Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2005-60

Amtrak (ATK)/Norfolk Southern (NS)
Belton, Montana
August 5, 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-2005-60

1.Name of Railroad Operating Train #1	1a. Alphabetic Code	1b. Railroad Accident/Incident No.
Amtrak [ATK]	ATK	097639
2.Name of Railroad Operating Train #2	2a. Alphabetic Code	2b. Railroad Accident/Incident
N/A	N/A	N/A
3.Name of Railroad Responsible for Track Maintenance:	3a. Alphabetic Code	3b. Railroad Accident/Incident No.
Amtrak [ATK]	ATK	097639

4. U.S. DOT_AAR Grade Crossing Identification Number	5. Date of Accident/Incident			6. Time of Accident/Incident
	Month	Day	Year	
735480V	08	02	2005	12:35: ☐ 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) — **07**

8. Cars Carrying HAZMAT	9. HAZMAT Cars Damaged/Derailed	10. Cars Releasing HAZMAT	11. People Evacuated	12. Division
0	0	0	0	Piedmont

13. Nearest City/Town	14. Milepost (to nearest tenth)	15. State Abbr	15. State Code	16. County
Raleigh	H83.6	N/A	NC	WAKE

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
94 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		4	3.9		3

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	26. Was Equipment Attended? 1. Yes 2. No	Code	27. Train Number/Symbol
	2	1. Yes	1	80

28. Speed (recorded speed, if available) R - Recorded E - Estimated			Code
E - Estimated	48	MPH	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; 2. South 4. West: 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	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	7	0	0	0
(2) Total Derailed	0	4	0	0	0

36. Equipment Damage This Consist	37. Track, Signal, Way, & Structure Damage	38. Primary Cause Code	39. Contributing Cause Code
650000	8000	M308	N/A

Number of Crew Members				Length of Time on Duty	
40. Engineer/ Operators	41. Firemen	42. Conductors	43. Brakemen	44. Engineer/Operator	45. Conductor
N/A	0	1	1	Hrs 2 Mi 2	Hrs 2 Mi 2

Casualties to:	46. Railroad Employees	47. Train Passengers	48. Other
Fatal	0	0	2
Nonfatal	N/A	12	0

49. EOT Device? 1. Yes 2. No: 2

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

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	53. Was Equipment Attended? 1. Yes 2. No	Code	54. Train Number/Symbol
	N/A	1. Yes	N/A	N/A

55. Speed (recorded speed, if available) R - Recorded E - Estimated			Code
E - Estimated	0	MPH	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)	D

80. Vehicle Speed (est. MPH at impact)	81. Direction geographical) 1.North 2.South 3.East 4.West	Code
00		2

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

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	4

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)	1

84. Position of Car Unit in Train
1

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

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

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)	01	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

