Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2007-45

Amtrak (ATK)
Shafter, California
July 19, 2007

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-2007-45

1.Name of Railroad Operating Train #1: Amtrak [ATK]	1a. Alphabetic Code: ATK	1b. Railroad Accident/Incident No.: 105043
2.Name of Railroad Operating Train #2: N/A	2a. Alphabetic Code: N/A	2b. Railroad Accident/Incident No.: N/A
3.Name of Railroad Operating Train #3: N/A	3a. Alphabetic Code: N/A	3b. Railroad Accident/Incident No.: N/A
4.Name of Railroad Responsible for Track Maintenance: BNSF Rwy Co. [BNSF]	4a. Alphabetic Code: BNSF	4b. Railroad Accident/Incident No.: CA0707201
5. U.S. DOT_AAR Grade Crossing Identification Number: 028386G	6. Date of Accident/Incident: Month 07 Day 19 Year 2007	7. Time of Accident/Incident: 01:55: ☐ AM ☑ PM

8. 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) — Code: 07

9. Cars Carrying HAZMAT	10. HAZMAT Cars Damaged/Derailed	11. Cars Releasing HAZMAT	12. People Evacuated	13. Division
0	N/A	N/A	0	Bakersfield

14. Nearest City/Town	15. Milepost (to nearest tenth)	16. State Abbr	16. State Code	17. County
Shafter	904.4	N/A	CA	KERN

18. Temperature (F) (specify if minus)	19. Visibility (single entry) 1. Dawn 2. Day 3.Dusk 4.Dark — Code	20. Weather (single entry) 1. Clear 2. Cloudy 3. Rain 4. Fog 5.Sleet 6.Snow — Code	21. Type of Track 1. Main 2. Yard 3. Siding 4. Industry — Code
97 F	2	1	1

22. Track Name/Number	23. FRA Track Class (1-9, X) — Code	24. Annual Track Density (gross tons in millions)	25. Time Table Direction 1. North 2. South 3. East 4. — Code
Main	5	55.46	4

OPERATING TRAIN #1

26. 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	27. Was Equipment Attended? 1. Yes 2. No — Code	28. Train Number/Symbol
2	1	ATK-715-19

29. Speed (recorded speed, if available) R - Recorded E - Estimated — Code	31. Method(s) of Operation (enter code(s) that apply)	31a. Remotely Controlled Locomotive?
64 MPH — R	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)	0 = Not a remotely controlled; 1 = Remote control portable; 2 = Remote control tower; 3 = Remote control transmitter - more than one remote control transmitter
30. Trailing Tons (gross tonnage, excluding power units): 0	Code(s): e N/A N/A N/A N/A	0

32. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded (yes/no)
(1) First involved (derailed, struck, etc)	CDTX2012	1	yes
(2) Causing (if mechanical cause reported)	0	0	N/A

33. 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

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

35. Locomotive Units	a. Head End	Mid Train b. Manual	Mid Train c. Remote	Rear End d. Manual	Rear End c. Remote	36. Cars	Loaded a. Freight	Loaded b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Train	1	0	0	0	0	(1) Total in Equipment Consist	0	4	0	0	0
(2) Total Derailed	1	0	0	0	0	(2) Total Derailed	0	4	0	0	0

37. Equipment Damage This Consist	38. Track, Signal, Way, & Structure Damage	39. Primary Cause Code	40. Contributing Cause Code
217500	258000	M308	M303

Number of Crew Members				Length of Time on Duty	
41. Engineer/ Operators	42. Firemen	43. Conductors	44. Brakemen	45. Engineer/Operator	46. Conductor
1	0	1	1	Hrs 2 Mi 5	Hrs 2 Mi 5

Casualties to:	47. Railroad Employees	48. Train Passengers	49. Other
Fatal	0	0	0
Nonfatal	2	0	0

50. EOT Device? 1. Yes 2. No — 2

51. Was EOT Device Properly Armed? 1. Yes 2. No — N/A

52. Caboose Occupied by Crew? 1. Yes 2. No — N/A

OPERATING TRAIN #2

53. 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	54. Was Equipment Attended? 1. Yes 2. No — Code	55. Train Number/Symbol
N/A	N/A	N/A

