Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2006-22

Burlington Northern Santa Fe (BNSF)
Granada, Colorado
April 13, 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-2006-22

1.Name of Railroad Operating Train #1: BNSF Rwy Co. [BNSF]	1a. Alphabetic Code: BNSF	1b. Railroad Accident/Incident No.: KS0406202
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: BNSF Rwy Co. [BNSF]	3a. Alphabetic Code: BNSF	3b. Railroad Accident/Incident No.: KS0406202
4. U.S. DOT_AAR Grade Crossing Identification Number: 003211G	5. Date of Accident/Incident: Month 04 / Day 13 / Year 2006	6. Time of Accident/Incident: 10:15: ☑ 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	Kansas

13. Nearest City/Town	14. Milepost (to nearest tenth)	15. State Abbr	15. State Code	16. County
Granada	487.4	N/A	CO	PROWERS

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
73 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
Single Main		4	9		4

OPERATING TRAIN #1

25. Type of Equipment Consist (single entry)	A. Spec. MoW Equip.	Code	26. Was Equipment Attended? 1. Yes 2. No	Code	27. Train Number/Symbol
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		1	1	1	BKCKS CO512

28. Speed (recorded speed, if available) R - Recorded E - Estimated 46 MPH Code R

29. Trailing Tons (gross tonnage, excluding power units): 2128

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): c, g, j, 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	1	N/A
(2) Causing (if mechanical cause reported)	N/A	N/A	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
(1) Total in Train	2	0	0	0	0
(2) Total Derailed	0	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	0	66	0	0
(2) Total Derailed	0	0	0	0	0

36. Equipment Damage This Consist	37. Track, Signal, Way, & Structure Damage	38. Primary Cause Code	39. Contributing Cause Code
500	0	M303	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	0	Hrs 8 Mi 10	Hrs 8 Mi 10

Casualties to:	46. Railroad Employees	47. Train Passengers	48. Other
Fatal	0	0	6
Nonfatal	N/A	0	1

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)	A. Spec. MoW Equip.	Code	53. Was Equipment Attended? 1. Yes 2. No	Code	54. Train Number/Symbol
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		N/A	N/A	N/A	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
N/A			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	N/A	N/A		N/A	N/A
(2) Causing (if mechanical cause reported)	0	N/A	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
N/A	N/A	N/A	N/A	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? 1. Yes 2. No — N/A

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

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

Highway User Involved

79. Type — Code: J
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)

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

81. Direction geographical) 1.North 2.South 3.East 4.West — Code: 1

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

86a. 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 — Code: 4

Rail Equipment Involved

83. Equipment — Code: 1
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)

84. Position of Car Unit in Train: 1

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

86b. Was there a hazardous materials release by 1. Highway User 2. Rail Equipment 3. Both 4. Neither — Code: 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)	07	08	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: 2
1. Yes 2. No 3. Unknown

