



***Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2008-06***

***Burlington Northern Santa Fe (BNSF)
Augusta, KS
January 12, 2008***

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.

1. Name of Railroad Operating Train #1 BNSF Rwy Co. [BNSF]		1a. Alphabetic Code BNSF		1b. Railroad Accident/Incident No. KS0108102		
2. Name of Railroad Operating Train #2 BNSF Rwy Co. [BNSF]		2a. Alphabetic Code BNSF		2b. Railroad Accident/Incident No. KS0108102		
3. Name of Railroad Operating Train #3 BNSF Rwy Co. [BNSF]		3a. Alphabetic Code BNSF		3b. Railroad Accident/Incident No. KS0108102		
4. Name of Railroad Responsible for Track Maintenance: BNSF Rwy Co. [BNSF]		4a. Alphabetic Code BNSF		4b. Railroad Accident/Incident No. KS0108102		
5. U.S. DOT_AAR Grade Crossing Identification Number		6. Date of Accident/Incident Month 01 Day 12 Year 2008		7. Time of Accident/Incident 05:40: <input checked="" type="checkbox"/> AM <input type="checkbox"/> PM		
8. Type of Accident/Incident (single entry in code box)						
1. Derailment		4. Side collision		7. Hwy-rail crossing		
2. Head on collision		5. Raking collision		10. Explosion-detonation		
3. Rear end collision		6. Broken Train collision		11. Fire/violent rupture		
		9. Obstruction		12. Other impacts		
				13. Other (describe in narrative) Code 03		
9. Cars Carrying HAZMAT 9		10. HAZMAT Cars Damaged/Derailed 1		11. Cars Releasing HAZMAT 0		
				12. People Evacuated 0		
				13. Division Kansas		
14. Nearest City/Town Augusta		15. Milepost (to nearest tenth) 183.4		16. State Abbr Code N/A KS		
				17. County BUTLER		
18. Temperature (F) (specify if minus) 30 F		19. Visibility (single entry) Code 1. Dawn 3. Dusk 2. Day 4. Dark 4		20. Weather (single entry) Code 1. Clear 3. Rain 5. Sleet 2. Cloudy 4. Fog 6. Snow 1		
				21. Type of Track Code 1. Main 3. Siding 2. Yard 4. Industry 1		
22. Track Name/Number Double Main Track		23. FRA Track Code Class (1-9, X) 5		24. Annual Track Density (gross tons in millions) 60.79		
				25. Time Table Direction Code 1. North 3. East 2. South 4. West 4		
OPERATING TRAIN #1						
26. Type of Equipment Consist (single entry)		1. Freight train 4. Work train 7. Yard/switching 2. Passenger train 5. Single car 8. Light loco(s). 3. Commuter train 6. Cut of cars 9. Maint./inspect.car		27. Was Equipment Attended? Code 1. Yes 2. No 1		
				28. Train Number/Symbol GEDYDHT510		
29. Speed (recorded speed, if available) Code R - Recorded E - Estimated 52 MPH R		30. Trailing Tons (gross tonnage, excluding power units) 13121			31. Method(s) of Operation (enter code(s) that apply) a. ATCS g. Automatic block m. Special instructions b. Auto train control h. Current of traffic n. Other than main track c. Auto train stop i. Time table/train orders o. Positive train control d. Cab j. Track warrant control p. Other (Specify in narrative) e. Traffic k. Direct traffic control Code(s) f. Interlocking l. Yard limits g h N/A N/A N/A	
					31a. 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	
32. Principal Car/Unit		a. Initial and Number (1) First involved (derailed, struck, etc) BNSF4709		b. Position in Train 1		
		c. Loaded (yes/no) N/A		33. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box. Alcohol 0 Drugs 0		
(2) Causing (if mechanical cause reported)		0		0		
		N/A		34. Was this consist transporting passengers? (Y/N) N		
35. Locomotive Units		a. Head End		Mid Train		
		b. Manual		c. Remote		
		d. Manual		c. Remote		
(1) Total in Train		2		0 0 0 1		
(2) Total Derailed		2		0 0 0 0		
36. Cars		a. Freight		b. Pass.		
		c. Freight		d. Pass.		
		e. Caboose				
(1) Total in Equipment Consist		96		0 0 0 0		
(2) Total Derailed		28		0 0 0 0		
37. Equipment Damage		38. Track, Signal, Way, & Structure Damage \$2,977,421.00 \$505,870.00		39. Primary Cause Code H221		
This Consist				40. Contributing Cause Code N/A		
Number of Crew Members			Length of Time on Duty			
41. Engineer/Operators 1		42. Firemen 0		43. Conductors 1		
		44. Brakemen 0		45. Engineer/Operator Hrs 8 Mi 50		
				46. Conductor Hrs 8 Mi 50		
Casualties to:		47. Railroad Employees		48. Train Passengers		
Fatal		0		0		
Nonfatal		1		0		
				49. Other 0		
				50. EOT Device? 1. Yes 2. No 1		
				51. Was EOT Device Properly Armed? 1. Yes 2. No 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 4. Work train 7. Yard/switching 2. Passenger train 5. Single car 8. Light loco(s). 3. Commuter train 6. Cut of cars 9. Maint./inspect.car		A. Spec. MoW Equip. Code 1		
				54. Was Equipment Attended? Code 1. Yes 2. No 1		
				55. Train Number/Symbol ZKCKSBD112		
56. Speed (recorded speed, if available) Code R - Recorded E - Estimated 0 MPH R		57. Method(s) of Operation (enter code(s) that apply) a. ATCS g. Automatic block m. Special instructions b. Auto train control h. Current of traffic n. Other than main track			58a. Remotely Controlled Locomotive? 0 = Not a remotely controlled 1 = Remote control portable	

