Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2006-42

Norfolk Southern
Lemoyne, AL
June 1, 2006

Note that 49 U.S.C. §20903 provides that no part of an accident or incident report 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.

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

FRA FACTUAL RAILROAD ACCIDENT REPORT

FRA File # HQ-2006-41

1.Name of Railroad Operating Train #1: CSX Transportation [CSX]	1a. Alphabetic Code: CSX	1b. Railroad Accident/Incident No.: 000022822
2.Name of Railroad Operating Train #2: N/A	2a. Alphabetic Code: N/A	2b. Railroad Accident/Incident: N/A
3.Name of Railroad Responsible for Track Maintenance: CSX Transportation [CSX]	3a. Alphabetic Code: CSX	3b. Railroad Accident/Incident No.: 000022822
4. U.S. DOT_AAR Grade Crossing Identification Number:	5. Date of Accident/Incident: Month 05 / Day 30 / Year 2006	6. Time of Accident/Incident: 01:55: ☐ AM ☑ PM

7. Type of Accident/Indicent (single entry in code box): 1. Derailment; 2. Head on collision; 3. Rear end collision; 4. Side collision; 5. Raking collision; 6. Broken Train collision; 7. Hwy-rail crossing; 8. RR grade crossing; 9. Obstruction; 10. Explosion-detonation; 11. Fire/violent rupture; 12. Other impacts; 13. Other (describe in narrative): 01

8. Cars Carrying HAZMAT	9. HAZMAT Cars Damaged/Derailed	10. Cars Releasing HAZMAT	11. People Evacuated	12. Division
33	14	0	35	Albany

13. Nearest City/Town	14. Milepost (to nearest tenth)	15. State Abbr	15. State Code	16. County
Tribes Hill	180.2	N/A	NY	MONTGOMERY

17. Temperature (F) (specify if minus)	18. Visibility (single entry) 1. Dawn 2. Day 3.Dusk 4.Dark	Code	19. Weather (single entry) 1. Clear 2. Cloudy 3. Rain 4. Fog 5.Sleet 6.Snow	Code	20. Type of Track 1. Main 2. Yard 3. Siding 4. Industry	Code
83 F		2		1		1

21. Track Name/Number	22. FRA Track Class (1-9, X)	Code	23. Annual Track Density (gross tons in millions)	24. Time Table Direction 1. North 3. East	Code
Main No. 1		4	100.00		4

OPERATING TRAIN #1

25. Type of Equipment Consist (single entry): 1. Freight train; 2. Passenger train; 3. Commuter train; 4. Work train; 5. Single car; 6. Cut of cars; 7. Yard/switching; 8. Light loco(s).; 9. Maint./inspect.car; A. Spec. MoW Equip. — Code: 1

26. Was Equipment Attended? 1. Yes 2. No — Code: 1

27. Train Number/Symbol: Q38130

28. Speed (recorded speed, if available) R - Recorded E - Estimated: 49 MPH — Code: R

29. Trailing Tons (gross tonnage, excluding power units): 5423

30. Method(s) of Operation (enter code(s) that apply): a. ATCS; b. Auto train control; c. Auto train stop; d. Cab; e. Traffic; f. Interlocking; g. Automatic block; h. Current of traffic; i. Time table/train orders; j.Track warrant control; k. Direct traffic control; l.Yard limits; m.Special instructions; n. Other than main track; o. Positive train control; p. Other (Specify in narrative) Code(s): e, g, N/A, N/A, N/A

30a. Remotely Controlled Locomotive? 0 = Not a remotely controlled; 1 = Remote control portable; 2 = Remote control tower; 3 = Remote control transmitter - more than one remote control transmitter: 0

31. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded (yes/no)
(1) First involved (derailed, struck, etc)	N/A	2	yes
(2) Causing (if mechanical cause reported)	0	0	N/A

32. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box.

