Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2005-26

Amtrak (ATK)
Home Valley, Washington
April 3, 2005

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-2005-26

1.Name of Railroad Operating Train #1: Amtrak [ATK]	1a. Alphabetic Code: ATK	1b. Railroad Accident/Incident No.: 096040
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: Amtrak [ATK]	3a. Alphabetic Code: ATK	3b. Railroad Accident/Incident No.: 096040
4. U.S. DOT_AAR Grade Crossing Identification Number:	5. Date of Accident/Incident: Month 04 / Day 03 / Year 2005	6. Time of Accident/Incident: 09:35: ☑ 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
0	0	0	0	Northwest

13. Nearest City/Town	14. Milepost (to nearest tenth)	15. State Abbr	15. State Code	16. County
Stevenson	58.5	N/A	WA	SKAMANIA

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
45 F		2		3		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		4	79.37		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: 2

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

27. Train Number/Symbol: 27

28. Speed (recorded speed, if available) R - Recorded E - Estimated: 60 MPH; Code: R

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

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, 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

	a. Initial and Number	b. Position in Train	c. Loaded (yes/no)
31. Principal Car/Unit (1) First involved (derailed, struck, etc)	N/A	1	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): Y

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	1	0	0	0	0
(2) Total Derailed	1	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	0	4	0	0	0
(2) Total Derailed	0	4	0	0	0

36. Equipment Damage This Consist: 555000

37. Track, Signal, Way, & Structure Damage: 154019

38. Primary Cause Code: T110

39. Contributing Cause Code: N/A

Number of Crew Members

40. Engineer/ Operators	41. Firemen	42. Conductors	43. Brakemen
N/A	0	2	0

Length of Time on Duty

44. Engineer/Operator: Hrs 4 Mi 20

45. Conductor: Hrs 8 Mi 5

Casualties to:	46. Railroad Employees	47. Train Passengers	48. Other
Fatal	0	0	0
Nonfatal	N/A	22	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: 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-2005-26

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
0		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
0

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					

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

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

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

102. Highway Vehicle Property Damage (est. dollar damage)	103. Total Number of Highway-Rail Crossing Users (include driver)
0	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.

109. SYNOPSIS OF THE ACCIDENT

On April 3, 2005, at 9:35 a.m. (PDT), a westbound National Railroad Passenger Company (Amtrak), train number 27, derailed. The accident occurred on the BNSF's Northwest Division, Fallbridge Subdivision, on the main track, about 4.5 miles east of Stevenson, Washington, milepost 58.56. The total consist of the train derailed (1 locomotive and 4 loaded passenger cars).

There were 115 crew members and passengers on board. There was a total of 30 injuries reported, 22 to passengers and 8 to employees of Amtrak. Two passengers were kept overnight for observation at a local hospital, then released the next morning (April 04, 2005).

There was no release of hazardous material and there was no evacuation. The total estimated damages are $709,019 ($555,000 equipment and $154,019 track and structure).

At the time of the accident it was daylight, the weather was cloudy and misty, with a temperature of 45 ° F.

110. NARRATIVE

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

CIRCUMSTANCES PRIOR TO THE ACCIDENT

The crew of the westbound train consisted of a locomotive engineer, one conductor and one assistant conductor. The engineer went on duty at 5:15 a.m. at Pasco, WA. The conductor and assistant conductor went on duty at Spokane, WA. at 1:30 a.m. The home terminal for the crew is Portland, OR.

The engineer, conductor and assistant conductor all received a required statutory off-duty period.

The train was scheduled to travel from Pasco, WA to Portland, OR, a distance of approximately 232 miles. The engineer performed a running air test before departing Pasco at 6:35 a.m. The train consisted of one locomotive and four passenger cars. It was approximately 480 feet long and weighed 289 tons.

As the train approached the accident site, the locomotive engineer was seated at the controls located on the right (north) side of the locomotive. The conductor and assistant conductor were riding in the coach cars. One conductor was performing paper work and the other was monitoring the radio.

Approaching the accident from the east traversing westward, there is approximately one and a quarter mile of tangent track that leads into a succession of curves. The first curve, where the accident occurred, is a left hand 3-degree curve that is approximately 1,500 feet in length, then a tangent portion of track approximately 500 feet in length west of the Point Of Derailment (POD) and then a right hand 3-degree curve with a length of approximately 1,800 feet. The grade is virtually level.

In the accident area, trains operate on a single main track under the authority of a Traffic Control System (TCS). The BNSF System Special Instructions No. 10 effective April 3, 2005 and BNSF Northwest Division Timetable No. 2 effective November 5, 2005 authorizes a maximum passenger train speed of 60 miles per hour (mph), FRA Class 4 track. The timetable and geographical direction the train was traveling was west.