56. Speed (recorded speed, if available) R - Recorded E - Estimated — Code	58. Method(s) of Operation (enter code(s) that apply)	58a. Remotely Controlled Locomotive?
0 MPH — N/A	a. ATCS; b. Auto train control; g. Automatic block; h. Current of traffic; m.Special instructions; n. Other than main track	0 = Not a remotely controlled; 1 = Remote control portable

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57. 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

59. 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

60. 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

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

62. Locomotive Units	a. Head End	Mid Train b. Manual	Mid Train c. Remote	Rear End d. Manual	Rear End c. Remote	63. Cars	Loaded a. Freight	Loaded 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

64. Equipment Damage This Consist: 0

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

66. Primary Cause Code: N/A

67. Contributing Cause Code: N/A

Number of Crew Members

68. Engineer/ Operators	69. Firemen	70. Conductors	71. Brakemen
0	0	0	0

Length of Time on Duty

72. Engineer/Operator: Hrs 0 Mi 0

73. Conductor: Hrs 0 Mi 0

Casualties to:	74. Railroad Employees	75. Train Passengers	76. Other
Fatal	0	0	0
Nonfatal	0	0	0

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

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

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

OPERATING TRAIN #3

80. 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

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

82. Train Number/Symbol: N/A

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

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

85. 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): N/A | N/A | N/A | N/A | N/A

85a. 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: N/A

86. 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

87. 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

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

89. Locomotive Units	a. Head End	Mid Train b. Manual	Mid Train c. Remote	Rear End d. Manual	Rear End c. Remote	90. Cars	Loaded a. Freight	Loaded 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

91. Equipment Damage This Consist: 0

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

93. Primary Cause Code: N/A

94. Contributing Cause Code: N/A

Number of Crew Members

95. Engineer/ Operators	96. Firemen	97. Conductors	98. Brakemen
0	0	0	0

Length of Time on Duty

99. Engineer/Operator: Hrs 0 Mi 0

100. Conductor: Hrs 0 Mi 0

Casualties to:	101. Railroad Employees	102. Train	103. Other
Fatal	0	0	0
Nonfatal	0	0	0

104. EOT 1. Yes 2. No: N/A

105. Was EOT Device Properly 1. Yes 2. No: N/A

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

Highway User Involved

107. 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: C

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

109. geographical) 1.North 2.South 3.East 4.West Code: 4

Rail Equipment Involved

111. 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: 1

112. Position of Car Unit in: 1

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110. Position	Code	113. Circumstance	Code
1.Stalled on Crossing 2.Stopped on Crossing 3.Moving Over Crossing 4. Trapped	1	1. Rail Equipment Struck Highway User 2. Rail Equipment Struck by Highway User	1
114a. 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	4	114b. Was there a hazardous materials release 1. Highway User 2. Rail Equipment 3. Both 4. Neither	4

114c. State here the name and quantity of the hazardous materials released, if any.
N/A

115. Type 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	116. Signaled Crossing (See instructions for codes) Code	117. Whistle 1. Yes 2. No 3. Unknown Code
Code(s)	05	N/A N/A N/A	N/A N/A N/A		01	2

118. Location of Warning 1. Both Sides 2. Side of Vehicle Approach 3. Opposite Side of Vehicle Approach	Code	119. Crossing Warning with Highway Signals 1. Yes 2. No 3. Unknown	Code	120. Crossing Illuminated by Street Lights or Special Lights 1. Yes 2. No 3. Unknown	Code
	1		2		2

