Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2007-30

Burlington Northern Santa Fe (BNSF)
Denver, Colorado
May 23, 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-2007-30

1.Name of Railroad Operating Train #1: BNSF Rwy Co. [BNSF]	1a. Alphabetic Code: BNSF	1b. Railroad Accident/Incident No.: CO0507110
2.Name of Railroad Operating Train #2: BNSF Rwy Co. [BNSF]	2a. Alphabetic Code: BNSF	2b. Railroad Accident/Incident No.: CO0507110
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.: CO0507110
5. U.S. DOT_AAR Grade Crossing Identification Number:	6. Date of Accident/Incident: Month 05 | Day 23 | Year 2007	7. Time of Accident/Incident: 03:40: ☑ 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: 12

9. Cars Carrying HAZMAT	10. HAZMAT Cars Damaged/Derailed	11. Cars Releasing HAZMAT	12. People Evacuated	13. Division
37	1	1	20	Colorado

14. Nearest City/Town	15. Milepost (to nearest tenth)	16. State Abbr	16. State Code	17. County
Denver	N/A	N/A	CO	DENVER

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
45 F	4	1	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. — Code
Track No 144	1	N/A	3

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
6	2	YDEN318222

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

32. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded (yes/no)
(1) First involved (derailed, struck, etc)	CORX5061	3	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
0	0

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	0	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	34	0	0	0	0
(2) Total Derailed	3	0	0	0	0

37. Equipment Damage This Consist	38. Track, Signal, Way, & Structure Damage	39. Primary Cause Code	40. Contributing Cause Code
197065	202086	H021	H199

Number of Crew Members

41. Engineer/ Operators	42. Firemen	43. Conductors	44. Brakemen
2	0	0	0

Length of Time on Duty

45. Engineer/Operator	46. Conductor
Hrs 4 Mi 41	Hrs 0 Mi 0

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

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
7	1	YDEN303122

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 — R	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 | N/A | N/A | N/A | N/A

2 = Remote control tower
3 = Remote control transmitter - more than one remote control transmitter: 0

59. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded (yes/no)
(1) First involved (derailed, struck, etc)	BNSF2505	1	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
0	0

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

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	2	0	0	0	0
(2) Total Derailed	2	0	0	0	0

63. Cars	Loaded a. Freight	Loaded b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Equipment Consist	56	0	6	0	0
(2) Total Derailed	1	0	0	0	0

64. Equipment Damage This Consist: 273484

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

66. Primary Cause Code: H021

67. Contributing Cause Code: H199

Number of Crew Members

68. Engineer/ Operators	69. Firemen	70. Conductors	71. Brakemen
1	0	0	2

Length of Time on Duty

72. Engineer/Operator: Hrs 4 Mi 40

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: 2

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. 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: N/A

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

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

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: N/A

112. Position of Car Unit in: N/A

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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 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) N/A N/A 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	Code N/A

