Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2006-97

Norfolk Southern
Bloomsburg, PA
December 7, 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-2006-97

1.Name of Railroad Operating Train #1: Norfolk Southern Corp. [NS]	1a. Alphabetic Code: NS	1b. Railroad Accident/Incident No.: 27394
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: Norfolk Southern Corp. [NS]	3a. Alphabetic Code: NS	3b. Railroad Accident/Incident No.: 27394
4. U.S. DOT_AAR Grade Crossing Identification Number:	5. Date of Accident/Incident: Month 12 / Day 07 / Year 2006	6. Time of Accident/Incident: 12:17:00 ☑ 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
6	4	2	0	NEUS

13. Nearest City/Town	14. Milepost (to nearest tenth)	15. State Abbr	15. State Code	16. County
EAST BLOOMSBUR	728.6	N/A	PA	COLUMBIA

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
40 F	D	4		2		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
FREIGHT MAIN/SINGLE		3	9		2

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: 1

27. Train Number/Symbol: 30T 9905

28. Speed (recorded speed, if available) R - Recorded E - Estimated: 40 MPH; Code: R

29. Trailing Tons (gross tonnage, excluding power units): 5998

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): j N/A 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	12	N/A
(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
N/A	N/A

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	35. Cars	Loade a. Freight	Loade b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Train	3	0	0	0	0	(1) Total in Equipment Consist	52	0	8	0	0
(2) Total Derailed	0	0	0	0	0	(2) Total Derailed	16	0	5	0	0

36. Equipment Damage This Consist	37. Track, Signal, Way, & Structure Damage	38. Primary Cause Code	39. Contributing Cause Code
6952000	23500	T204	T201

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	45. Conductor
Hrs 7 Mi 47	Hrs 7 Mi 47

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: N/A

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: 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

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56. Trailing Tons (gross tonnage, excluding power units)	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)	2 = Remote control tower 3 = Remote control transmitter - more than one remote control transmitter
0			N/A N/A N/A N/A N/A	N/A

58. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded (yes/no)	59. 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)	0	0	N/A		N/A	N/A
(2) Causing (if mechanical cause reported)	0	0	N/A	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	62. Cars	Loade a. Freight	Loade b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Train	0	0	0	0	0	(1) Total in Equipment Consist	0	0	0	0	0
(2) Total Derailed	0	0	0	0	0	(2) Total Derailed	0	0	0	0	0

63. Equipment Damage This Consist	64. Track, Signal, Way, & Structure Damage	65. Primary Cause Code	66. Contributing Cause Code
0	0	N/A	N/A

Number of Crew Members				Length of Time on Duty	
67. Engineer/ Operators	68. Firemen	69. Conductors	70. Brakemen	71. Engineer/Operator	72. Conductor
0	0	0	0	Hrs 0 Mi 0	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?	77. Was EOT Device Properly Armed?	78. Caboose Occupied by Crew?
1. Yes 2. No N/A	1. Yes 2. No N/A	1. Yes 2. No N/A

