Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2007-74

Burlington Northern Santa Fe
Winfield, MO
November 28, 2007

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

FRA FACTUAL RAILROAD ACCIDENT REPORT

FRA File # HQ-2007-74

1.Name of Railroad Operating Train #1: BNSF Rwy Co. [BNSF]	1a. Alphabetic Code: BNSF	1b. Railroad Accident/Incident No.: SF1107201
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.: SF1107201
5. U.S. DOT_AAR Grade Crossing Identification Number: 068762V	6. Date of Accident/Incident: Month 11 Day 28 Year 2007	7. Time of Accident/Incident: 01:20: ☐ 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	Springfield

14. Nearest City/Town	15. Milepost *(to nearest tenth)*	16. State Abbr	16. State Code	17. County
Winfield	56.74	N/A	MO	LINCOLN

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
61 F	2	2	2

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. West — Code
Single Main Track	4	69.2	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
1	1	CBKMSLC367

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?
44 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)*: 19326	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)*	BNSF6002	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): N

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	2	0	0	0	1
(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	135	0	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
$7,200.00	$45,000.00	M302	N/A

Number of Crew Members

41. Engineer/ Operators	42. Firemen	43. Conductors	44. Brakemen
1	0	1	0

Length of Time on Duty

45. Engineer/Operator	46. Conductor
Hrs 5 Mi 20	Hrs 5 Mi 20

Casualties to:	47. Railroad Employees	48. Train Passengers	49. Other
Fatal	0	0	0
Nonfatal	0	0	1

50. EOT Device? 1. Yes 2. No	51. Was EOT Device Properly Armed? 1. Yes 2. No
1	1

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?
N/A 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)* N/A

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)*	N/A	N/A	N/A
(2) Causing *(if mechanical cause reported)*	N/A	N/A	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
(1) Total in Train	N/A	N/A	N/A	N/A	N/A
(2) Total Derailed	N/A	N/A	N/A	N/A	N/A

63. Cars	Loaded a. Freight	Loaded b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Equipment Consist	N/A	N/A	N/A	N/A	N/A
(2) Total Derailed	N/A	N/A	N/A	N/A	N/A

64. Equipment Damage This Consist N/A

65. Track, Signal, Way, & Structure Damage N/A

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
N/A	N/A	N/A	N/A

Length of Time on Duty

72. Engineer/Operator Hrs N/A Mi N/A

73. Conductor Hrs N/A Mi N/A

Casualties to:	74. Railroad Employees	75. Train Passengers	76. Other
Fatal	N/A	N/A	N/A
Nonfatal	N/A	N/A	N/A

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 N/A

84. Trailing Tons *(gross tonnage, excluding power units)* N/A

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)*	N/A	N/A	N/A
(2) Causing *(if mechanical cause reported)*	N/A	N/A	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
(1) Total in Train	N/A	N/A	N/A	N/A	N/A
(2) Total Derailed	N/A	N/A	N/A	N/A	N/A

90. Cars	Loaded a. Freight	Loaded b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Equipment Consist	N/A	N/A	N/A	N/A	N/A
(2) Total Derailed	N/A	N/A	N/A	N/A	N/A

91. Equipment Damage This Consist N/A

92. Track, Signal, Way, & Structure Damage N/A

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
N/A	N/A	N/A	N/A

Length of Time on Duty

99. Engineer/Operator Hrs N/A Mi N/A

100. Conductor Hrs N/A Mi N/A

Casualties to:	101. Railroad Employees	102. Train	103. Other
Fatal	N/A	N/A	N/A
Nonfatal	N/A	N/A	N/A

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. Code C
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)*

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

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

Rail Equipment Involved

111. 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)*

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	N/A	114b. Was there a hazardous materials release 1. Highway User 2. Rail Equipment 3. Both 4. Neither	N/A

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 Ban 1. Yes 2. No 3. Unknown Code
Code(s)	07	08	N/A	N/A	N/A	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
	N/A		2		N/A