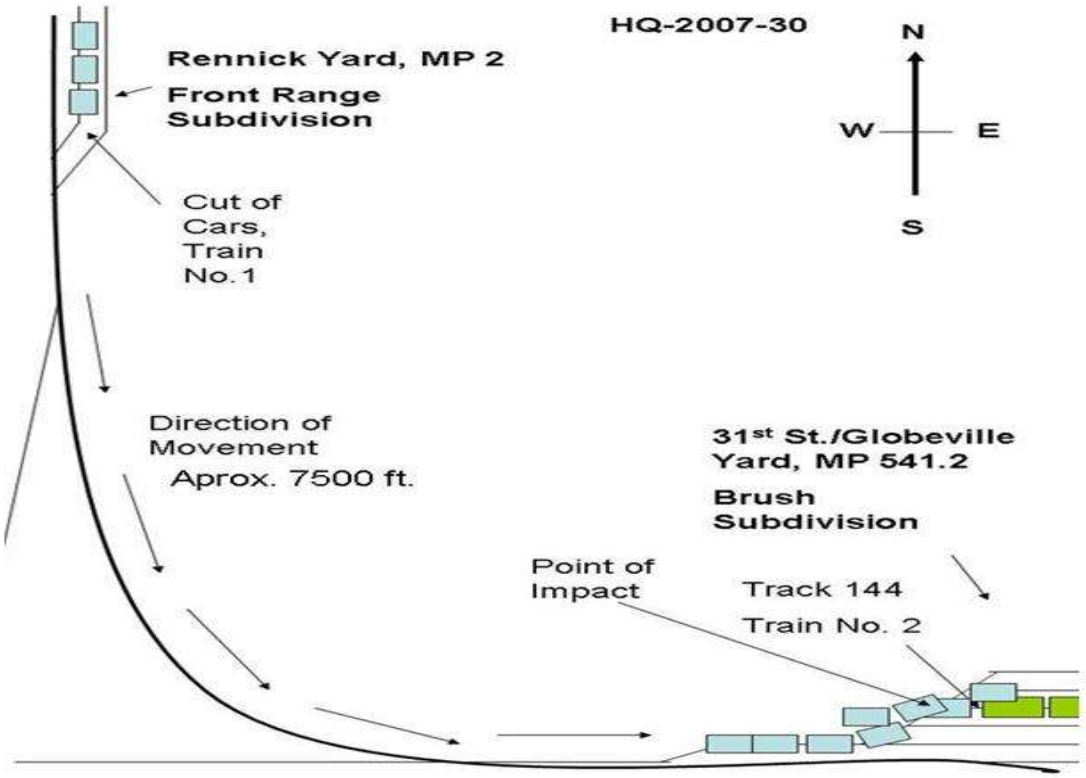
121. Age N/A	122. Driver's Gender 1. Male 2. Female	Code N/A	123. Driver Drove Behind or in Front of and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown	Code N/A	124. Driver 1. Drove around or thru the Gate 2. Stopped and then Proceeded 3. Did not Stop 4. Stopped on Crossing 5. Other (specify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

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	Code N/A
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)	N/A

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 May 23, 2007, at 3:40 a.m., m.d.t., BNSF Train Symbol YDEN3182-22A (Train No. 1), a two-man RCL (Remote Control Locomotive) yard job uncoupled from 34 loaded tank cars of beer on track No. 208 at the Rennick Yard in Denver, Colorado. The 34 unsecured tank cars then rolled southward (timetable east) approximately 7,500 feet around the Wye Bridge and into Denver's 31st Street Yard Track No. 144, where they struck BNSF Train Symbol YDEN3031-22A (Train No. 2), which contained 62 cars. The crew of Train No. 2 had been warned by radio of the oncoming tank cars and was instructed to move away from their train consist. The train crew did so and there were no injuries reported.

As a result of the impact, the two locomotives of Train No. 2 were completely destroyed and four cars derailed. Locomotive No. BNSF 2505 had the entire locomotive cab and car body sheared away from the deck. Locomotive No. BNSF 1532 had 3/4 of the car body sheared away. Three of the four derailed tank cars were on Train No. 1 and loaded with beer. Tank Car No. CORX 5087 was compromised and leaked an estimated 20,886 gallons of beer.

The destroyed locomotive Numbers BNSF 2505 and BNSF 1532 were estimated to have lost 1,500 gallons of diesel fuel plus 350 gallons of lube oil. Tank Car No. PLCX 22044, on Train No. 2 was also damaged and leaked an estimated 18,400 gallons of paving asphalt, causing the evacuation of 20 people. Response was limited to BNSF personnel from various operating and environmental departments and Hulcher Emergency Services. The incident made a major impact with Denver Yard switching and the ability of the BNSF to accommodate inbound and outbound trains.
At the time of the derailment, the conditions were dark and clear with a temperature of 45 degrees Fahrenheit and wind out of the southwest. The total damage is $672,635.
The probable cause is that the Denver based yard crew of Train No. 1 failed to secure the equipment prior to cutting away from cars (H021). A contributing cause is based on an analysis of the work schedules and interview questionnaires for the crew of Train No. 1 and 2. The analysis showed that the crews' physical condition (H199) related to the natural lowering of performance during the circadian low period of the early morning hours and/or circadian disrhythmia caused by work irregular schedules (fatigue), also contributed to this accident.