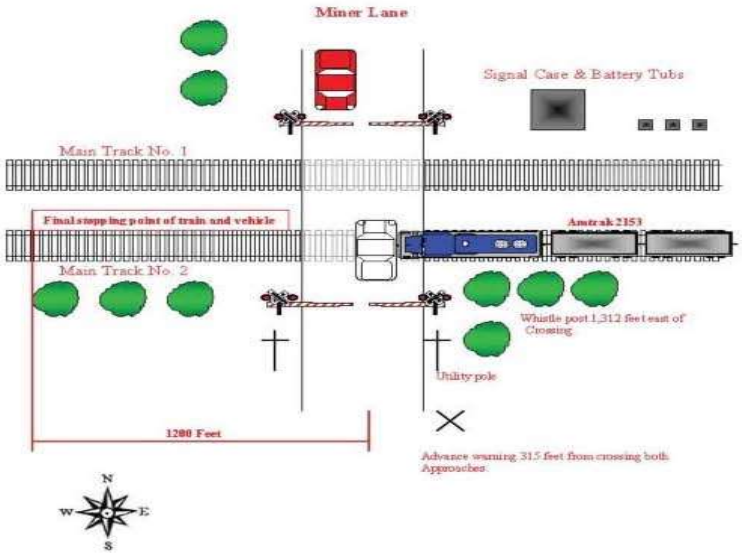
121. Age	122. Driver's Gender 1. Male 2. Female	Code	123. Driver Drove Behind or in Front of and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown	Code	124. Driver 1. Drove around or thru the Gate 2. Stopped and then Proceeded 3. Did not Stop 4. Stopped on Crossing 5. Other (specify in narrative)	Code
39		1		2		4

125. Driver Passed Highway Vehicle 1. Yes 2. No 3. Unknown	Code	126. 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
	2		8

Casualties to:	Killed	Injured	127. Driver 1. Killed 2.Injured 3. Uninjured	Code	128. Was Driver in the Vehicle? 1. Yes 2. No	Code
				3		1
129. Highway-Rail Crossing Users	0	0	130. Highway Vehicle Property Damage (est. dollar damage)	0	131. Total Number of Highway-Rail Crossing Users (include driver)	1

132. Locomotive Auxiliary Lights? 1. Yes 2. No	Code	133. Locomotive Auxiliary Lights Operational? 1. Yes 2. No	Code
	1		1
134. Locomotive Headlight Illuminated? 1. Yes 2. No	Code	135. Locomotive Audible Warning Sounded? 1. Yes 2. No	Code
	1		1

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



137. SYNOPSIS OF THE ACCIDENT

At 1:55p.m. PDT, July 19, 2007, westbound Amtrak (ATK) passenger train 715-19, operating in a locomotive forward configuration, struck the water tanker of a truck/trailer combination, which was stopped foul of the track at a public highway-rail grade crossing. The accident occurred in Shafter, California, milepost 904.4, DOT/AAR crossing number 023386G on the BNSF Railway (BNSF), California Division, Bakersfield Subdivision.

The method of operation is Traffic Control System. The maximum timetable speed is 79 mph for passenger trains and 70 mph for freight trains. A total of 156 passengers were aboard at the time of the accident

The Amtrak locomotive engineer sustained a minor injury and a service employee later complained of pain and sought medical treatment. There were no hazardous materials involved. Estimated equipment damage is $217,000; estimated track and signal damage is $258,000. The truck driver was not injured, however, the water tanker trailer was destroyed.

At the time of the accident, it was daylight and clear with a temperature of 97 degrees Fahrenheit.

The accident was caused by the failure of the tanker truck driver to pull the entire length of his vehicle clear of the railroad track before stopping.

138. NARRATIVE

Circumstances Prior to the Accident

The crew of Amtrak Train 715-19 West included a locomotive engineer, a conductor and an assistant conductor. The three man crew was called to report for duty at 11:20 a.m. on July 19, 2007, at their "away from home" duty station at Bakersfield, California. The crew had received the required statutory off duty period prior to reporting for duty.

Their assigned passenger train consisted of one locomotive and four cars and was being operated in a locomotive forward mode. The train ran on a scheduled route beginning at Bakersfield and terminating at Oakland, California. The trip was uneventful and a normal run prior to approaching the accident area..

As the train approached the accident area, the locomotive engineer was seated at the controls at the right side of the locomotive, CDTX 2012. The conductor was in the rear car of the train processing his paper work and the assistant conductor was in the second car from the head end arranging passengers for the pending stop at Wasco, California.