Alcohol	Drugs
0	0

33. Was this consist transporting passengers? (Y/N): N

34. Locomotive Units	a. Head End	Mid Train b. Manual	Mid Train c. Remote	Rear End d. Manual	Rear End c. Remote
(1) Total in Train	3	0	0	0	0
(2) Total Derailed	0	0	0	0	0

35. Cars	Loade a. Freight	Loade b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Equipment Consist	24	0	75	0	0
(2) Total Derailed	7	0	19	0	0

36. Equipment Damage: This Consist 892896

37. Track, Signal, Way, & Structure Damage: 125000

38. Primary Cause Code: T220

39. Contributing Cause Code: N/A

Number of Crew Members

40. Engineer/ Operators	41. Firemen	42. Conductors	43. Brakemen
N/A	0	1	0

Length of Time on Duty

44. Engineer/Operator: Hrs 2 Mi 40

45. Conductor: Hrs 2 Mi 40

Casualties to:	46. Railroad Employees	47. Train Passengers	48. Other
Fatal	0	0	0
Nonfatal	N/A	0	0

49. EOT Device? 1. Yes 2. No — 1

50. Was EOT Device Properly Armed? 1. Yes 2. No — 1

51. Caboose Occupied by Crew? 1. Yes 2. No — 2

OPERATING TRAIN #2

52. Type of Equipment Consist (single entry): 1. Freight train; 2. Passenger train; 3. Commuter train; 4. Work train; 5. Single car; 6. Cut of cars; 7. Yard/switching; 8. Light loco(s).; 9. Maint./inspect.car; A. Spec. MoW Equip. — Code: N/A

53. Was Equipment Attended? 1. Yes 2. No — Code: N/A

54. Train Number/Symbol: N/A

55. Speed (recorded speed, if available) R - Recorded E - Estimated: 0 MPH — Code: N/A

57. Method(s) of Operation (enter code(s) that apply): a. ATCS; b. Auto train control; g. Automatic block; h. Current of traffic; m.Special instructions; n. Other than main track

57a. Remotely Controlled Locomotive? 0 = Not a remotely controlled; 1 = Remote control portable

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

FRA FACTUAL RAILROAD ACCIDENT REPORT

FRA File # HQ-2006-41

56. Trailing Tons (gross tonnage, excluding power units): 0

c. Auto train stop; d. Cab; e. Traffic; f. Interlocking; i. Time table/train orders; j.Track warrant control; k. Direct traffic control; l.Yard limits; o. Positive train control; p. Other (Specify in narrative)

Code(s): N/A | N/A | N/A | N/A | N/A

2 = Remote control tower
3 = Remote control transmitter - more than one remote control transmitter: N/A

58. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded (yes/no)
(1) First involved (derailed, struck, etc)	0	0	N/A
(2) Causing (if mechanical cause reported)	0	0	N/A

59. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box.

Alcohol	Drugs
0	0

60. Was this consist transporting passengers? (Y/N): N/A

61. Locomotive Units	a. Head End	Mid Train b. Manual	Mid Train c. Remote	Rear End d. Manual	Rear End c. Remote
(1) Total in Train	0	0	0	0	0
(2) Total Derailed	0	0	0	0	0

62. Cars	Loade a. Freight	Loade b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Equipment Consist	0	0	0	0	0
(2) Total Derailed	0	0	0	0	0

63. Equipment Damage This Consist: 0

64. Track, Signal, Way, & Structure Damage: 0

65. Primary Cause Code: N/A

66. Contributing Cause Code: N/A

Number of Crew Members

67. Engineer/ Operators	68. Firemen	69. Conductors	70. Brakemen
0	0	0	0

Length of Time on Duty

71. Engineer/Operator: Hrs 0 Mi 0

72. Conductor: Hrs 0 Mi 0

Casualties to:	73. Railroad Employees	74. Train Passengers	75. Other
Fatal	0	0	0
Nonfatal	0	0	0

76. EOT Device? 1. Yes 2. No: N/A

77. Was EOT Device Properly Armed? 1. Yes 2. No: N/A

78. Caboose Occupied by Crew? 1. Yes 2. No: N/A

Highway User Involved

79. Type: A. Auto; B. Truck; C. Truck-Trailer.; D. Pick-Up Truck; E. Van; F. Bus; G. School Bus; H. Motorcycle; J. Other Motor Vehicle; K. Pedestrian; M. Other (spec. in narrative). Code: N/A

