Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2007-26

Amtrak (ATK)
Riverbank, California
May 8, 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-2007-26

1.Name of Railroad Operating Train #1: Amtrak [ATK]	1a. Alphabetic Code: ATK	1b. Railroad Accident/Incident No.: 104320
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.: CA0507200
5. U.S. DOT_AAR Grade Crossing Identification Number: 028755B	6. Date of Accident/Incident: Month 05 Day 08 Year 2007	7. Time of Accident/Incident: 02:05: ☐ 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	California

14. Nearest City/Town	15. Milepost (to nearest tenth)	16. State Abbr	16. State Code	17. County
Riverbank	1094.5	N/A	CA	STANISLAUS

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
96 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 Track	5	N/A	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	ATK713

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?
76 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)	ATK2011	1	N/A
(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
(1) Total in Train	1	0	0	0	0
(2) Total Derailed	0	0	0	0	0

36. Cars	Loaded a. Freight	Loaded b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Equipment Consist	0	4	0	0	0
(2) Total Derailed	0	0	0	0	0

37. Equipment Damage This Consist	38. Track, Signal, Way, & Structure Damage	39. Primary Cause Code	40. Contributing Cause Code
11624.00	4000.00	M302	N/A

Number of Crew Members: 41. Engineer/ Operators	42. Firemen	43. Conductors	44. Brakemen	Length of Time on Duty: 45. Engineer/Operator	46. Conductor
1	0	2	0	Hrs 7 Mi 45	Hrs 5 Mi 20

Casualties to:	47. Railroad Employees	48. Train Passengers	49. Other
Fatal	0	0	6
Nonfatal	0	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 N/A 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: J

108. Vehicle Speed (est. MPH at impact): N/A

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

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	3	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

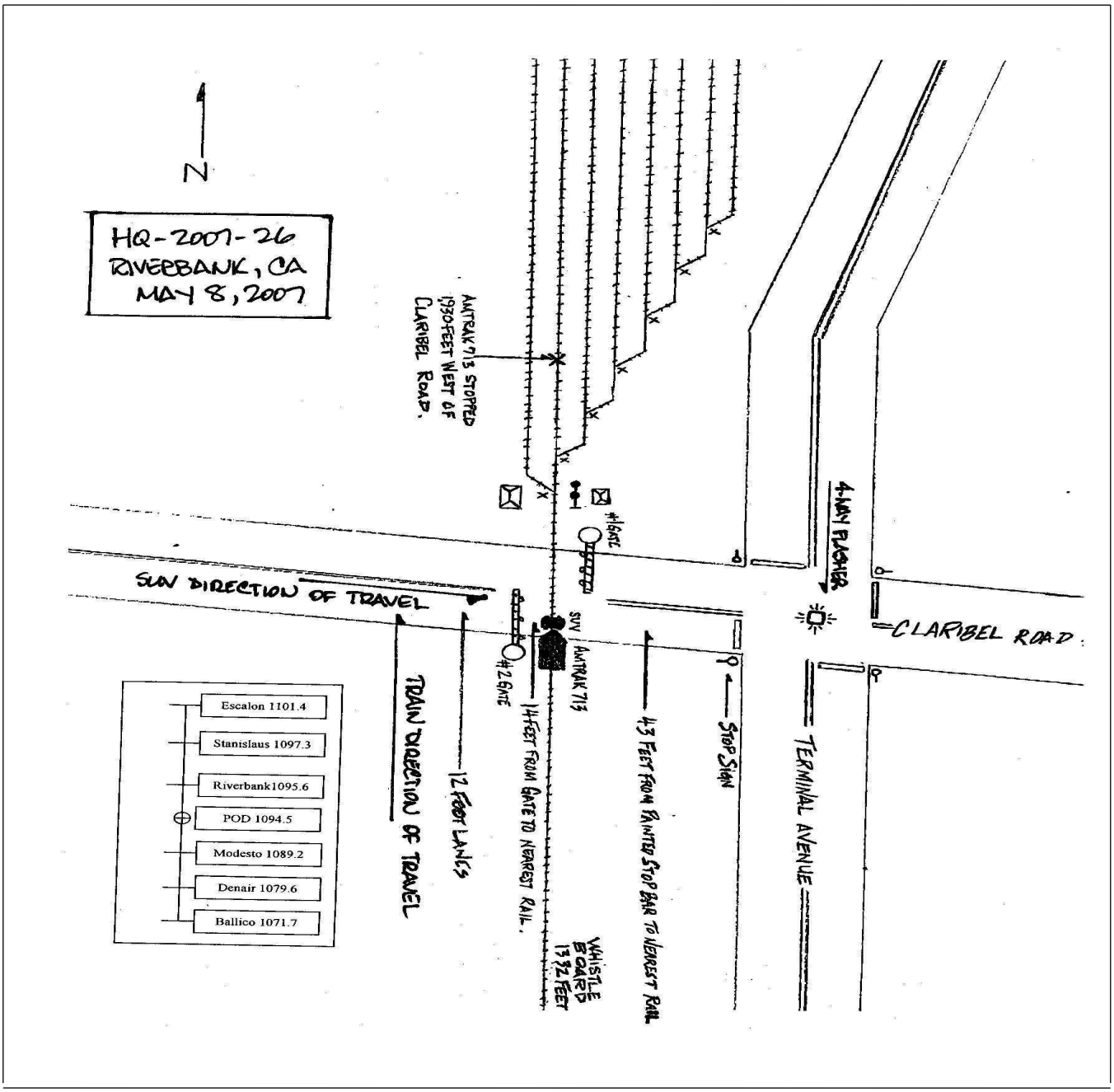
121. Age	122. Driver's Gender 1. Male 2. Female	Code	123. Driver Drove Behind or in Front of and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown	Code	124. Driver 1. Drove around or thru the Gate 2. Stopped and then Proceeded 3. Did not Stop 4. Stopped on Crossing 5. Other (specify in narrative)	Code
23		2		2		2