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

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

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

93. Driver's Age: 15

94. Driver's Gender — Code: 1
1. Male 2. Female

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

96. Driver — Code: 4
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)

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

98. View of Track Obscured by (primary obstruction) — Code: 8
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

101. Casulties to Highway-Rail Crossing Users	Killed	Injured
	6	1

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

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

102. Highway Vehicle Property Damage (est. dollar damage): 10000

103. Total Number of Highway-Rail Crossing Users (include driver): 7

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

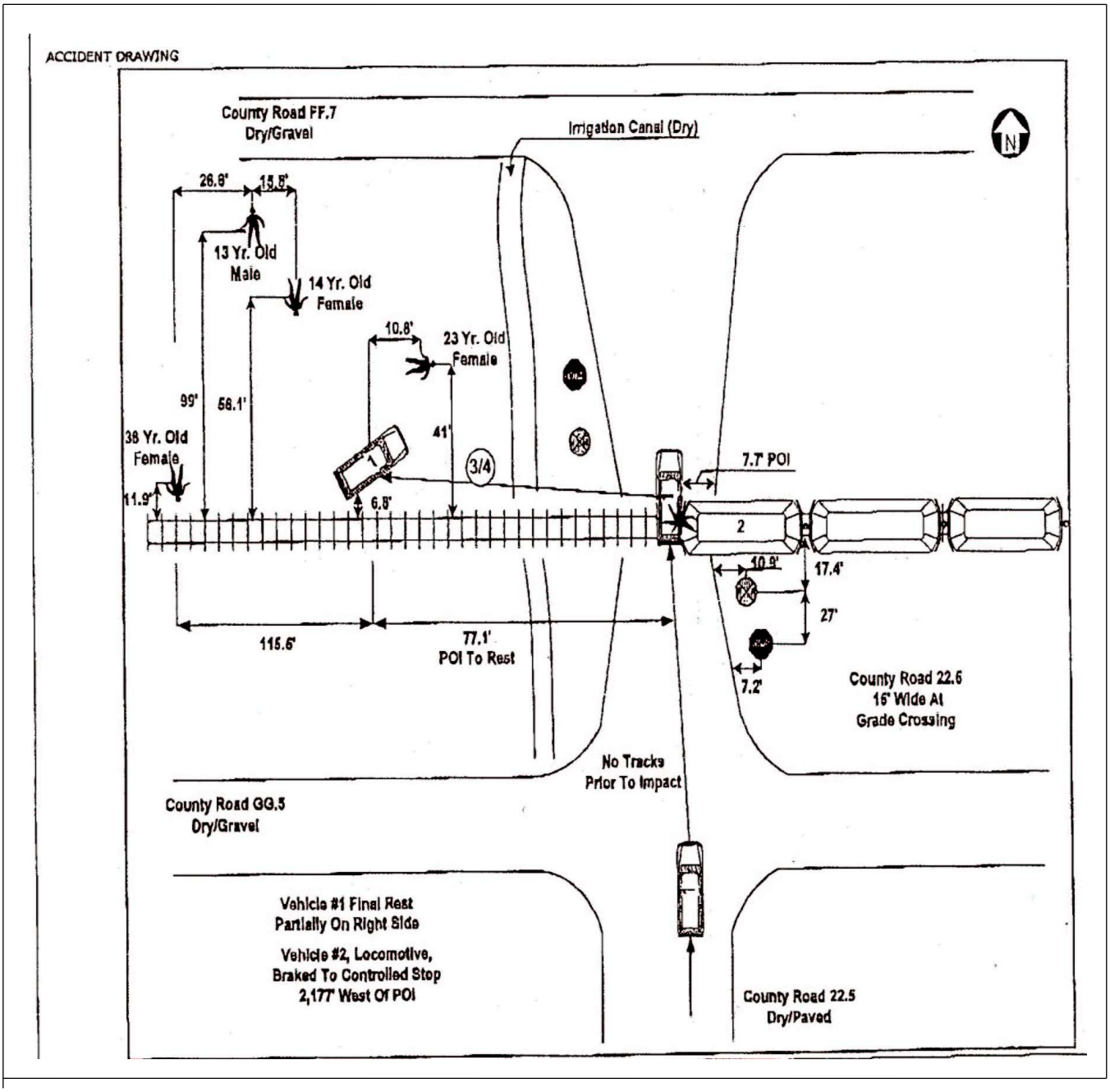
105. Locomotive Auxiliary Lights Operational? 1. Yes 2. No — Code: 1

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

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

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

HQ-2006-22 Sketch.jpg



109. SYNOPSIS OF THE ACCIDENT

A westbound BNSF Railway Company (BNSF) freight train collided with a 1999 Ford Explorer, a sport utility vehicle (SUV), at a highway-rail grade crossing on April 13, 2006, at 10:15 a.m., Mountain Daylight Time (MDT). The accident occurred near Granada, Colorado, at BNSF Milepost (MP) 487.4, on the BNSF Kansas Division, La Junta Subdivision.

Six passengers were killed. One occupant, the driver, survived. The SUV was completely destroyed. There were no injuries to the train crew. The leading locomotive sustained damage of about $500, and there was no derailment.

At the time of the accident, it was daylight and sunny with a westerly wind of about 10 mph. The temperature was 73 °F.

The accident was caused by failure of the motor vehicle driver to yield to the train. According to the Colorado Highway Patrol's investigating officer, the driver was in violation of and charged with 6 counts of Careless Driving Causing Death, under Colorado revised Statute 42-4-1402.