80. Vehicle Speed (est. MPH at impact): 0

81. Direction geographical) 1.North 2.South 3.East 4.West. Code: N/A

82. Position: 1.Stalled on Crossing 2.Stopped on Crossing 3.Moving Over Crossing 4. Trapped. Code: N/A

86a. Was the highway user and/or rail equipment involved in the impact transporting hazardous materials? 1. Highway User 2. Rail Equipment 3. Both 4. Neither. Code: N/A

Rail Equipment Involved

83. Equipment: 1.Train(units pulling); 2.Train(units pushing); 3.Train (standing); 4.Car(s) (moving); 5.Car(s) (standing); 6.Light Loco(s) (moving); 7.Light(s) (standing); 8.Other (specify in narrative). Code: N/A

84. Position of Car Unit in Train: 0

85. Circumstance: 1. Rail Equipment Struck Highway User; 2. Rail Equipment Struck by Highway User. Code: N/A

86b. Was there a hazardous materials release by: 1. Highway User 2. Rail Equipment 3. Both 4. Neither. Code: N/A

86c. State here the name and quantity of the hazardous materials released, if any.
N/A

87. Type of Crossing Warning: 1.Gates; 2.Cantilever FLS; 3.Standard FLS; 4.Wig Wags; 5.Hwy. traffic signals; 6.Audible; 7.Crossbucks; 8.Stop signs; 9.Watchman; 10.Flagged by crew; 11.Other (spec. in narr.); 12.None

Code(s): N/A | N/A | N/A | N/A | N/A | N/A | N/A

88. Signaled Crossing Warning (See instructions for codes). Code: N/A

89. Whistle Ban: 1. Yes 2. No 3. Unknown. Code: N/A

90. Location of Warning: 1. Both Sides; 2. Side of Vehicle Approach; 3. Opposite Side of Vehicle Approach. Code: N/A

91. Crossing Warning Interconnected with Highway Signals: 1. Yes 2. No 3. Unknown. Code: N/A

92. Crossing Illuminated by Street Lights or Special Lights: 1. Yes 2. No 3. Unknown. Code: N/A

93. Driver's Age: 0

94. Driver's Gender: 1. Male 2. Female. Code: N/A

95. Driver Drove Behind or in Front of Train and Struck or was Struck by Second Train: 1. Yes 2. No 3. Unknown. Code: N/A

96. Driver: 1. Drove around or thru the Gate; 2. Stopped and then Proceeded; 3. Did not Stop; 4. Stopped on Crossing; 5. Other (specify in narrative). Code: N/A

97. Driver Passed Standing Highway Vehicle: 1. Yes 2. No 3. Unknown. Code: N/A

98. View of Track Obscured by (primary obstruction): 1. Permanent Structure; 2. Standing Railroad Equipment; 3. Passing Train; 4. Topography; 5. Vegetation; 6. Highway Vehicle; 7. Other (specify in narrative); 8. Not obstructed. Code: N/A