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
				1		1
129. Highway-Rail Crossing Users	6	0	130. Highway Vehicle Property Damage (est. dollar damage)	7000	131. Total Number of Highway-Rail Crossing Users (include driver)	6

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

On May 8, 2007, at approximately 2:05 p.m. PDT, a northbound (timetable west) Amtrak (ATK) passenger train 713 operating locomotive forward, collided with a sports utility vehicle (SUV) at a highway-rail grade crossing. The accident occurred at Claribel Road, milepost 1094.5, located near Riverbank, California, on BNSF's Stockton Subdivision.

All six occupants of the vehicle were killed and the SUV completely destroyed. There were no injuries to the train crew or passengers, no derailment, and no hazardous materials involved. The lead locomotive sustained minor front end damage.

For the purposes of this report, geographical directions will be used.

At the time of the accident it was daylight and clear. The temperature was about 96 degrees F.

Damages were estimated as: $11,624, equipment; $4,000 track, signals and structures.

FRA concludes the cause of the accident was the failure of the motor vehicle operator to yield the right of way to the approaching train.

138. NARRATIVE

Circumstances Prior to the Accident

The train crew of ATK 713 consisted of a locomotive engineer, conductor, and assistant conductor. After receiving his statutory off-duty period, the engineer reported for duty at the ATK facility in Oakland, California, on May 8, 2007. He departed Oakland at 7:30 a.m. PDT on train 712, and arrived in Merced, California, at 10:48 a.m., and waited there on-duty until he relieved the engineer on train 713 at 1:22 p.m. After receiving their statutory off-duty period, the conductor and assistant conductor went on duty at 8:45 a.m., and 9:15 a.m. respectively, at Bakersfield, California, May 8, 2007. The train had received an initial terminal air brake test and departed Bakersfield at 10:15 a.m. The train assigned to the crew consisted of a locomotive, baggage car, coach car, diner car, and a cab car. The train was scheduled to travel to Oakland and was operated with the locomotive forward.

Traffic Control governs train movements on this section of railroad, and trains are controlled by a BNSF Dispatcher in San Bernardino, California. This section of the railroad operates in a timetable east-west direction. For the purposes of this report, geographical directions are used to coincide with police reports.

According to the engineer, the train was traveling north (timetable west) at approximately 79 mph as it approached Claribel Road highway-rail grade crossing. The locomotive engineer was seated at the controls and the conductor and assistant conductor were located in the train. Approaching Claribel Road from the south, the track is tangent and nearly level. The maximum authorized timetable speed for passenger train movement is 79 mph. The railroad has a whistle sign in place 1,332 feet south of the crossing. The engineer began sounding the whistle when the train neared this sign. This was later validated by analysis of the event recorder.