Other contributing factors are that the crew of Train No. 1 improperly handled the train line air connections (bottling air, H008) and failed to apply a derail in the derailing position (H303).

138. NARRATIVE

Circumstances Prior to the Accident

Train No.1
The Denver based yard switch crew of Train Symbol YDEN3182-22A, included a foreman, and a switchman helper. They first went on duty at 10:59 p.m., m.d.t., May 22, 2007, at Denver. This is the home terminal for both crew members and both received more than the statutory off-duty period prior to reporting for duty.

Their assigned train was the Rennick Yard job and both crew members were assigned as remote control operators (RCO). The switchman helper was in control of the RCO box operating BNSF Locomotive
Number 6393 and 6388; and the foreman was in a company vehicle protecting the point. The crew was shoving a cut of 34 loaded cars, 3,941 tons, into Track No. 208 at Rennick Yard while building Train Symbol H-DENCM9-23. The crew stopped in the clear of Track No. 208 and the RCO locomotive went into an emergency application of the train air brake system. As the helper was attempting to reset the emergency application on the locomotive, the switch foreman on the job instructed the helper to close the angle cock on the first car to speed up the process of recovering the emergency application. After the angle cock was closed on the car, the emergency application was recovered on the locomotive and the helper separated the locomotives from the cut of cars to go perform the next move.

Train No. 2
The Denver based yard switch crew of Train Symbol YDEN3031-22A, included an engineer, foreman and switchman helper. They first went on duty at 11:00 p.m., m.d.t., May 22, 2007, at Denver. This is the home terminal for all three crew members and all received more than the statutory off-duty period prior to reporting for duty. Their assigned job had been primarily working in front of the 31st Street Yard Office at Globeville Yard. At the time of the incident, the foreman was returning from the 38th Street Yard by company vehicle; and the engineer and helper had just tied up their train on Track No. 144 to go on break.

The track at the accident site is tangent and is located on a .13 percent descending grade. Prior to that, the track from Rennick Yard to the accident site contains a maximum 10-degree left-hand curve and descending to the south/southeast at a varying rate of 1.08 to .13 percent for approximately 7,500 feet.

At the point of the collision the railroad timetable direction was east. The geographical direction was east. Timetable directions are used throughout this report.

The Accident

Train No. 1
After separating from the cut, the helper didn't hear any air escape from the train line on the cut of cars and realized that he had not cut the angle cock in. He then observed that the 34 cars were rolling away down a descending grade toward the

31st Street, Globeville Yard. The helper immediately called the foreman who then called the Rennick yardmaster to inform him of the runaway cars. The yardmaster then called by radio to the foreman and asked if the derail was in place. The reply from the foreman was negative. After an unsuccessful attempt to contact the 31st Street yardmaster by telephone, the Rennick yardmaster got on the radio using "emergency" and notified the 31st Street yardmaster of the runaway cars.

Train No. 2
The 31st Street yardmaster received the emergency call and contacted the crew of Train No. 2 and told them to line the switch away from their train. At the same time, the yardmaster noted on the television monitor that the runaway cars were already coming into the yard and told the engineer and switchman helper to get away from the train and go to the fence located north of Track No. 144. Both were on the ground located about 25 ft north from the train during impact.

The cars traveled approximately 7,500 feet before impact with Train No. 2, which was sitting stationary on Track No. 144. Estimated speed during impact was 30 mph. Maximum authorized timetable speed at this location is 10 mph. The resulting collision derailed four cars and two locomotives. Tank Car No. PLCX 22044, located in the consist of Train No. 2, was damaged and leaked an estimated 18,400 gallons of paving asphalt. BNSF management initiated the evacuation of 20 people for a short time. Emergency response was limited to BNSF personnel from various operating and environmental departments and Hulcher Emergency Services. The crew of Train No. 2 was able to clear the area before impact and there were no injuries.