101. Casulties to Highway-Rail Crossing Users	Killed	Injured
	0	0

99. Driver Was: 1. Killed 2.Injured 3. Uninjured. Code: N/A

100. Was Driver in the Vehicle? 1. Yes 2. No. Code: N/A

102. Highway Vehicle Property Damage (est. dollar damage): 0

103. Total Number of Highway-Rail Crossing Users (include driver): 0

104. Locomotive Auxiliary Lights? 1. Yes 2. No. Code: N/A

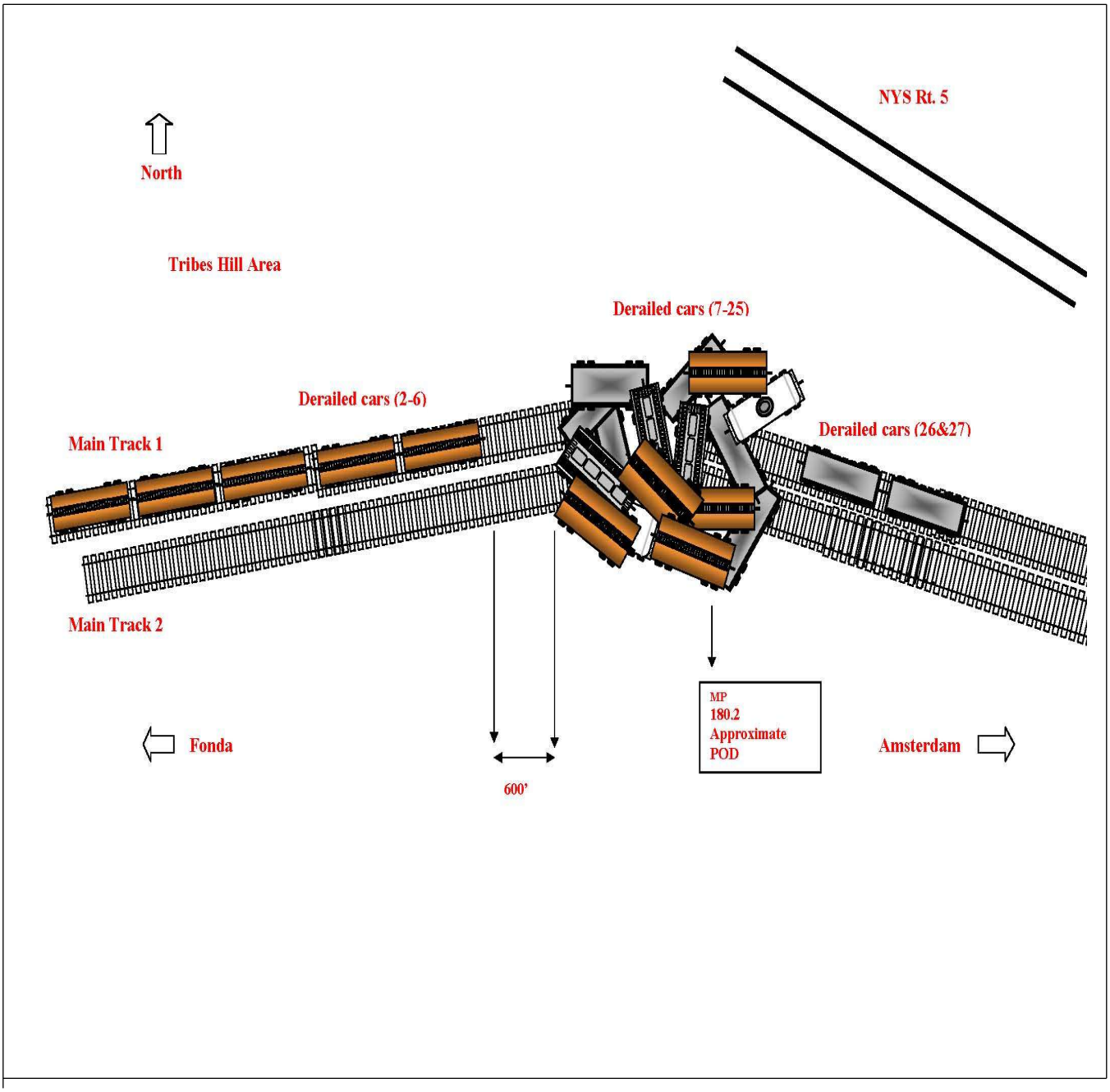
105. Locomotive Auxiliary Lights Operational? 1. Yes 2. No. Code: N/A

106. Locomotive Headlight Illuminated? 1. Yes 2. No. Code: N/A

107. Locomotive Audible Warning Sounded? 1. Yes 2. No. Code: N/A

108. DRAW A SKETCH OF ACCIDENT AREA INCLUDING ALL TRACKS, SIGNALS, SWITCHES, STRUCTURES, OBJECTS, ETC., INVOLVED.

HQ-41-2006 Sketch.jpg



109. SYNOPSIS OF THE ACCIDENT

On Tuesday, May 30, 2006 at 1: 55 p.m., CSX train Q38130 derailed while traveling westbound on the CSX Chicago Main Line Number 1, Mohawk Subdivision, at milepost 180.2, Tribes Hill, New York. The train derailed 26 cars (2nd thru 27th head end) including 14 residue hazardous material cars last containing Alcohol (UN 1987). Both main line tracks were destroyed in the vicinity of the major pile up.

