train going into emergency brake application, a signal maintainer notified the crew that several cars were derailed. The Engineer notified the dispatcher by radio and the Conductor left the locomotive to inspect the situation. He soon confirmed that there was a hazmat tank car leaking and returned to the locomotive with a local firefighter to tell the Engineer to leave the locomotive and go to the fire station.

Hazardous material Tank Car TILX 190347, Class 3, UN number 1987, loaded with alcohols, N.O.S. was Car 19 in the train and leaked approximately 1,498 liquid gallons of product. Tank Car CTCX 732483, Class 3, UN number 1987, loaded with alcohols, N.O.S. was Car 20 in the train and leaked approximately 28 liquid gallons of product. There were no fatalities or injuries resulting from the released substance.

The Ripley Fire Chief initiated an evacuation of 1,000 feet affecting approximately 45 people. The evacuation lasted approximately 9 hours.

Analysis and Conclusions

Analysis -Track Structure: A walking track inspection of the derailment area was conducted by NS and the Federal Railroad Administration (FRA). No FRA track deficiencies were noted outside the area of the track damaged by the derailment. The track was last inspected by hi-rail vehicle on February 29, 2016, the day before the derailment. The last ultrasonic rail detection test through this area was on December 8, 2015. This area was last inspected by a geometry car on September 15, 2015. In July 2013, this area was tamped and surfaced according to the 2015 Track Charts.

Conclusion: Track inspection records indicate that the track was inspected the day before the derailment. There were no defects recorded at or within a mile of the derailment on that report. The ultrasonic rail detection test through this area showed no indications of defective rail near the derailment area. The geometry car showed no deviations in the derailment area. The crosstie condition did meet FRA's Standards for Class 4 Track. On-site measurements taken at the time of the accident did not show any geometry variances in the area west of the derailment area. A section of rail was recovered from the derailment site that showed a detail fracture under shelling. After piecing all the sections together, both NS and FRA agreed that the detail fracture was in the north stock rail in the switch point area.

Analysis-Signals: The signals were tested and found to be in proper working order.

Conclusion: There were no signal defects which contributed to the cause.

Analysis-Locomotive Engineer Operating Performance: Both locomotives were equipped with a speed indicator and event recorders as required. The recorder data was downloaded and analyzed by both NS and FRA and both agreed that the information coincided with the Engineer's statement regarding train handling and nothing was out of the ordinary.

Conclusion: The Locomotive Engineer was in compliance with all applicable FRA and railroad operating

and train handling requirements and no exceptions were taken.

Analysis-Toxicological Testing: The two crew members of Train 310C901 were not tested.

Conclusion: The crew was not tested. FRA Drug and Alcohol testing was not required.

Analysis-Fatigue Study: Both the Engineer and Conductor refused to take part in a fatigue analysis. A 10-day work history was analyzed by the FAST system. The Engineer had a sleep effectiveness rating of 93.79 (excellent). The Conductor had a sleep effectiveness of 93.98 (excellent).

Conclusion: The crew members were well-rested and fatigue of the crew was not an issue.

Analysis-Equipment Defects: The derailed cars were inspected by FRA after the accident. FRA requested the blue cards (FRA Form 6180.49A) and the calendar-day inspections from the two locomotives. No defects were detected on the rail cars other than derailment damage. All inspections on the locomotives have been performed in a timely manner and none were overdue.

Conclusion: The equipment was inspected and operating properly and did not contribute to the derailment.

Overall Conclusions

The railroad was in compliance with its own and applicable FRA standards. The train crew operated the locomotives and handled the train in compliance with applicable FRA regulations and their operating rules.

Probable Cause

The probable cause of the accident was a broken rail and will listed in FRA's Factual Accident Report as cause code T207 (Broken Rail - Detail fracture from shelling or head check). The stock rail had a detailed fracture under shelling on the north stock rail in the area of the switch point.