Highway User Involved

79. Type	Code
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)	N/A

80. Vehicle Speed (est. MPH at impact)	81. Direction geographical) 1.North 2.South 3.East 4.West	Code
N/A		N/A

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

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

Rail Equipment Involved

83. Equipment	Code
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)	N/A

84. Position of Car Unit in Train
N/A

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

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

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

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

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

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

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

93. Driver's Age	94. Driver's Gender	Code
0	1. Male 2. Female	N/A

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

96. Driver	Code
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)	N/A

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

98. View of Track Obscured by (primary obstruction)	Code
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	N/A

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

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

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

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

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

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

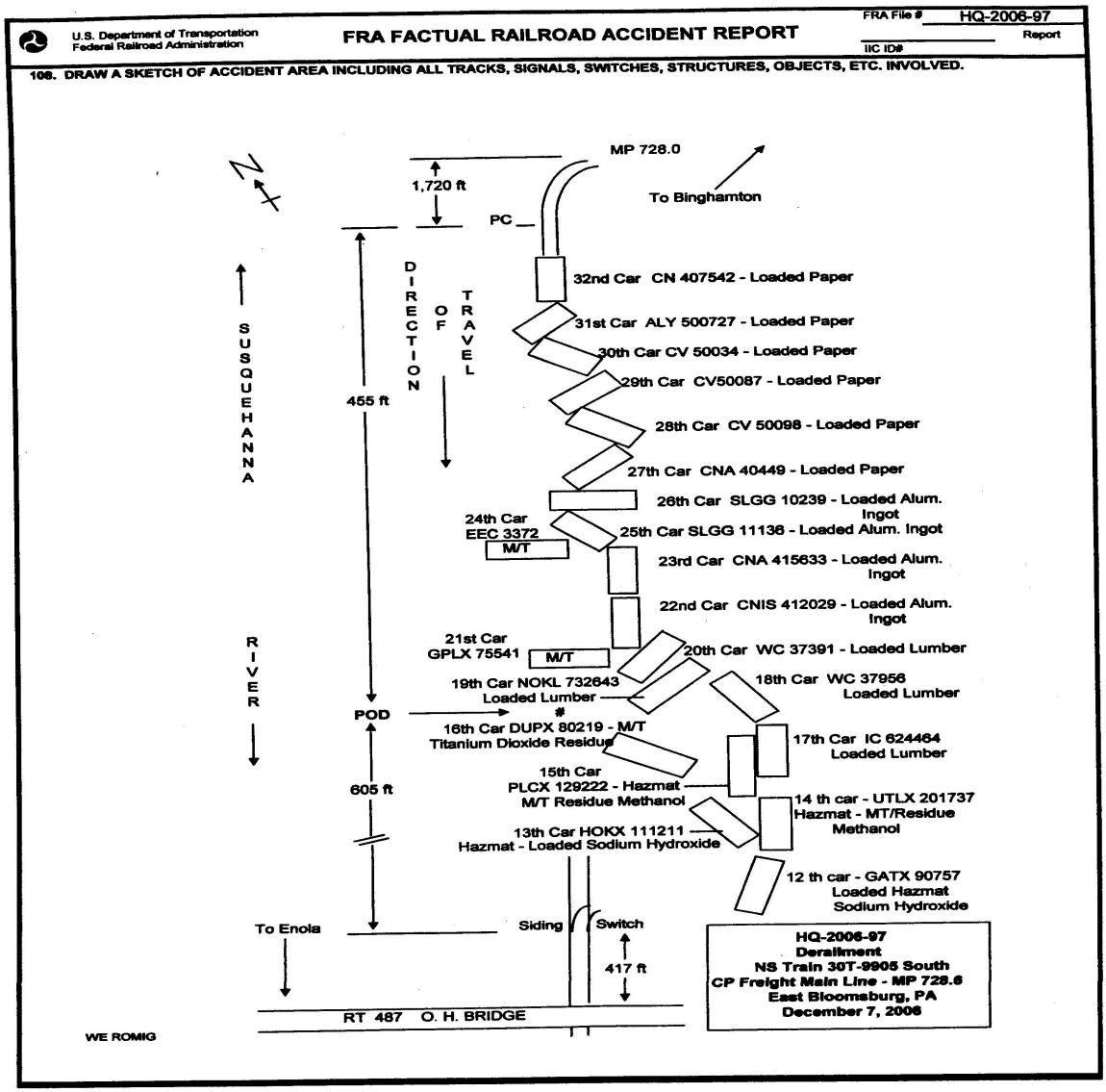
105. Locomotive Auxiliary Lights Operational?	Code
1. Yes 2. No	N/A

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

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

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

SKETCH
HQ-2006-97.jpg



109. SYNOPSIS OF THE ACCIDENT

Synopsis of the Accident

On Thursday, December 7, 2006 Norfolk Southern Train 30T 9905 was traveling south on the Canadian Pacific Railway (Delaware and Hudson) Freight Main Line, NEUS-North Division at MP 728.6 near East Bloomsburg, PA (adjacent to the Susquehanna River) when an emergency brake application occurred at 12:17 am EST.