Analysis and Conclusions

Analysis
BNSF mechanical personal inspected both BNSF Locomotive Number 6393 and 6388 under the supervision of the assistant general foreman, mechanical, Denver. In addition, data from the conventional and RCO event recorders was examined from the two remote control locomotives assigned to Train No. 1. There is no information from the mechanical inspection or event recorder data that indicate any mechanical conditions could have contributed to the runaway cars and derailment.

FRA conducted a review of the data from the BNSF Uniform Efficiency Testing (UET) Program which includes Test No. 602 (train/cars left unattended). In the previous 6 months, BNSF supervisors responsible for the Colorado Division have recorded 4,322 operation tests with 159 failures for a 3.6 percent failure rate. Of these, 394 tests were recorded as No. 602 tests with 18 failures in the previous 6 months. The efficiency and operation records examined for the train crew of Train No. 1 indicate that the switchman helper is 41 years of age with 4 months of service. No active discipline is on-record. This employee was tested three times with zero failures in the past 4 months. All were unrelated to the incident with the last occurring 15 days prior to the incident. The efficiency and operation records for the foreman show that he is 44 years of age with 13 years of service. The employee has no active discipline, with the last active discipline being in 2004 for late reporting of an injury. This employee has been tested 52 times with five failures in the past 12 months, including five No. 602 tests with one failure. The last test occurred 21 days prior to the incident.
These records show that the BNSF is active regarding efficiency testing for securement and failures are recorded.

The Fatigue Avoidance Scheduling Tool (FAST) was used gathering data from both the crew of Train No. 1 and Train No. 2. This included the fatigue analysis questioner as completed by the assigned crews and a 10-day work/rest history from the BNSF. Based on this analysis, fatigue was probable for all the employees from both Train No. 1 and Train No. 2.

The foreman and helper of Train No. 1 were both interviewed by FRA Inspectors following the accident. The foreman indicated that he secured one handbrake at the lower end of the cut and that there was another applied somewhere in the middle of the cut of cars. The helper stated that he did not apply any handbrakes at the upper end of the cut of cars and he did not think that his foreman had applied any on the cut as there were no radio communications from him (the foreman) to go in between cars to secure a handbrake. BNSF Air Brake Rules show that a minimum of eight handbrakes should be applied for trains exceeding 3,000 tons on a grade of 1 percent or more. The helper also stated that the foreman told him to close the angle cock on the first car behind the locomotive. In addition, the helper indicated that the split rail derail located near Prospect Junction was not applied in the derail position at that time of the incident.

The Federal Railroad Administration Post-Accident Toxicology Result Reports indicates that the five employees tested had negative test results.

Conclusion
The investigation showed that the crew of Train No. 1 failed to comply with the BNSF Railway Air Brake and Train Handling Rules (ABTH) Rule 102.1.2, Securing Train Before Detaching Locomotives; and ABTH Rule No.104.14, Determining Number of Hand Brakes. In addition, the crew also violated the General Code of Operating Rules (GCOR) Rule No.7.6, Securing Cars or Engines; and GCOR Rule No. 8.20, Derail Location and Position.

The investigation regarding the FAST analysis indicates fatigue was a factor for all of the employees involved with this accident. An analysis of the work schedules and interview questionnaires indicates that all railroad operating employees involved in this accident were suffering from degrading physical and cognitive performance (fatigue). This degradation was due to the natural lowering of performance during the circadian low period of the early morning hours and/or circadian disrhythmia caused by working irregular schedules. This information is critical regarding the actions of the foreman and helper of Train No. 1, who did not secure the train as required.

There were no indications that drug, alcohol or mechanical conditions were contributing factors regarding this accident.

Probable Cause & Contributing Factors

The switchman helper used improper connection of train line air connections (bottling the air, H008) and the crew failed to apply the derail in the derailing position (H303) are also contributing factors.

The FRA found that the accident occurred because the crew of Train No.1 failed to secure the equipment prior to cutting away from cars (H021). The FAST analysis indicates fatigue was a factor for all of the employees involved with this accident and is the primary contributing factor (employee's physical condition, H199).