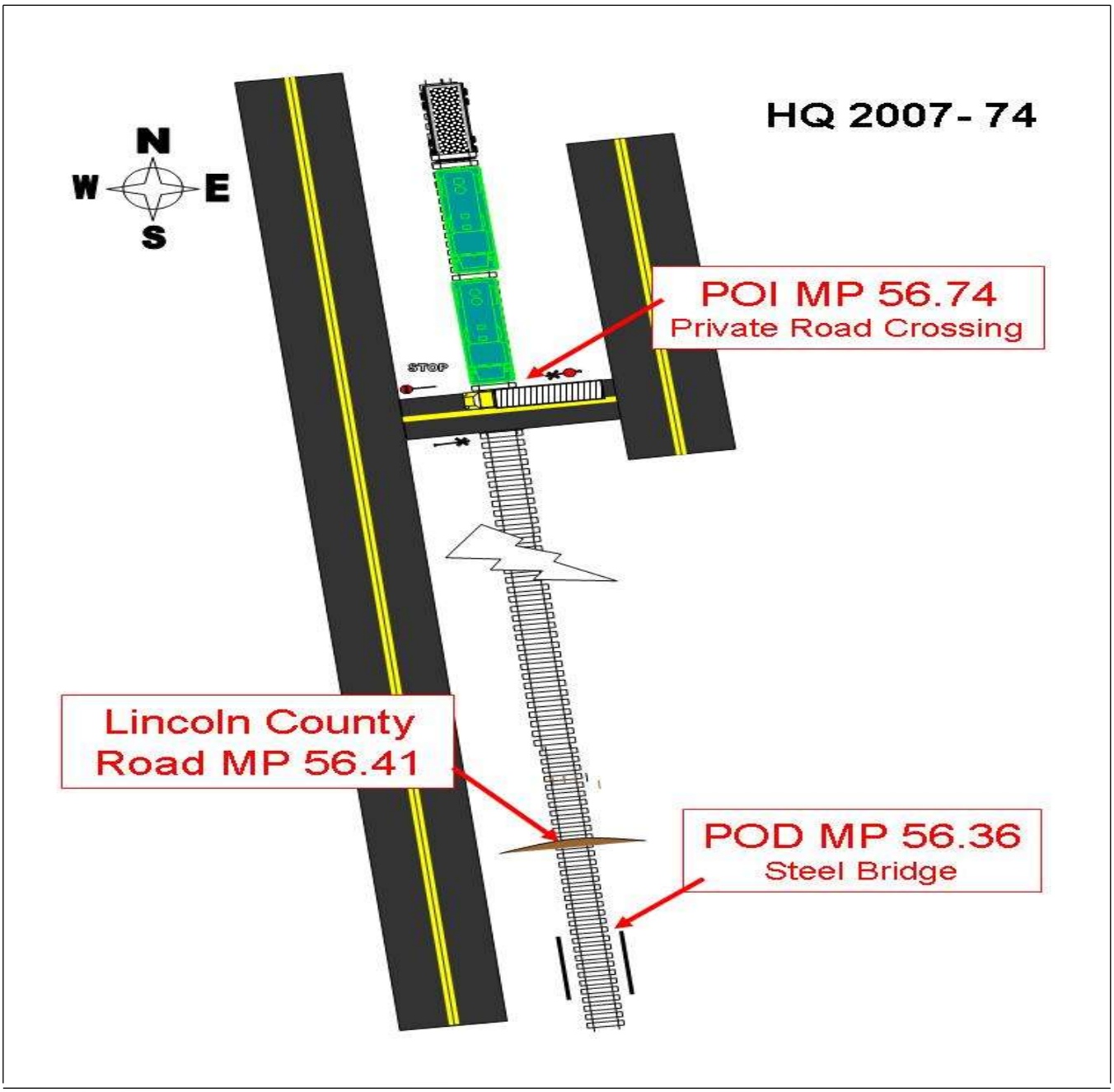
121. Age	122. Driver's Gender 1. Male 2. Female	Code	123. Driver Drove Behind or in Front of and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown	Code	124. Driver 1. Drove around or thru the Gate 2. Stopped and then Proceeded 3. Did not Stop 4. Stopped on Crossing 5. Other *(specify in narrative)*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