57. Trailing Tons (gross tonnage, excluding power units)	4074	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				
				g	h	N/A	N/A	N/A	0

59. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded(yes/no)	60. 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)	TTRX370571	33	yes		0	0
(2) Causing (if mechanical cause reported)	0	0	N/A	61. Was this consist transporting passengers? (Y/N)	N	

62. Locomotive Units	a. Head End	Mid Train	Rear End	63. Cars	Loaded	Empty	e. Caboose	
		b. Manual	c. Remote		a. Freight	b. Pass.	c. Freight	d. Pass.
(1) Total in Train	4	0	0	0	0	0	0	0
(2) Total Derailed	0	0	0	0	2	0	0	0

64. Equipment Damage This Consist	\$206,580.00	65. Track, Signal, Way, & Structure Damage	\$0.00	66. Primary Cause Code	H221	67. Contributing Cause Code	N/A
Number of Crew Members				Length of Time on Duty			

68. Engineer/Operators	69. Firemen	70. Conductors	71. Brakemen	72. Engineer/Operator	73. Conductor
1	0	1	0	Hrs 6 Mi 40	Hrs 6 Mi 40

Casualties to:	74. Railroad Employees	75. Train Passengers	76. Other	77. EOT Device?	78. Was EOT Device Properly Armed?
Fatal	0	0	0	1. Yes 2. No 1	1. Yes 2. No 1
Nonfatal	0	0	0	79. Caboose Occupied by Crew?	1. Yes 2. No N/A

OPERATING TRAIN #3

80. Type of Equipment Consist (single entry)	1. Freight train	4. Work train	7. Yard/switching	A. Spec. MoW Equip.	Code	81. Was Equipment Attended?	Code	82. Train Number/Symbol
	2. Passenger train	5. Single car	8. Light loco(s).		1	1. Yes 2. No 1	1	ZRICCHI109
	3. Commuter train	6. Cut of cars	9. Maint./inspect.car					

83. Speed (recorded speed, if available)	Code	85. Method(s) of Operation (enter code(s) that apply)	85a. Remotely Controlled Locomotive?
R - Recorded		a. ATCS	0 = Not a remotely controlled
E - Estimated	MPH 53	b. Auto train control	1 = Remote control portable
84. Trailing Tons (gross tonnage, excluding power units)	5225	c. Auto train stop	2 = Remote control tower
		d. Cab	3 = Remote control transmitter - more than one remote control transmitter
		e. Traffic	0
		f. Interlocking	

86. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded(yes/no)	87. 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)	DTTX728206	6	yes		0	0
(2) Causing (if mechanical cause reported)	0	0	N/A	88. Was this consist transporting passengers? (Y/N)	N	

89. Locomotive Units	a. Head End	Mid Train	Rear End	90. Cars	Loaded	Empty	e. Caboose	
		b. Manual	c. Remote		a. Freight	b. Pass.	c. Freight	d. Pass.
(1) Total in Train	2	0	0	0	71	0	0	0
(2) Total Derailed	0	0	0	0	10	0	0	0

91. Equipment Damage This Consist	\$1,305,678.	92. Track, Signal, Way, & Structure Damage	\$0.00	93. Primary Cause Code	H221	94. Contributing Cause Code	N/A
Number of Crew Members				Length of Time on Duty			