The train consisted of three locomotives and 60 cars of mixed freight. There were 52 loads and eight empties for a length of 4,073 feet and a trailing tonnage of 5,998 tons. There were 21 cars derailed, four of which were hazardous material; two loaded sodium hydroxide and two methanol (empty-residue). The train was traveling at the designated timetable speed of 40 mph prior to, and at the time of, the derailment. The weather was dark, with clear skies, and 40 degrees Fahrenheit.

It was determined that the 12th head car GATX 90757, a load of sodium hydroxide, was the first to derail. The car was significantly damaged and released approximately 14,000 gallons of the product which was contained by an existing drainage ditch on the east side of the track away from the river.

There were no fatalities, injuries or evacuation. The area of the derailment was secured, however, and the National Emergency Response Center was notified. No investigative personnel (CP, NS, FRA, State, etc.) were permitted on site until it was determined to be safe to do so by the emergency responders and the Pennsylvania Department of Environmental Protection (DEP). The State- Route 487 bridge that crosses over the railroad and the Susquehanna River just south of the derailment site was closed to the public until Saturday morning December 9th to allow for the “staging” of various repair and recovery vehicles.

The spilled hazardous material was contained and taken from the site by the NS contractor REACT from Philadelphia, PA under the direction of the Pennsylvania DEP, the CP and NS Environmental Departments. CP contractor Op-Tech from Binghamton, NY also participated in this operation.

The services of both Hulcher-Gettysburg, PA and R.J. Corman-Albany, NY were used to clear the derailment and assist in the track restoration. The damages were estimated as follows: equipment
$695,200, lading $208,000 and track $ 23,500.

The probable cause was a broken rail under movement; a failed field-weld on the north end (receiving end) on a short piece of rail that was field-welded into the track. A probable contributing cause was an old bolt-hole defect on the same end of the rail and an old failed field-weld on the opposite (south) end of the rail. This was supported by the field investigation and statements from the train crew.

The CP has sent this rail to their Research and Tests Department in Winnipeg, Canada for analysis and the results have not been obtained yet at the time of this report.

110. NARRATIVE

The following information was obtained from an investigation that was conducted by the Federal Railraod Administration.

Circumstances Prior to the Accident

The crew of NS Train 30T 9905 South included a locomotive engineer and a conductor. They both went on duty at 4:30 pm EST on December 6, 2006 at Binghamton, NY which is the home terminal for each of them. Both had more than the required statutory off duty period prior to reporting to duty (17 hours and 58 minutes). They left Binghamton at 5:41 am EST and were both on duty for 7 hours and 47 minutes when the derailment occurred.

The train consisted of three locomotives (NS 8908, NS 9059, NS 2536) handling 52 loads and eight empties of mixed freight (this included six hazardous materials; four loaded and two empty / residue) for a total load of 5,998 trailing tons and a length of 4,073 feet. The train received an initial terminal air brake test at Binghamton, NY and was scheduled to travel from there to Enola, PA with no scheduled stops en- route.

As the southbound train approached the derailment site, the locomotive engineer was seated at the controls on the west side of the lead locomotive and the conductor was seated opposite, on the east side of the lead locomotive.

In this area, the railroad is single-main track and non-signaled. From MP 728.0 southward to the point of derailment (POD) at MP 728.6 there are, in succession, a tangent of approximately 1,220 feet; a zero-degree-30 minute curve to the left of approximately 500 feet and then another tangent of approximately 455 feet to the POD.