Train Q38130 consisted of 3 locomotives, CSXT 227, CSXT 68 and MTRL 290 (being towed), 24 loads and 75 empties, 6,266 feet in length and had 5,423 trailing tons. The crew consisted of an engineer, conductor and engineer trainee. At the time of the derailment, the engineer trainee was operating the train.

The total track and equipment damages are estimated at $1,017,896.

An evacuation of 14 homes (35 people) located to the north of the derailment scene was ordered by the Tribes Hill Fire Chief as a precautionary measure once it was determined that there were hazardous material tank cars involved in the derailment.

New York State Route 5, located north of the scene, was closed and used by Montgomery County Emergency Services to set up a command post. Amtrak passenger service was interrupted between Rensselaer and Buffalo with passengers being bussed immediately following the derailment.

The temperature was 83 °F, sunny and with good visibility.

This derailment was caused by a broken rail (transverse fissure) which occurred under one of the locomotives in the train consist.

110. NARRATIVE

Circumstances Prior to the Accident

The crew of CSX train Q38130 reported for duty at Selkirk, New York at 11:15 a.m. on Tuesday, May 30, 2006. The crew consisted of an engineer, conductor and engineer trainee. Both the engineer and conductor had 15 hours of rest, and, the trainee had 9 hours of rest before reporting for duty.

The crew had a job briefing and reviewed their tonnage sheets, dispatcher bulletins, safety focus of the day and checked for hazardous materials placement. They also noted that they had seven working gangs and three flagmen along their route to Buffalo, New York.

Train Q38130 consisted of 3 locomotives, CSXT 227, CSXT 68 and MRL 290 (being towed), 24 loads, 75 empties, and, was 6,266 feet in length with 5,423 trailing tons.

Selkirk mechanical forces completed the class 1 brake test and the engineer completed the class III air brake test. The train departed Selkirk Yard at 12 p.m. with the engineer trainee operating the train in the engineer's seat or south side of the locomotive, the engineer in the middle seat, and the conductor in the left or north side of the cab in the conductors seat.

The trip from Selkirk was uneventful, and, as they were operating on a clear signal indication on Track Number 1 westbound, they encountered the first flagman at CP 175. The crew received permission through his location and the flagman gave the train a roll by inspection with no defects noted. The train then proceeded through the hot box dragging equipment detector located at milepost 177.4 with no defects noted.

As the train continued westbound on Track Number 1, it was operating in throttle position eight at 49 mph (verified by speed tapes from lead locomotive CSXT 227). In the vicinity of milepost 180.2, the train was traveling through a compound left hand curve into tangent track on a 0.14- percent ascending grade when the crew felt a slight tug on the train. The engineer instructed the trainee to throttle back one notch when the train went into emergency. The crew stated that they did not notice anything unusual in the track.

The engineer transmitted the emergency call on the radio and immediately contacted the dispatcher. The engineer and the trainee remained in the cab of the locomotive while the conductor went back to assess the derailment.

The Accident

While traveling westbound on Main Track No. 1 at a recorded speed of 49 mph, CSX train Q38130 derailed 26 cars at milepost 180.2, May 30, 2006, at 1:55 p.m. The maximum authorized speed according to CSX Timetable No. 4 effective November 1, 2004, in the area of the derailment are 50 mph for mixed freight, 60 mph for intermodal and 70 mph for passenger trains. Method of operation is ABS-261. These speeds place the track under Federal Railroad Administration Track Safety Standards of Class 4 for maintenance and inspection purposes.