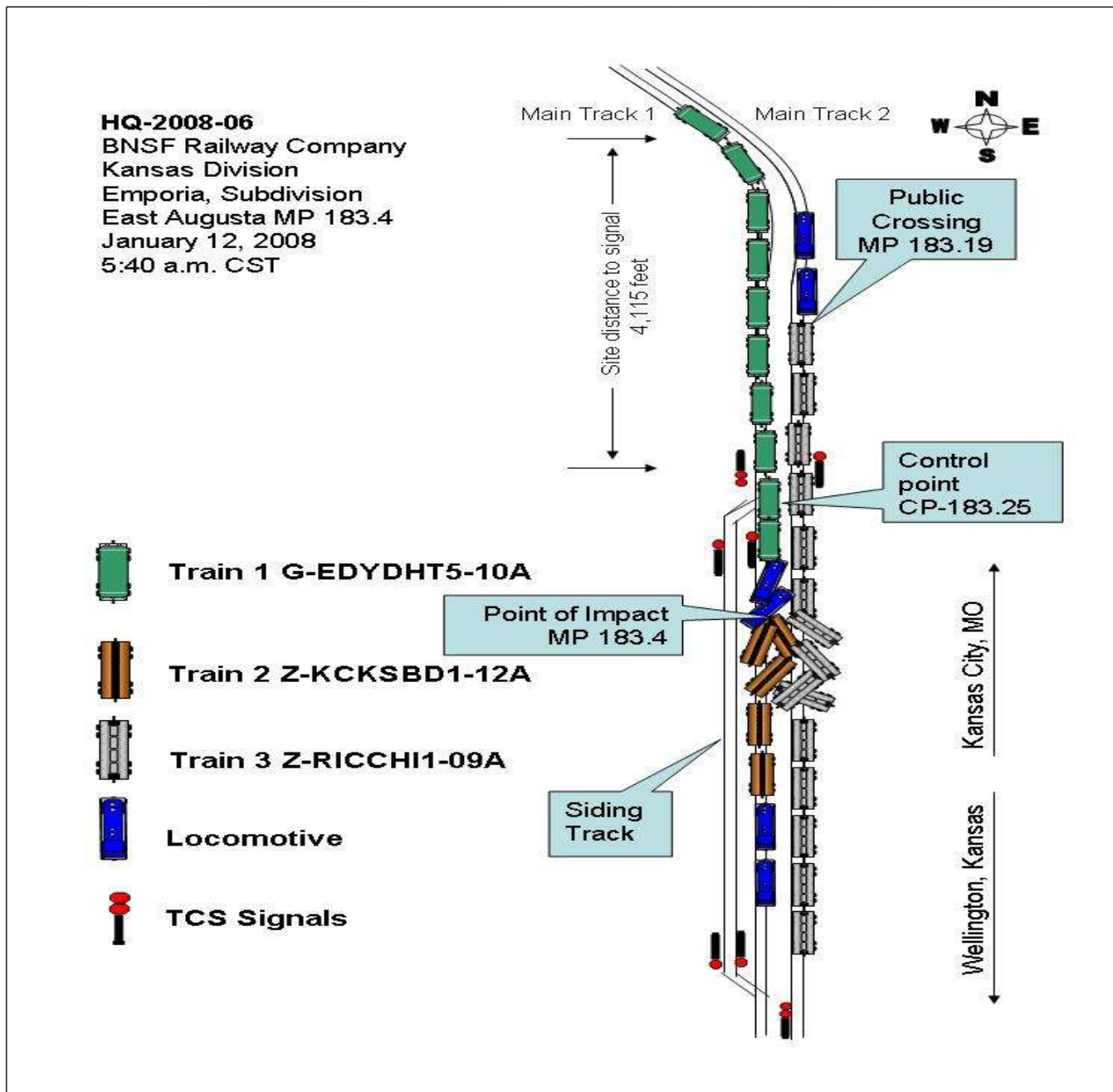
95. Engineer/Operators	96. Firemen	97. Conductors	98. Brakemen	99. Engineer/Operator	100. Conductor
1	0	1	0	Hrs 3 Mi 55	Hrs 3 Mi 55

Casualties to:	101. Railroad Employees	102. Train	103. Other	104. EOT	105. Was EOT Device Properly
Fatal	0	0	0	1. Yes 2. No 1	1. Yes 2. No 1
Nonfatal	0	0	0	106. Caboose Occupied by Crew?	1. Yes 2. No N/A