The POD was estimated to be approximately 1,022 feet north of the Route 487 overhead bridge which crosses the railroad and Susquehanna River. Because the railroad follows the river in this area, the grade is level to 0.10 percent descending southward.

The railroad timetable direction of the train was south and the geographic direction was southwest. Timetable directions are used throughout this report.

The Accident

NS Train 30T 9905 South

The train was traveling south on the CP Railway Freight Main Line en-route from Binghamton, NY to Enola, PA. under Form D authority. The last Form D (# D 700) was issued at MP 721 at 12:03 am EST December 7, 2006 for travel south between MP 721 and MP 733. Prior to this the train had passed hot box and dragging equipment detectors at MP 696.3 and MP 721.7 without incident.

As the train approached the derailment site at MP 728.6 near East Bloomsburg, PA it was operating at 40 mph. The maximum authorized speed for mixed freight trains is 40 mph, as designated in the current CP Railway NEUS Timetable No. 4. The data retrieved from the lead locomotive confirms that the train traveled for 11 minutes between 12:06 am EST and 12:17 am EST not exceeding 41 mph using throttle modulation between the 2nd and 4th notches to control the speed. When the train went into an emergency brake application it was traveling at 40 mph in the 3rd notch drawing 216 amps.

According to statements by both the engineer and conductor; as the train approached the POD they heard a loud “bang” noise as if they had hit something and they felt the locomotive “shimmy”.

Immediately following this, the train experienced the emergency brake application. The conductor walked back to find all three locomotives and the first 11 cars still on the rail but pulled away from the rest of the train. He stated that he walked approximately 30 car lengths north to find the derailed cars.

The crew notified the CP South-End dispatcher who, in turn, notified the NS dispatcher's office in Harrisburg, PA. When it was determined that hazardous material cars had been derailed with a possible release, the National Response Center and local emergency responders were notified.

There were no injuries, fatalities or evacuations in this derailment.

Hazardous Material Release and Securement

The first to respond were members of the Catawissa Fire station # 50 and they immediately secured the area. At this time no CP, NS or other personnel were permitted on site to start the derailment investigation. There were no evacuations of the few nearby homes but the State Route 487 bridge was closed to allow access and "staging" as mentioned above.

Initially the Catawissa Fire Department accessed the situation from boats on the river adjacent to the derailment. After this, members of the Pennsylvania DEP and the environmental contractor, Minute Man inspected the site utilizing various monitoring devices. At approximately 6:30 am EST the Pennsylvania DEP released the site to the Canadian Pacific and at 6:55 am EST the CP Environmental Department entered the site. It was determined safe at 7:30 am EST and the NS personnel were finally authorized to enter to begin the derailment investigation.

The investigation revealed that four of the 21 cars derailed contained hazardous materials: the 12th car GATX 90757- loaded Sodium Hydroxide; the 13th car, HOKX 111211 - loaded Sodium Hydroxide; the 14th car, UTLX 201737 - Methanol empty/residue; the 15th car, PLCX 129222 - Methanol empty/residue. The GATX 90757 was significantly damaged (punctured by a rail) and released approximately 14,000 gallons of the estimated 18,000 gallon capacity. This spill was contained by an existing ditch on the east side of the track away from the Susquehanna River, and no hazmat was released into the river. Two other hazardous material cars were in the consist and were not derailed: the 6th car, HOKX 132027 - loaded Chlorine and the 11th car, HOKX 111395 - loaded Sodium Hydroxide.

REACT Environmental Services handled the hazardous material containment and cleanup. The Sodium Hydroxide was pumped from the cars and taken from the site in trucks. The contaminated
earth was removed to a depth of approximately eight feet and was also trucked from the site. This was completed at approximately 1:30 pm EST on Friday December 8, 2006. Test samples of the soil were also sent to their lab to determine if any additional soil was contaminated.