The railroad timetable direction of travel is westward; but is geographically northwest. The geographical direction of travel of the motor vehicle was westward. Timetable directions are used throughout this report in reference to the train movement. It should be noted that the vehicle crossed in front of the locomotive in a geographically westward direction, that is from right to left. In this area, the track is tangent and on a descending grade of less than 0.5 percent between milepost 903 and milepost 905.

The maximum authorized speed for this train was 79 mph, as designated in the current BNSF Timetable.

The Accident

Amtrak Train 715-19 West

As the train approached the Los Angeles Avenue public grade crossing, the engineer stated that the train was traveling at 79 mph and that he was sounding the train horn. He stated that he saw the tanker truck move slowly across the tracks, then stop before the trailer was clear of the main track. Investigation has developed that the truck had stopped at the stop sign that protects Santa Fe Avenue. Santa Fe Avenue runs parallel with and along the west side of the BNSF trackage. When the engineer determined that the truck was not going to pull the trailer clear of the main track and that an impact was imminent, he placed the train in emergency braking, left the engineer's seat and placed himself on the floor of the locomotive cab. Seconds later, the train struck the stopped empty water trailer which was fouling the track.

Water Tanker Truck and Trailer (empty)

The investigation revealed that the truck moved slowly in a westward direction across the tracks and stopped at the stop sign, which is located just west of the BNSF trackage at Santa Fe Avenue. Santa Fe Avenue is a heavily traveled highway

that runs parallel to the BNSF tracks.

When the driver of the truck stopped his vehicle at the stop sign and waited for on-coming vehicle traffic on Santa Fe Avenue to clear, he was unaware that the water tanker trailer of his truck and trailer was not clear of the railroad tracks behind him. The driver stated that as he waited for traffic to clear, he heard the crossing bells begin, and the sound of the train horn as the train approached. The train struck the left side of the empty water tanker trailer at a point near the rear wheels of the trailer. At impact, the trailer was shoved towards the west side of the train and stopped approximately 100 feet from the point of impact. The locomotive and all four cars of the Amtrak train derailed but remained upright and stopped in approximately one-quarter of a mile.

Post-Accident Investigation

After the train stopped, the conductor had a short radio conversation with the engineer, then notified the train dispatcher. Emergency personnel from the surrounding area were dispatched to the scene. The conductor and the assistant conductor surveyed the passengers and determined that none were injured. The driver of the truck, a 39-year old male, was not injured and there were no passengers in the vehicle. The locomotive engineer was removed from the scene and taken by ambulance to the Bakersfield Memorial Hospital where he was treated for neck and back pain and released. A service employee later complained of pain and sought medical treatment. All 156 passengers were removed from the train and were staged at a local youth center until buses arrived.

The grade crossing is a heavily traveled paved two lane road that crosses one main track, one siding track and two additional tracks at a 90-degree angle to the west. Vehicles travel in an east/west direction. For westward vehicle traffic, the warning system consists of a standard five-inch mast mounted at the edge of the approaching lane. Two 8-inch flashing light units, a gate arm, a crossbuck, and an audible warning bell are mounted on the mast. Three Harmon Crossing Processors and Phase Motion Detectors provide train detection on an approach circuit sufficient to allow at least twenty-five seconds warning time for train movements. A review of all records, tests and inspections on the signals and grade crossing warning devices indicate the system functioned as intended and did not contribute to the accident.

Analysis and Conclusions

Analysis

The signals and grade crossing warning devices functioned as intended and did not contribute to the accident.

A review of all records, tests and inspections on the Amtrak locomotive indicate it did not contribute to the accident. The locomotive was equipped with front headlights, auxiliary lights and the audible warning devices required by Federal regulations. The auxiliary lights were broken from the impact.

A review of the locomotive event recorder indicates the train was traveling at a recorded speed of 64 mph immediately prior to or at impact. The review also concluded that the locomotive engineer's handling of the train did not contribute to the accident.

Conclusion

The Amtrak train and BNSF grade crossing protection were in compliance with their operating rules and applicable Federal standards.

The truck driver misjudged the length of his vehicle and failed to completely clear the crossing prior to stopping.

Probable Cause

FRA has determined the accident was caused by the failure of the tanker truck driver to pull the entire length of his vehicle clear of the railroad track before stopping.