The 2nd through 27th head end cars derailed on the Chicago Main Line, Mohawk Subdivision in the vicinity of Tribes Hill, Montgomery County, New York. Fourteen of the 26 derailed cars were hazardous material cars that last containing Alcohol, UN 1987 and did not leak. Tank car GATX 14858, a load of vegetable oil, did leak product. The remaining 11 derailed cars contained mixed freight.

The Tribes Hill Fire Chief ordered an evacuation of approximately 35 residents from 14 nearby homes as a precautionary measure. New York State Route 5 located just to the north of the tracks was also closed and the Montgomery County Emergency Services set up a command post on Route 5.

The derailed cars were inspected by hazardous material teams from Montgomery County Emergency Services and CSX. No leaks were discovered from the derailed hazardous materials tank cars. The evacuation was lifted at 7:30 p.m., and Route 5 was reopened.

Amtrak service between Rensselaer and Buffalo was terminated and passengers were bussed between those locations.

Analysis and Conclusion

Analysis

The track in the area of the derailment is part of the CSX Transportation Albany Division, Mohawk Subdivision and runs in an east to west direction with Main Track No. 1 located to the north and Main Track No. 2 to the south.

In the westbound direction of travel, in the vicinity of milepost 180.2, Main Track No. 1 transfers from a 58-minute curve into a 22-minute compound left-hand curve into tangent track on a 0.14- ascending grade with 1 inch of super elevation in the curve.

The track is made up of 136 pound Bethlehem Steel continuous welded rail rolled in 1995. The rail was placed in track in 1995, with 21 inch spacing on double shoulder plates. Four spikes per plate box anchored every other tie on granite ballast in excellent condition with a 12-inch shoulder on the high side and 6 inches on the low side. The rail showed very little wear on both the high and low rails.

This area was timbered and surfaced in April 2005. The last CSX Geometry Car test was on November 21, 2005 with no defects found in this area and the last test for internal rail defects (Sperry) was on March 30, 2006 with no defects found. The track was last inspected by high rail on May 29, 2006 with no exceptions being noted in this area.

This section of track was installed and maintained well within the Federal Railroad Administration and CSX Continuous Welded Rail Standards Compliance programs. Although the weather at the time of the derailment was warm (83°F), there was no indication of any heat related problems within the track structure.

A broken rail approximately 8 feet 2 inches long was found at the suspected point of derailment with an approximate 15% transverse fissure in the gage side of the rail head and there was evidence of batter on the end of the rail head. This piece of rail was from the north or outside rail of the curve.

The investigation revealed that the1st car (TTPX 806154), an empty bulk head flat, although not derailed, showed a cross sectional impact on the tread of wheel L4 that indicated crossing over a broken rail. The 2nd head car (CSXT 460091), a high side gondola load of scrap metal, was the first to derail to the north side of the rail.

The first 5 derailed cars remained coupled together and were pulled away from the general pile up leaving a separation of 600 feet. The 7th through 25th cars were in the general pile up and the 26th and 27th cars were derailed up right and in line with the track.

Both main tracks were destroyed in the general pile up area.

Conclusion

The crew of CSX Train Q 38130 was operating their train in full compliance with all of their own and Federal standards.

According to the crew's statements, they did not notice anything out of the ordinary with the track as they proceeded westbound. The first indication of a problem was when they felt a tug on the train and immediately went into an emergency brake application.

The track had been inspected twice weekly as required by high rail and tested recently by CSX's Geometry car and by Sperry for internal defects with no exceptions found. The track had not been disturbed since April 2005 when it was tied and surfaced.

The defective rail would not have been detected by ordinary high rail inspections until it was completely broken.

There were no mechanical problems found with any of the derailed cars.

Emergency responders took the necessary precautions by ordering the immediate evacuation of the nearby homes and the closure of State Route 5.

There were no injuries and no leak of hazardous material.

Track No. 2 was returned to service at 5:35 p.m. on Wednesday, May 31 and Track No. 1 at 5:00 a.m. on Thursday, June 1.

Amtrak service was restored to full schedule on Thursday, June 1.

Probable Cause

The FRA's investigation found that this derailment was caused by a broken rail (transverse fissure) which occurred under one of the locomotives in the train consist.