The Track

The track in the area of the derailment is a single-main track constructed with standard wood ties and a mix of 112 RE and 115RE (1942-1947) continuous welded rail (CWR) with double-shoulder tie plates. The rail is fastened with standard cut spikes; two or three rail-holding spikes and one "anchor" plate spike. There is a standard anchor pattern for CWR, using "channel-lock" type anchors. The ballast is crushed stone and the general tie condition in this area is fair to poor. There are a series of curves in advance of the derailment site, but the track is tangent at the point of derailment and is on a nearly level 0.10 percent descending grade southward.

The Investigation

The on-site investigation revealed that a total of 21 cars were derailed, four of which contained hazardous materials as noted above. The three locomotives and first 11 non-derailed cars had been pulled away, south to the town of Catawissa. A total of 19 of the derailed cars, 12th through 30th in the train, were cleared to the east side of the railroad for unloading. The last two derailed cars, 31st and 32nd in train: ALY 500727 and CN 407542 were re-railed on the north end of the derailment. This was completed at approximately 1:30 am EST on Saturday December 9, 2006.

The track where the estimated point of derailment (POD) was located was completely destroyed in the derailment so track notes were not taken, but the track was inspected behind the derailed cars back to MP 728.0 with no exceptions taken to the track geometry (surface, alignment or gage). There were no signs of wheel marks or other evidence of possible equipment dragging prior to the POD.

The inspection of the locomotive event recorder tapes eliminated speed, train handling or any other human factor cause. The inspection of the derailed equipment, as well as, the three locomotives and 11 non-derailed cars did not reveal any evidence of equipment cause.

As a result of the above findings and the statements from the engineer and conductor that they heard a loud "bang" and felt the train "shimmy" prior to the emergency brake application, the investigation turned towards a broken rail as the possible cause. As previously stated, the track at the suspected POD was completely destroyed and much of it had been pulled down the embankment on the west side (river side) of the railroad by some of the derailed cars which made inspection of the rail and ties difficult.

A rail was found down the embankment at the suspected POD that had broken field welds and wheel marks indicative to those that may have caused the derailment rather than those that are caused by wheels that are already derailed. This rail was a short rail, approximately 100 inches, that had been field welded in track with no joint bars applied. There was also an old bolt-hole break in the web that
progressed from the bolt hole to the weld. This particular rail was 112 RE - Steelton - 1942.

Both NS and CP managers agreed to this probable cause and the rail was marked to be sent to the CP lab for analysis. I also submitted the appropriate Factual Information Report on Rail Failures.

Records obtained from the CP revealed that this stretch of the CP Freight Main Line had been tested
by Sperry Rail Services on October 10, 2006 and at MP 728.98 a defective field weld (DWF - Small)
had been detected. The Track Safety Standards Part 213.113 require that if a rail with a defect as indicated is found, and not immediately replaced, joint bars must be applied within 20 days and in the
case of the 40 mph Class 3 track where the derailment occurred, the track must be protected by a 30 mph slow order until the joint bars are applied.

The same Sperry records provided for this investigation do not indicate any remedial action for this defective (Sperry) rail and this matter is being further investigated. It must be noted, however, that the rail suspected as the probable cause of the derailment did not have any Sperry or other markings on it and it is not being implied at this time that the two rails are one-of-the-same.

Further investigation into the history of the rail on this stretch of the Freight Main Line has revealed that on November 9, 2004, another major derailment occurred at MP 736.3 near Danville, PA. This
was caused by a broken rail and it had been previously tested by Sperry in October of 2004.

A review of the CP track inspection records for the period of October 16, 2006 through December 7, 2006, showed that the track had been inspected twice weekly between MP 673 and MP 752. It is noted that on the inspection dated December 7, 2006 (the day of, but after the derailment) a broken rail was found by the track inspector at MP 724.2. This rail was changed out, and the Region 2 Inspector In Charge personally inspected it at the CP MW yard in Nescopeck, PA. It was a clean fracture of the rail with evidence of an old break in the base. These same track inspection reports (18 reports) revealed that a total of 10 broken joint bars were found by the track inspector during this period.