89. Whistle Ban	Code
1. Yes 2. No 3. Unknown	2

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

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

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

93. Driver's Age	94. Driver's Gender 1. Male 2. Female	Code
34		1

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

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)	1

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

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	8

101. Casulties to Highway-Rail Crossing Users	Killed	Injured
	02	00

99. Driver Was	Code
1. Killed 2.Injured 3. Uninjured	1

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

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

103. Total Number of Highway-Rail Crossing Users (include driver)
00

104. Locomotive Auxiliary Lights?	Code
1. Yes 2. No	1

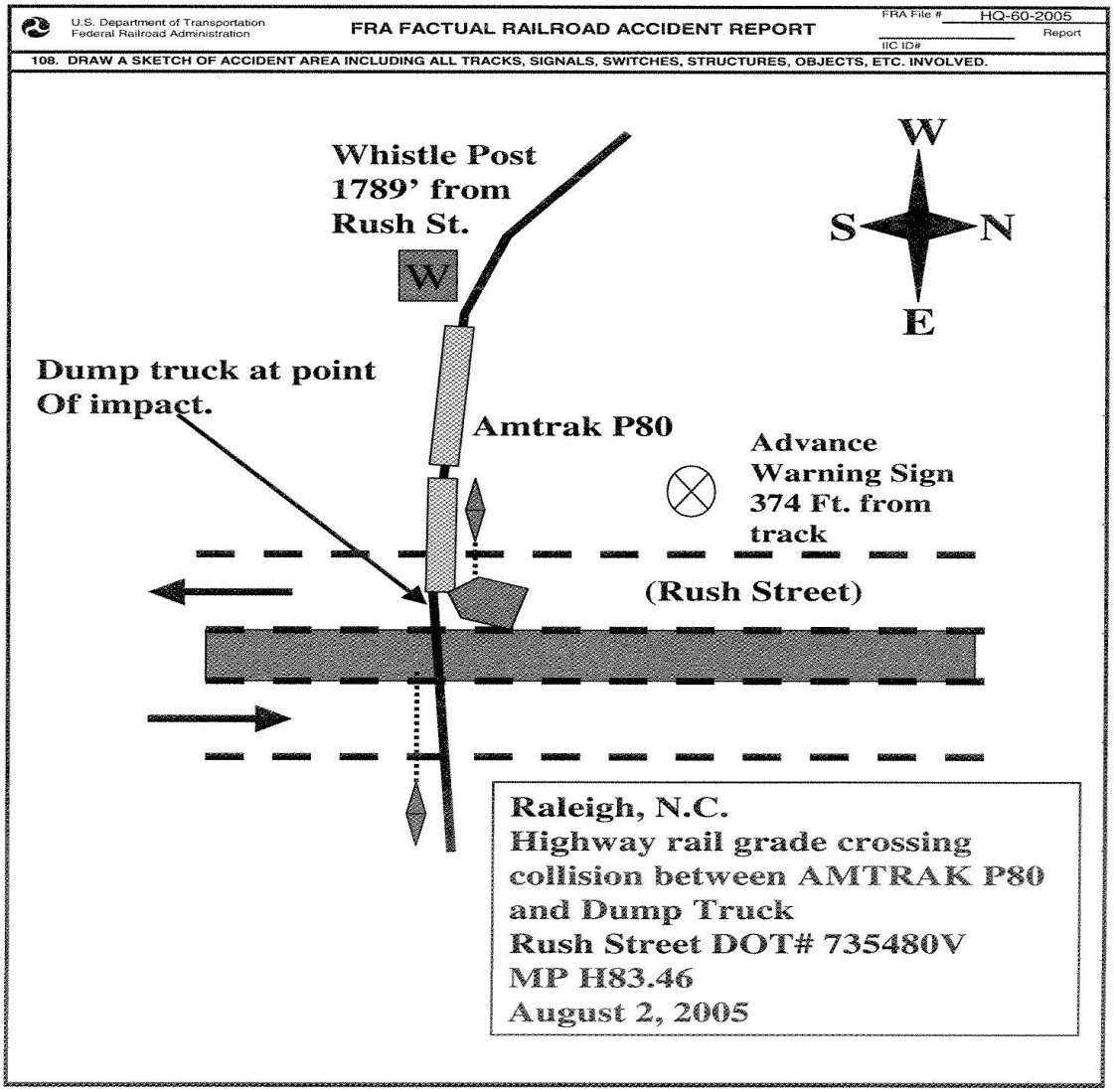
105. Locomotive Auxiliary Lights Operational?	Code
1. Yes 2. No	1

106. Locomotive Headlight Illuminated?	Code
1. Yes 2. No	1

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

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

HQ-60-
2005
sketch.jpg



109. SYNOPSIS OF THE ACCIDENT

On August 2, 2005, Amtrak (ATK) Passenger Train No. 80 was operating on the Norfolk Southern Corporation (NS), Piedmont Division main track in Raleigh, North Carolina (NC). This track segment extends from Goldsboro to Greensboro, NC. There were 204 passengers, four ATK on-board crew members, a locomotive engineer, conductor, and assistant conductor totaling 211 people.

About 12:35 p.m. Eastern Standard Time (EST), ATK Train No. 80 struck a moving dump truck at milepost (mp) H83.6. The truck was traveling southbound across highway-rail grade crossing (Rush Street/State Route 2683, U.S. DOT No. 735480V). The collision caused the derailment of the locomotive, baggage car, and first three passengers cars. The last four passenger cars of the consist did not derail and all the equipment remained upright. 18 passengers, three ATK on-board service personnel, and the locomotive engineer were taken to area hospitals. The engineer was treated and released from the hospital that day. Two passengers were admitted into the hospital. The remaining passengers were transported by Raleigh City Buses to Raleigh Civic Center, which was utilized as a staging area. ATK provided transportation for these passengers to their final destination.

According to eyewitnesses, ATK Train No. 80 was blowing the whistle. The active warning devices (lights, gates, and bell) were operating when the dump truck went around the crossing gates in front of the approaching train.

The collision resulted in the deaths of the driver and passenger of the truck. Damages are $650,000 to rail equipment and $8,000 to track structures.

At the time of the accident it was daylight and clear. The temperature was 94 °F.

The probable cause of the accident was the failure of the truck driver to stop at the crossing.

110. NARRATIVE

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

Circumstances Prior to the Accident

ATK Train No. 80 crew consisted of a locomotive engineer, conductor, assistant conductor, and four on-board service employees. The train crew went on duty at 10:33 a.m., on August 2, 2005, at ATK's Raleigh station, which is their away from home terminal. The crew received 12 hours 28 minutes off duty time prior to reporting for duty.

ATK Train No. 80 consisted of ATK Locomotive No. 69, one baggage car, and seven passenger coaches. After receiving the required initial terminal air brake test at Charlotte, NC, the train departed at 7:50 a.m. eastward toward Raleigh, NC where there was a crew change. The train departed Raleigh at 12:27 p.m. and was uneventful until the accident site. As Train No. 80 approached Rush Street, the engineer was seated at the controls on the south side of the locomotive, assistant conductor was in the business class coach, and the conductor was in the fifth coach collecting tickets. Eastbound trains approaching traverse a long left hand curve with a 0.92-percent ascending grade that extends through the crossing.