THE ACCIDENT

According to the engineer and the conductors, the trip was uneventful as the train approached the accident area. While approaching and at the time the accident occurred, the train was being operated at 60 mph. This speed was recorded on the event recorder.

According to the train crew, at 9:35 a.m.(PDT), the accident occurred.

The locomotive engineer first became aware of the derailment after the train induced brake application had occurred.

After the train had stopped, the engineer contacted the BNSF Fort Worth, TX, dispatcher. The dispatcher then began contacting emergency response personal. The engineer stayed in the locomotive cab for approximately ten minutes before he left the cab and began assisting the conductors with the passengers.

The conductors first became aware of the derailment when they both started to be thrown around in the coach cars in which they were riding, followed by smoke, dirt and debris entering the cars.

According to the conductors, the passengers were calm and cooperative. The conductor stated that Amtrak officials contacted him by phone, at which time he reported that there were no serious injuries to report at this time. He gave his ticket pouch and manifest to the emergency responders.

The assistant conductor started checking people for injuries and looked for signs of fire in the cars. He instructed the passengers to stay on the train. The assistant conductor then departed the train and walked eastward towards a wayside train signal to verify their location. He then returned to the train to assist the conductor in assessing the damages.

According to both conductors, the emergency response personnel showed up 10 to 15 minutes after the derailment occurred.

Emergency /Agencies Responders are as follows:

* Skamania County Sheriff's Office
* Skamania County Dive Team
* Skamania County EMS
* Carson Fire Department
* Stevenson Fire Department
* Washington State Parks
* Washington State Fish and Wildlife
* Washington State Fish Biologists
* US Forest Service
* Washington State Patrol
* Clark County Sheriff's Office
* Multnomah County Fire Department
* Hood River EMS
* Stevenson/Carson School District (buses)
* Vancouver Police Department
* White Salmon Police Department
* Washington Department of Transportation
* Washougal Police Department
* Camas Police Department
* Camas Fire Department

The three train crew members and 22 passengers were injured and transported to six area hospitals. All were released except for two passengers that were held overnight for observation.

A total of 1 locomotive and 4 cars derailed (the entire consist). The locomotive was upright and the cars were leaning at a 45 to 60 degree angle.

The Point of Derailment (POD) was identified as milepost 58.56, located on the main track in a left hand 3-degree curve, super elevated with 4-1/4 inches.

ANALYSIS

This accident did meet Title 49 CFR, Part 219, Subpart C, Post Accident Toxicological Testing criteria and the three Amtrak train crew members were tested under this criteria. The results of the tests were negative.

An inspection of the data printout from locomotive event recorder indicated no unusual events related to train handling.

Between February 28, and April 1, 2005, BNSF track inspectors performed 13 recorded FRA track inspections through the area of the POD. No FRA noncompliant conditions were recorded in the area of the derailment, during these inspections

Between March 23, and April 2, 2005, the area of the POD had been reported as riding rough on four occasions by train crews who noted the location during train operations. An FRA inspector also noted the location as riding rough while conducting a train riding inspection. On three occasions the rough riding location reported was inspected by BNSF track inspectors. The inspectors found nothing that would cause a rough ride for a train. It was later determined that the inspectors never inspected the proper location reported, which would later be the POD.

On May 25, and September 23, 2004, the BNSF, Car 80 geometry car performed geometry inspections through the area of the POD. Both of these BNSF inspections recorded incipient gage and rail cant conditions. The curve in which the derailment occurred was scheduled to have rail replaced on April 27, 2005.

The investigation determined that abrasion of concrete tie seats allowed the high rail of curve to cant outward causing a open gage resulting in a unprotected wide gage condition allowing the rail wheels to fall into the gage of the track.

CONCLUSION

Following the Amtrak derailment, the BNSF performed walking inspections of all concrete tie curves the day of the accident. The inspections determined that no other curves had rail seat abrasion except for the ones that BNSF had discovered during their routine inspections and had been monitoring until permanent repairs could be made.

On April 12, 2005, BNSF Engineering Instructions were changed and re-issued addressing yellow tag exceptions recorded by the BNSF geometry cars. The area of the POD had several yellow tag exceptions recorded for open gage and rail cant during the May and September 2004 surveys.

The BNSF has been assessed two willful violations for wide gage. One for the area of the POD and one four hundred feet east of the POD.

PROBABLE CAUSE

The FRA determined that the probable cause was wide gage due to concrete tie abrasion allowing the high rail to cant outward creating a open gage condition allowing rail wheels to fall into the gage of track.