A 2001 Chevrolet Tracker SUV driven by a 23-year old female driver, with five other passengers, was proceeding eastbound on Claribel Road towards the highway-rail grade crossing when it encountered a stop sign and overhead four-way flashing traffic light at the intersection of Terminal Avenue and Claribel Road. According to the California Highway Patrol, eastbound vehicular traffic was stopped at the stop sign and overhead four-way flashing red signal at the intersection of Terminal Avenue and Claribel Road located about 44 feet east of the track. Witnesses reported that the driver had pulled onto and fouled the track, and apparently noticed the train approaching. The driver placed the vehicle in reverse and backed up to clear the track. At this time, the active warning devices activated. As the gate descended, it struck the hood of the car and the driver drove forward into the path of the train.

The Accident

As it approached the accident site, ATK 713 was traveling at 78 mph, as indicated by the event recorder.The engineer stated that approximately one mile away, he noticed that automobile traffic was backed up at the intersection of Claribel Road and Terminal Avenue, and that the subject SUV was sitting on top of the crossing, fouling the track. The engineer noticed that the same SUV began to back up, as if the driver had noticed the train's presence and prepared to clear for the train. The automobile was well within clearance of his train when the #2 (or west) gate lowered onto the automobile. When the train

was approximately 2 car lengths away from the crossing , the driver of the SUV pulled forward onto the main track, at which time the engineer initiated an emergency brake application.

The lead locomotive struck the middle of the SUV as the vehicle was moving across the highway-rail grade crossing and pushed it along the track in a northward direction until it came to a stop 1,930 feet beyond the point of impact. The driver of the SUV was ejected from the vehicle on impact.

Post-Accident Investigation

The driver of the SUV and its five occupants were fatally injured and pronounced dead at the scene of the accident. The Stanislaus County Coroner listed massive blunt force, traumatic, and cranio-cerebral injuries as the causes of death.

Post-accident inspections and tests performed on lead locomotive ATK 2011 revealed minor damage to the snow plow and a broken auxiliary light, The locomotive bell, horn, sanders, air brake apparatus, and operating lights were in working condition. The information from the locomotive's event recorder was downloaded and analyzed. The information indicated that the passenger train was traveling at 76 mph at the time of impact.

Shortly after the accident, employees of the BNSF signal department arrived on the scene and conducted operational tests to determine if the highway-rail grade crossing warning system functioned as intended. Post- accident testing indicated that the system was detecting the presence of trains and providing adequate warning time for motorist.

Analysis and Conclusions

Analysis

The driver was a 23-year old female. The other five occupants of the vehicle were two females, ages 40 and 19, and three male children, two 5-year olds and a 3-year old. The Stanislaus County Coroner performed a post-mortem test for alcohol on the driver. The results were negative.

Claribel Road is an east/west paved 24-foot wide road that crosses the BNSF single main line track at a near 90 degree angle. It has one traffic lane for each direction of vehicle traffic with a posted speed limit of 45 mph. The method of operation is by signal indication of a Traffic Control System (TCS). The warning system consists of two standard five-inch diameter signal masts located near the edge of the roadway on each side of the main track. Attached to each mast is a crossbuck, a 12-inch flashing light unit, an audible bell, and gate arm. A Safetran Grade Crossing Predictor (GCP 3000 D2) provides train detection on an approach circuit sufficient to allow at least twenty-five seconds warning time during train movements. Claribel Road's DOT/AAR Inventory Number is 028755B.

The active warning devices were tested by the BNSF signal department in the presence of a FRA Signal & Train Control inspector. The devices functioned as intended and were in full compliance with Federal regulations. Event information retrieved from the GCP 3000 D2 was downloaded and analyzed. The download revealed a warning time of 27 seconds.

The lead locomotive was equipped with a headlight, auxiliary lights, and the audible warning device. The ATK Road Foreman, who accompanied the train to destination in Oakland, stated that these devices functioned as intended and were in full compliance with Federal requirements.

The locomotive was also equipped with a speed indicator and an event recorder as required. The relevant event recorder data was downloaded by the mechanical department when the train arrived in Oakland. The analysis disclosed that the locomotive engineer was in compliance with all railroad operating and train handling requirements. FRA reviewed the results of this analysis and concurred with the conclusions.

Conclusions

The railroad was in compliance with their own and applicable Federal standards. A review of records relating to the inspection and maintenance of the signal system and grade crossing warning devices indicated they functioned as intended and provided adequate warning to the motorists. There were no mechanical defects on the equipment that would have contributed to the accident.

Probable Cause

FRA concludes the cause of the accident was the failure of the motor vehicle operator to yield the right of way to the approaching train.