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
	N/A		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
				N/A		N/A
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)*	0

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

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



137. SYNOPSIS OF THE ACCIDENT

Westbound Burlington Northern Santa Fe Railway Company (BNSF) freight Train C-BKMSLC3-67 collided with an empty tractor-trailer at a private highway-rail grade crossing on November 28, 2007, at approximately 1:20 p.m. The accident occurred in Winfield, Missouri, at milepost 56.74, on the BNSF Hannibal Subdivision.

The tractor-trailer was struck in the passenger side directly behind the cab of the tractor and sustained major damage of approximately $10,000. The tractor-trailer operator survived the impact with severe injuries. There were no injuries to the train crew. The leading locomotive sustained minimal damages of about $7,200, and the two lead locomotives derailed. Toral track damages were approximately $45,000.

At the time of the accident it was daylight, overcast, and the temperature was 61 °F.

Probable Cause:

The accident was caused by failure of the tractor-trailer operator to yield the Right-of-Way to the oncoming freight train. According to the Missouri State Highway Patrol, the driver was in violation of the Missouri highway traffic laws for failure to yield to an oncoming train.

138. NARRATIVE

CIRCUMSTANCES PRIOR TO THE ACCIDENT

The crew of BNSF Freight Train C-BKMSLC3-67 consisted of a locomotive engineer and a conductor. They first went on duty at 8:00 a.m., CST, November 28, 2007, at the BNSF depot at West Quincy, Missouri. This is the home terminal for both crew members, a regular job assignment for both, and both received more than the required statutory off-duty rest period prior to reporting for duty.

The assigned freight train, consisting of 2 lead locomotives, 135 loaded coal hopper cars, and 1 rear distributive power (DPU) locomotive unit. It was scheduled to travel to St. Louis, Missouri, with no cars to be added or removed en route. The train had received a Class 1 air brake test inspection at Alliance, Nebraska, on November 22, 2007, prior to the outbound crew taking charge, and the necessary air slips were in possession of the train crew.

As the westbound train approached the accident site, the locomotive engineer was seated at the controls on the right side of the lead locomotive and the conductor was seated on the left side of the same locomotive.

The tractor-trailer was occupied by only the truck driver. He had previously proceeded geographically eastward from State Route 79 Highway across the railroad track with the empty tractor-trailer to pick up the paperwork needed for loading. He had obtained his paperwork and was proceeding back to the west side of the crossing to pick up his load. The route he was traveling to make his crossing caused him to be parallel to the track as he was being overtaken by the train proceeding on his right side. He made a broad right turn toward the track and was proceeding slowing up the slightly ascending grade road surface to the crossing.

In this area, the track is tangent for approximately 9 miles approaching the impact location. There is an ascending track grade of .03 percent between milepost (MP)56.95 and MP 56.3.

The railroad timetable direction of the train was west. The geographic direction was south. Timetable directions are used throughout this report for the train; however, geographic direction is applied to the tractor-

trailer, which was westbound.

THE ACCIDENT:

BNSF TRAIN C-BKMSLC3-67

BNSF TRAIN C-BKMSLC3-67 was operating at a speed of 44 mph approaching the accident area. The train crew's view of the crossing was unobstructed. The engineer and conductor stated they were approximately 300 feet in approach to the crossing when the truck operated into the path of the train. The engineer immediately initiated an emergency application of the train air brake system. The engineer had no time to decelerate the train when the collision occurred. Speeds were recorded by the event recorder of the controlling locomotive. The maximum authorized speed for the train was 60 mph, as designated in the current BNSF Timetable No. 6.