The NS timetable direction of the train and the geographic direction is east. Timetable directions are used throughout this report.

The Accident

ATK Train No. 80 was operating at a recorded speed of 48 miles per hour (mph) as it approached the Rush Street crossing. The engineer began sounding the train horn at the whistle board, which is located 1,789 feet west of the highway crossing. As he came out of the sweeping left hand curve, the engineer did not notice anyone on either side of the road crossing. He sounded another long whistle approaching Rush Street and noticed a dump truck pulling up to the north side of Rush Street road crossing. The truck went around the activated crossing gate and did not appear to be slowing down. He dove to the floor of the locomotive cab and did not have time to apply the train's emergency brake application.

The dump truck was struck on the passenger side cab door, causing the truck cab to separate from the bed of the truck. The cab of the truck and front axle landed down the embankment on the east side of the roadway, 15 feet north of the main track. The bed of the truck and rear axle were still near the area of impact. The locomotive derailed at the point of impact and traveled east about 300 feet before it stopped. After the accident, the assistant conductor went to the locomotive to check on the engineer while the conductor stayed on the coaches attending to the passengers. The assistant conductor notified the train dispatcher by radio from the cab of the locomotive about the accident.

The driver and passenger of the dump truck were both ejected by the force of the impact. Witnesses at a convenience store near the Rush Street crossing called 911 to alert the local authorities. Raleigh Police, EMS and Fire departments responded within minutes of the accident.

The driver and passenger were pronounced dead at the scene of the accident by the Wake County Coroner.

Highway Vehicle
The dump truck was a 1973 Ford dump truck with an NC registration no. U902VR54342. The dump truck was driven by a 34 year old male with an NC driver's license. His driving record showed four charges of driving without a license, three charges of speeding, and one case of failure to stop at a red light. Also recorded was an accident that occurred on January 24, 2005. There was a collision with injuries and he was cited for expired plates, no registration, parking a vehicle in the highway, and defective tail light. The other occupant of the dump truck was a 33 year old male.

The dump truck was traveling south on Rush Street. According to two eyewitnesses, the driver of the dump truck made no attempt to stop at the crossing. The dump truck was totally destroyed.

Description of Accident Site
Rush Street is a straight two lane undivided asphalt roadway with a median center isle. The road crossing is equipped with gates mounted on ground masts, flashing lights, and a bell mounted on cantilever signals. There is an advance warning sign 374 feet north of the crossing. The street is equipped with a painted stop bar 23 feet from the north rail. The southbound lane is equipped with a railroad advance pavement marking and a railroad advance warning sign, 381 and 374 feet respectively from the north rail. The highway speed in the area of the crossing is posted as 45 mph and the view is unlimited for highway users.

No toxicological tests were performed on the ATK train crew.

Analysis and Conclusion

West of Rush Street there is a whistle post about 1,789 feet at the point where the crossing gate warning system would be activated and provides 30 seconds of warning time to highway users. ATK Train No. 80 horn and bell were sounding for 40 seconds prior to impact, as indicated by the trains event recorder.

An NS signal supervisor arrived at Rush Street crossing shortly after the collision and sealed the crossing case. When the Federal Railroad Administration (FRA) Signal & Train Control (S&TC) inspector arrived, the crossing case was unsealed and testing of the crossing system began. Operation tests of the Safetran Grade Crossing Predictor, Model 3000, were observed by FRA and North Carolina Department of Transportation (NCDOT) S&TC inspectors with no exceptions noted. According to the highway-rail grade crossing control equipment that was tested, the recorded warning time for ATK Train No. 80 was 32 seconds. When the control equipment is activated, four seconds later the gates break away and eight seconds after that the gates are horizontal for a total of 12 seconds. This indicates with 32 seconds warning time, the crossing gates would have been horizontal for 20 seconds before ATK Train No. 80 entered the Rush Street highway-rail grade crossing.

The crossing width of the road at Rush Street is 61 feet. The gate length protecting the southbound lane is 24 feet. This completely protects the southbound lane for highway traffic when the crossing is activated by an approaching train.

The locomotive is equipped with headlights, auxiliary lights, and an audible warning device required by the Code of Federal Regulations Part 229 Railroad Safety Standards. The engineer observed that these devices were working as ATK Train No. 80 was pulling into the Raleigh station. Eyewitness statements at the time of the accident stated the same.

Several eye witnesses to the accident gave statements that the dump truck driver made no attempts to stop short of the Rush Street crossing at the time of the accident. Two eyewitness statements state that the vehicle never slowed down before entering onto the highway-rail grade crossing or stopped. They also said the gates were down, and the bell and crossing lights were working properly as the dump truck attempted to drive around the lowered railroad crossing gates.

Conclusion
The dump truck driver failed to stop at Rush Street crossing and proceeded to drive around the crossing gates as the train entered the crossing, striking the dump truck. The ATK engineer complied with all railroad operating rules.

Probable Cause
The FRA determined that the probable cause of the accident was the failure of the motor vehicle driver to stop at the highway-rail grade crossing and yield the right