Highway User Involved				Rail Equipment Involved			
107. C. Truck-Trailer. F. Bus J. Other Motor Vehicle Code	A. Auto D. Pick-Up Truck G. School Bus K. Pedestrian	B. Truck E. Van H. Motorcycle M. Other (spec. in narrative) N/A		111. Equipment	3. Train (standing)	6. Light Loco(s) (moving)	Code
108. Vehicle Speed (est. MPH at impact)	N/A	109. geographical Code		1. Train(units pulling)	4. Car(s)(moving)	7. Light(s) (standing)	N/A
		1. North 2. South 3. East 4. West N/A		2. Train(units pushing)	5. Car(s)(standing)	8. Other (specify in narrative)	
				112. Position of Car Unit in	N/A		

110. Position 1. Stalled on Crossing 2. Stopped on Crossing 3. Moving Over Crossing 4. Trapped				Code N/A	113. Circumstance 1. Rail Equipment Struck Highway User 2. Rail Equipment Struck by Highway User				Code N/A		
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				Code N/A	114b. Was there a hazardous materials release 1. Highway User 2. Rail Equipment 3. Both 4. Neither				Code N/A		
114c. State here the name and quantity of the hazardous materials released, if any. N/A											
115. Type Crossing 1. Gates 2. Cantilever FLS 3. Standard FLS 4. Wig Wags 5. Hwy. traffic signals 6. Audible Warning 7. Crossbucks 8. Stop signs 9. Watchman 10. Flagged by crew 11. Other (spec. in narr.) 12. None				Code N/A	116. Signaled Crossing (See instructions for codes)				Code N/A	117. Whistle 1. Yes 2. No 3. Unknown	
Code(s)				N/A	N/A	N/A	N/A	N/A	N/A	N/A	
118. Location of Warning 1. Both Sides 2. Side of Vehicle Approach 3. Opposite Side of Vehicle Approach				Code N/A	119. Crossing Warning with Highway Signals 1. Yes 2. No 3. Unknown				Code N/A	120. Crossing Illuminated by Street Lights or Special Lights 1. Yes 2. No 3. Unknown	
121. Age N/A		122. Driver's Gender 1. Male 2. Female		Code N/A	123. Driver Drove Behind or in Front of and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown				Code N/A	124. Driver 1. Drove around or thru the Gate 2. Stopped and then Proceeded 3. Did not Stop	
125. Driver Passed Highway Vehicle 1. Yes 2. No 3. Unknown				Code N/A	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		
Casualties to:			Killed	Injured	127. Driver 1. Killed 2. Injured 3. Uninjured				Code N/A	128. Was Driver in the Vehicle? 1. Yes 2. No	
129. Highway-Rail Crossing Users			N/A	N/A	130. Highway Vehicle Property Damage (est. dollar damage)				N/A	131. Total Number of Highway-Rail Crossing Users (include driver)	
132. Locomotive Auxiliary Lights? 1. Yes 2. No				Code N/A	133. Locomotive Auxiliary Lights Operational? 1. Yes 2. No				Code N/A		
134. Locomotive Headlight Illuminated? 1. Yes 2. No				Code N/A	135. Locomotive Audible Warning Sounded? 1. Yes 2. No				Code N/A		

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



137. SYNOPSIS OF THE ACCIDENT

On January 12, 2008, at 5:40 a.m. CST, westbound Burlington Northern Santa Fe Railway Company (BNSF) freight Train G-EDYDHT5-10 collided with the rear end of westbound BNSF freight Train Z-KCKSBD1-12, which subsequently resulted in the derailment of eastbound BNSF freight Train Symbol Z-RICCH1-09. The accident occurred on the east edge of Augusta, Kansas at BNSF Milepost 183.4 on the BNSF Emporia Subdivision.

Two locomotives and 40 cars were derailed and destroyed. One crewmember sustained non life-threatening injuries. No hazardous materials were released. Damages to equipment were \$4,489,679; track and signal damages were \$505,870.

At the time of the accident it was dark and the weather was clear. The temperature was 30 °F.

The accident was caused by the failure of westbound BNSF Freight Train G-EDYDHT5-10 to stop at a signal displaying a stop indication at BNSF Milepost (MP) 183.25.