HIGHWAY VEHICLE:

The tractor-trailer, traveling at approximately 5 mph in the same direction as the approaching train, made a right turn directly in the path of the train, then continued pulling westward until the train impacted between the tractor cab and the trailer. After the impact, the cab of the tractor-trailer was sheered from the chassis and came to rest approximately 380 feet from the point of impact. The driver was ejected from the cab and was found southwest of, and near, the impact location. The train continued shoving the truck chassis and trailer approximately 2,050 feet until it impacted with a bridge, derailing the two lead locomotives.

After the train stopped, the locomotive engineer stayed on the lead locomotive to establish communications with the train dispatcher. The conductor walked back to the point of impact to investigate and determine the extent of damage due to the accident and render aid if possible. He returned to the lead locomotive after meeting with emergency responders.

A Missouri Highway Patrol officer arrived on the scene at 1:31 p.m. and emergency responders arrived at approximately the same time. After they coordinated the emergency response, the tractor-trailer operator was air lifted via Arch Ambulance Service to St. John's Mercy Medical Center in Creve Coeur, Missouri. The highway patrol officer then interviewed the train crew. There were no injuries to railroad personnel.

A BNSF Road Foreman of Engines was dispatched to the scene from West Quincy at 1:20 p.m., and arrived at approximately 2:30 p.m. He ascertained there was no hazardous materials involved and minimal damage to the lead locomotive. He interviewed the crew, discussed the situation with the highway patrol officer, and completed the railroad accident report. The train crew was then released at 5:52 p.m., due to emotional trauma.

ANALYSIS AND CONCLUSION:

ANALYSIS - TOXICOLOGICAL TESTING:

The train crew was not drug tested. The tractor-trailer operator was a 42-year-old male. He survived the accident; however, was in very critical condition. The Missouri Highway Patrol did not order toxicological testing. The clerk that provided his paperwork said the driver appeared alert.

CONCLUSION:

There was no evidence of the driver being intoxicated.

ANALYSIS - HIGHWAY-RAIL GRADE CROSSING:

The highway-rail grade crossing is equipped with crossbucks and a stop sign for westbound vehicular traffic. There are no advanced warning signs and no pavement markings at this crossing. The crossing surface consists of concrete panels and is in good condition. There are no highway traffic visibility obstructions.

CONCLUSION:

The crossing is in good condition; the crossbucks and stop sign clearly visible.

ANALYSIS - LOCOMOTIVE SAFETY DEVICES:

The lead locomotive was equipped with a headlight, auxiliary lights, and the audible warning device required by Federal regulations. These devices were tested in the presence of the road foreman of engines and functioned as intended. The devices were in full compliance with Federal requirements.

CONCLUSION:

The locomotive safety devices were in full compliance with Federal requirements.

ANALYSIS - LOCOMOTIVE ENGINEER OPERATING PERFORMANCE:

The locomotive was equipped with a speed indicator, onboard camera, and event recorder. The relevant event recorder data was downloaded by the road foreman of engines at the accident site and analyzed. The railroad has a whistle post in place about 1,362 feet east of the crossing. Both train crew members stated the locomotive engineer began sounding the whistle when the train neared the whistle post. This was later validated by analysis of the event recorder data and replay of the onboard camera recording. A witness who was also interviewed, stated he heard the train whistle being sounded.

CONCLUSION:

The analysis disclosed that the locomotive engineer was in compliance with all applicable railroad operating and train handling requirements.

ANALYSIS: - FATIGUE

FRA obtained fatigue related information, for the 10-day period preceding this incident including the 10-day work history (on duty/off duty cycles) for all of the employees involved.

CONCLUSION:

Upon analysis of that information FRA concluded fatigue was not probable for any of the employees.

PROBABLE CAUSE & CONTRIBUTING FACTORS:

The accident occurred because the driver of the tractor-trailer failed to clear the highway-rail grade crossing and yield the Righ-of-Way to the oncoming freight train . Driver inattention may have been a contributing factor.