110. NARRATIVE

Circumstances Prior to the Accident

BNSF Train Symbol BKCKSC05-12A West included a locomotive engineer and a conductor. They first went on duty at 3:15 a.m., Central Daylight Time (CDT), April 13, 2006, at Newton, Kansas. This was the home terminal for both crew members, and both had received more than the required statutory off-duty period prior to reporting for duty.

Their assigned freight train consisted of 2 locomotives and 66 empty container cars. Articulated cars were used in the consist. Including the locomotives, the train was 6,431 feet long and weighed 2,128 tons. The train was en route to Los Angeles, California. It received a Class 1 air brake test by the BNSF mechanical forces at Newton and departed Newton at 4:35 a.m., CDT.

As westbound Train Symbol BKCKSC05-12A approached the accident site, the locomotive engineer was seated in the control compartment on the north side of the leading locomotive. The conductor was seated on the south side of the cab of the leading locomotive.

In this area, the railroad track is tangent in both directions from the crossing for at least 5 miles, with a .35 percent ascending grade. The area at the highway-rail grade crossing with County Road 22.5 is also tangent for over one-half mile heading up to the crossing from the south. Traveling north and south on this county road, the grade is practically level. The dirt road intersects the railroad track at a right angle. The crossing is of timber construction. The vehicle involved, a Sport Utility Vehicle (SUV), was a 1999 Ford Explorer, which was traveling north at a slow rate of speed. Along with the driver, the SUV carried six passengers.

The railroad timetable direction of the train was west. The geographic direction of travel was also west. Timetable directions are referenced throughout this report.

The Accident

Train BNSF BKCKSC05-12 West
The train was being operated at a recorded speed of 48 mph while approaching the accident area. The train crew's view of the crossing was not obstructed. Just prior to the collision, the engineer told the conductor to “hit the floor.” He did the same after making a controlled air brake application. The train had slowed to 46 mph when the collision occurred. Both speeds were recorded by the event recorder of the controlling locomotive. The maximum authorized speed for this train was 60 mph, as designated in the current BNSF timetable.

Highway Vehicle (1999 Ford Explorer, a sport utility vehicle (SUV))
The SUV was traveling north on County Road 22.5. According to the locomotive engineer, and an eye witness near the collision site, the driver slowed to almost a stop at the stop sign, then continued at a slow rate of speed onto the crossing. When he was half way across the track, he came to a complete stop and remained there until the collision. There is no posted speed limit sign in the area of the crash.

The train struck the right side of the SUV at the rear wheel and door. The SUV was pushed off to the northwest side of the track. It traveled for about 40 feet where it hit a ditch and was flung up into the air, traveling an additional 37.1 feet, coming to rest on the roof. The train came to a stop about 2,000 feet west of the point of impact at MP 487.82.

After the train stopped, the locomotive engineer applied an emergency brake application. He then reached up and hit the emergency button on the dispatcher radio to report the collision. The conductor exited the locomotive to get an estimated MP location and then walked back to the SUV to await arrival of emergency response

personnel. According to testimony obtained in an interview by the FRA with the conductor, he mentioned that as he walked toward the SUV, he heard loud music coming from the vehicle.

A Colorado State Highway Patrol Officer arrived at the scene at 10:34 a.m., MDT. The Grenada/Bristol Fire Department arrived at 10:30 a.m., MDT. When they first arrived on the scene, fire department personnel witnessed the driver exiting the vehicle. He was conscious and walking around. When they approached him, he became combative and refused to talk, but then let them administer first aid.

A BNSF track inspector was dispatched to the scene from Lamar, Colorado, and arrived at about 10:32 a.m., MDT. He evaluated the condition of the train and track structure. He saw that the head locomotive was moderately damaged with both auxiliary ditch lights broken. He looked for and found the crew walking toward the crossing. He helped secure the train so medical personnel could work. The train and crew did not require medical assistance and were released at 4:30 p.m., MDT. They continued their trip to Lamar, which is about 15 miles west of Granada. At Lamar, the train was moved to a back track and tied down. The crew was released from duty and headed toward their home terminal in Newton.