Track Production records were not provided, but the CP Track Supervisor indicated that the track
had been surfaced through the area of the derailment in November of 2006.

While most of the information provided on this page of the report does not reflect directly to the probable cause of the derailment, it serves to show a history of broken rails in the area of the derailment and conditions indicative of old and worn rail, combined with the general poor tie conditions, which supports the probable cause.

Analysis and Conclusions

Analysis

The equipment of NS Train 30T 9905 was inspected by the FRA MP&E Inspector assigned to this accident. This included the three locomotives: NS 8909, NS 9059, NS 2536 and the first 11 cars in the train (not derailed). The derailed cars were inspected as well. Records of the locomotive inspections and initial terminal air brake tests, etc. were also inspected and there were no exceptions taken to any of the mechanical conditions of the train that would lead to a suspected equipment cause. In addition the train passed hot box and dragging equipment detectors at MP 696.3 and MP 721.7 without incident. The track prior to the derailment was inspected and no signs of derailed wheels or dragging equipment was found.

The operation of the train was reviewed by the FRA OP Inspector assigned to this accident. The work history, training records and qualifications of the engineer and conductor were investigated as were the work history records relative to hours worked and rest periods including fatigue analysis.

Train dispatcher records, applicable bulletin orders, train consist records, etc. were all thoroughly reviewed. The locomotive event recorder tapes were inspected and the engineer and conductor were both interviewed. This investigation did not reveal any evidence of improper train handling or other possible human factor cause to this accident.

The track for approximately 400 feet prior to the suspected point of derailment (POD) was destroyed by the derailment so track notes were not taken. The track that was intact in advance of the derailment was inspected back to MP 728 with no evidence of track geometry (surface, alignment or gage) being a probable cause. Nor was there evidence of the train being derailed prior to the suspected POD.

The rail that was found that was the probable cause of the derailment was a very short piece that had been field welded into the track. As a standard, no joint bars are applied to the rail ends once the welds are made. It was apparent that the field welds failed on both ends of the rail and both of these had evidence of an old break. In addition, the north end (receiving end) of this rail had an old bolt-hole break which progressed through the web into the failed field weld. This north (receiving) end also had wheel marks indicative of a wheel derailing at this point.

The results of the CP lab analysis of the rail have not been provided yet.

Conclusion

The fact that no evidence was found at the on-site investigation to support either an equipment or human factor cause led to a probable track cause, specifically a possible broken rail under movement. This was supported by the statements from the engineer and conductor, as well as the inspection of the locomotive event recorder.

Inspection of Sperry rail test records revealed that there had been numerous rail defects in this area of the CP Freight Main Line, including a defective field weld that was found at MP 728.98. This was detected by Sperry on October 10, 2006 and was approximately 0.38 mile from the suspected POD.

In addition to the rail found that was the probable cause of the derailment, there was also a broken rail found by the track inspector on the same day as the derailment (after the derailment) at MP 724.2. While this rail was not suspected as a probable cause, the Region 2 Inspector-In-Charge inspected it after it had been removed from track and found that it had a portion of an old break in the base.

There have been previous derailments caused by broken rails in the same general vicinity on the CP Freight Main Line. This fact is supported by previous records on file.

As a result of this specific accident investigation and the findings relative to defective rails, further investigation into CP rail testing records and any required remedial actions will be conducted.

Probable Cause & Contributing Factors

The FRA found a contributing factor to be a broken rail would be the age of the rail and general poor tie and surface condition of the track. Also, the investigation revealed rails with visible old defects, apparently undetected by both the track inspectors and Sperry Rail Service.

The FRA determined that the probable cause was a broken rail under movement. The type of rail defect was suspected to be a broken field weld contributed to by an old bolt-hole break.