138. NARRATIVE

CIRCUMSTANCES PRIOR TO THE ACCIDENT

BNSF FREIGHT TRAIN G-EDYDHT5-10

The crew of Train G-EDYDHT5-10 consisted of a locomotive engineer and a conductor. The crew first went on duty at 8:50 p.m. CST, on January 11, 2008, at BNSF Argentine Yard in Kansas City, Kansas. This is the home terminal for both crewmembers, and they both received more than the required statutory off-duty rest period prior to reporting for duty.

The train consisted of two locomotives on the head end and one distributed power locomotive (DPU) on the rear end of the train. The train consisted of 96 loaded grain hopper rail cars and no empties. It was 5,096 feet in length and weighed 3,121 tons. The train was scheduled to travel to Dalhart, Texas. The train received a Class 1 train air brake test at the initial terminal in Eddyville, Iowa, by mechanical yard employees and engine crew assigned to the train.

As westbound BNSF Train GEDYDHT5-10 approached the accident site, the locomotive engineer was seated at the controls on the west side of the lead locomotive. The conductor was seated on the east side of the same locomotive.

Approximately 1 mile from the accident site there is a 1-degree 44-minute, right-hand curve. Sight distance to the signal at MP 183.25 is 4,115 feet. There was a sight distance of approximately 4,600 feet to the rear end marker of westward BNSF Train Z-KCKSBD1-12 stopped ahead. The grade is practically level.

The railroad timetable direction of the train was west. The geographic direction was south. Timetable directions are used throughout this report.

BNSF FREIGHT TRAIN Z-KCKSBD1-12:

The crew of BNSF Train Z-KCKSBD1-12 consisted of a locomotive engineer and a conductor. They first went on duty at 11:00 p.m. CST, on January 11, 2008, at BNSF Argentine Yard in Kansas City, Kansas. This is the home terminal for both crewmembers, and they both received more than the required statutory off-duty rest period prior to reporting for duty.

The train consisted of four locomotives on the head end, 59 loads (including 9 hazardous materials cars), and no empty rail cars. It was 5,105 feet in length and weighed 4,074 tons. The train was scheduled to travel to San Bernardino, California. The train received a Class 1 train air brake test at the initial terminal in Kansas City, Kansas, by BNSF mechanical personnel.

The train was stopped waiting for a proceed signal indication granting authority for westbound movement. Seconds prior to impact the engineer had released the train air brakes after receiving the signal indication to proceed.

BNSF TRAIN Z-RICCHI1-09:

The crew of BNSF Train Z-RICCHI1-09 consisted of a locomotive engineer and a conductor. They first went on duty at 1:40 a.m. CST, on January 12, 2008, at BNSF Wellington Yard in Wellington, Kansas. This is the away from home terminal for both crewmembers, and they both received more than the required statutory off-duty rest period prior to reporting for duty.

The train consisted of two locomotives on the head end, 71 loads and no empty rail cars. It was 6,606 feet in length and weighed 5,225 tons. The train received a Class 1 train air brake test at the initial terminal of Richmond, California, by BNSF mechanical personnel.

As eastbound BNSF Train Z-RICCHI1-09 approached the accident site, the engineer was seated at the controls on the east side of the locomotive and the conductor was seated on the west side of the locomotive.

Approaching the accident site, the track is tangent and grade is level for a distance of 2 miles. Approximately 1 mile prior to the accident site, the train was operating at an estimated speed of 53 mph. A few seconds after eastward BNSF Train Z-RICCHI1-09 passed the rear end of standing BNSF Train Z-KCKSBD1-12, it met the head end of westward BNSF Train G-EDYDHT5-10.

THE ACCIDENT

BNSF TRAIN G-EDYDHT5-10:

BNSF Train G-EDYDHT5-10 was being operated at 53 mph on Main Track No. 1 approaching the accident area. The crew's view of the signal at MP 183.25 and the rear of the train ahead at MP 183.4, was unobstructed. The engineer stated that he did not know how far he was from the red signal when he initiated an emergency application of the train air brake system. He did this after the conductor asked him if the red signal they saw was intended for them. The train had slowed to 52 mph at impact. Both speeds were recorded by the event recorder of the trailing locomotive and the DPU in the consist of the train. The event recorder in the lead locomotive was destroyed by fire following the collision. The maximum authorized speed for this train was 55 mph, as listed in the current BNSF Timetable No. 7.

The collision resulted in the derailment of the two head-end locomotives and 28 loaded cars in the consist.

BNSF FREIGHT TRAIN Z-KCKSBD1-12:

BNSF Train Z-KCKSBD1-12 was stopped short of the highway/rail grade crossing at MP 184.64 with the rear of the train located at MP 183.4. The signal changed from an approach indication to a proceed indication prior to impact and the engineer had just released the air brakes prior to impact. The engineer stated he felt the train rolling backwards and thought it was the slack rolling out. At that time, the train went into emergency. The maximum authorized speed for this train was 70 mph.