Responders then assessed the area and found four of the vehicle's occupants had been ejected. Three of the ejected occupants were presumed dead at the scene, which was confirmed by the Prowers County Coroner upon their arrival. One of the ejected occupants was still alive and was immediately transported, along with the driver, to Prowers Medical Center in Lamar, Colorado, and later airlifted to Denver Health and Medical Center in Denver, Colorado. The passenger soon died after arrival at Denver Health and Medical and was pronounced dead at 3:05 p.m., MDT that same day. The driver was wearing a seatbelt and remained in the vehicle during the collision. He then exited the vehicle and was found wandering around the collision site.

The emergency response crews also had to extricate two occupants from the vehicle. One was laying in the back seat area of the vehicle and the other was in the front passenger seat. The front passenger had to be cut out of the seat belt. They were both pronounced dead at the scene. The Prowers County Coroner made arrangements with the El Paso County Coroner's Office in Colorado Springs, Colorado, to transfer the bodies. El Paso County is contracted to handle autopsies for Prowers County.

The lead locomotive to Train Symbol BKCKSC05-12A West received $500.00 in damage, which included both auxiliary ditch lights being destroyed. The SUV was a total loss, with damages estimated at $10,000. There was no damage to the track structure or any warning devices in the area of the crossing. Total damage estimates were $10,500. There was no hazardous material involved and no evacuations necessary.

Analysis and Conclusions

Analysis

The driver was a 15-year-old male. The other six passengers of the SUV consisted of three males and three females ranging in age form 13 to 37 years old. The Colorado State Highway Patrol did not perform a toxicological test on the driver, because they did not feel drugs or alcohol were a contributing factor. The train crew was not tested.

The highway-rail grade crossing was equipped with crossbucks and stop signs. There was no advance warning sign posted. There is one leafless tree 435 foot east of the road and 78 feet south of the railroad tracks. According to the BNSF Line Segment Track Chart, the tree is on railroad property. BNSF owns and maintains the right-of-way for 100 feet on both sides of the track at this location. The tree was not a factor in the collision as it was located so far down the right-of-way. The railroad had a whistle post in place, 1,323 feet in advance of the crossing. According to testimony obtained in an interview by the FRA, the locomotive engineer began sounding the whistle at this location and continued in the required method up to and through the crossing. This was validated by analysis of the event recorder data.

The leading locomotive was equipped with a headlight, the auxiliary ditch lights, and the audible warning device required by Federal regulations. The locomotive engineer tested these devices at the accident site in the presence of the Colorado State Patrol, the trainmaster and the initial FRA inspector dispatched to the scene. Also witnessing and performing decibel level tests of the audible warning device was Kineticorp, contracted by the BNSF. The head light and the audible warning devise functioned as intended. The average decibel level of the audible warning device, measured by Kineticorp, was 105. This is well within the requirements of the Code of Federal regulations. The two auxiliary ditch lights were destroyed in the collision. All warning devices were retested in Lamar at 12 p.m., the next day on April 14, 2006, in the presence of an FRA Chief Inspector with experience in the motive power and equipment discipline. With the exception of the auxiliary ditch lights, the warning devices 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 trainmaster at the accident site and analyzed at the BNSF facility in Lamar. The analysis disclosed that the locomotive engineer was in compliance with all applicable railroad operating and train handling requirements. The FRA reviewed the analysis and concurred with the conclusions.

Conclusion

The railroad was in full compliance with their own and all applicable Federal standards. The train crew members and one bystander were the only witnesses to the accident. None of them had any information that could be used to determine why the automobile came to a stop on the crossing. Based on the little evidence available, the Colorado State Highway Patrol's investigating officer surmised that the inexperience and inattentiveness of the 15 year-old drive, who did not have a valid drivers license, were predominant factors. According to the BNSF track inspector, train crew, and the Colorado State Highway Patrol Officer, the vehicle's radio was on and the volume was very loud. Given the high volume of the radio, it is also surmised that the driver did not hear the train's audible warning as it approached.

Probable Cause and Contributing Factors

The Colorado Highway Patrol's investigating officer sited the driver with six counts of Careless Driving, Resulting in Death, under Colorado Revised Statute 42-4-1402. Causal factors include the driver's inexperience and the high volume of the car stereo.

The Federal Railroad Administration found that the accident occurred because the driver of the SUV failed to stop at the highway-rail crossing at grade, then came to a stop while on the railroad tracks.