The conductor of BNSF Train Z-KCKSBD1-12 changed radio channels and heard a radio transmission from the crew of BNSF Train Z-RICCHI1-09 stating that the crew of BNSF Train G-EDYDHT5-10 was trapped inside their lead locomotive and it was on fire. The conductor on BNSF Train Z-KCKSBD1-12 walked to the

rear of his train to render aid. When he arrived, the conductor of BNSF Train G-EDYDHT5-10 was at the accident site. He informed the conductor of BNSF Train Z-KCKSBD1-12 that his engineer was at the highway-rail grade crossing located at MP 183.19 waiting for emergency medical personnel.

The collision derailed two loaded cars in this consist. One of the derailed car was carrying hazardous materials; there was no release of product.

BNSF TRAIN Z-RICCH1-09:

Eastward BNSF Train Z-RICCH1-09 was operating on Main Track No. 2 at an estimated speed of 53 mph. The maximum authorized speed for trains in this location is 70 mph. After passing the lead locomotive of BNSF Freight Train G-EDYDHT5-10 at MP 183.2, the engineer realized the impact of BNSF Freight Train G-EDYDHT5-10 with BNSF Freight Train Z-KCKSBD1-12 was imminent. The conductor transmitted an emergency warning over the radio. A few seconds later, they experienced an undesired emergency application of the train air brakes. After the train stopped, the conductor walked back to the collision site of BNSF Freight Train G-EDYDHT5-10 and BNSF Freight Train Z-KCKSBD1-12 to render aid. Emergency vehicles and personnel were onsite when he arrived.

The initial collision resulted in the subsequent derailment of 10 loaded freight cars in the consist.

ANALYSIS AND CONCLUSION:

ANALYSIS - EVALUATION AND TESTING OF EQUIPMENT INVOLVED:

Testing was conducted on signals involved in the accident by BNSF signal personnel. All signal indications were verified as well as the train speed. Locomotive and train inspection records were provided by the BNSF Officials. All required inspections were performed on all equipment involved in the accident.

A re-enactment of the incident was performed using a westbound BNSF train on January 13, 2008. The re-enactment revealed all equipment, including signals, worked as intended. Signal previews were determined for three signals prior to, and including, the signal located at MP 183.25.

CONCLUSION:

Signal and equipment failure was not a causal factor.

ANALYSIS - TOXICOLOGICAL TESTING:

FRA post-accident toxicological testing per rule 49 CFR 219 was performed for the train crew members of the three trains involved. All test results were negative.

CONCLUSION:

Drugs and alcohol were not causal factors.

ANALYSIS:

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:

The analysis of that information led the FRA to conclude that one or more of the employees may have been working at a diminished level of safety (effectiveness) due to mental and/or physical attributes associated with fatigue, which may have contributed to the cause of the accident.

OVERALL CONCLUSION:

The railroad was in compliance with their own rules and all applicable Federal Regulations. The train crew of

BNSF Freight Train G-EDYDHT5-10 was not in compliance with Code of Federal Regulations (CFR) Sections 240.305(a)(1) and (2). The train was operated past a stop signal indication that required a complete stop before passing it. The train crew also operated the train at a speed which exceeded the maximum authorized limit by at least 10 mph. These violations of Title 49 CFR Section 240.305 resulted in the rear end collision of BNSF Freight Train G-EDYDHT5-10 with BNSF Freight Train Z-KCKSBD1-12, and the subsequent derailment of BNSF Freight Train Z-RICCH1-09.

PROBABLE CAUSE AND CONTRIBUTING FACTORS:

The cause of the accident was the failure of the crew of BNSF Freight Train G-EDYDHT5-10 to stop prior to passing the signal located at MP 183.25, and, the loss of situational awareness as stated by the engineer in the FRA interview. The crew passed this stop signal at approximately 53 mph and collided with the rear end of BNSF Freight Train Z-KCKSBD1-12 at 52 mph.

Based on the above described fatigue analysis of the locomotive engineer and conductor of BNSF Freight Train G-EDYDHT5-10, there is potential for fatigue being considered as a contributing factor in the accident. Based on the above analysis there is potential for fatigue being present in the crewmembers of BNSF Freight Train Z-KCKSBD1-12; however, it did not contribute to the accident because they were stopped at the time of the accident.