Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2005-47

Burlington Northern Santa Fe (BNSF)
Memphis, Tennessee
June 3, 2005

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-2005-47

1.Name of Railroad Operating Train #1: BNSF Rwy Co. [BNSF]	1a. Alphabetic Code: BNSF	1b. Railroad Accident/Incident No.: SF0605100
2.Name of Railroad Operating Train #2: BNSF Rwy Co. [BNSF]	2a. Alphabetic Code: BNSF	2b. Railroad Accident/Incident: SF0605100
3.Name of Railroad Responsible for Track Maintenance: BNSF Rwy Co. [BNSF]	3a. Alphabetic Code: BNSF	3b. Railroad Accident/Incident No.: SF0605100
4. U.S. DOT_AAR Grade Crossing Identification Number	5. Date of Accident/Incident: Month 06 / Day 03 / Year 2005	6. Time of Accident/Incident: 03:50: ☑ 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): 12

8. Cars Carrying HAZMAT	9. HAZMAT Cars Damaged/Derailed	10. Cars Releasing HAZMAT	11. People Evacuated	12. Division
0	0	0	0	Springfield

13. Nearest City/Town	14. Milepost (to nearest tenth)	15. State Abbr	15. State Code	16. County
Memphis	496	N/A	TN	SHELBY

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
56 F		4		2		2

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
1007		1	0		2

OPERATING TRAIN #1

25. 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	26. Was Equipment Attended? 1. Yes 2. No	Code	27. Train Number/Symbol
	7	1		YMEM 312202

28. Speed (recorded speed, if available) R - Recorded E - Estimated			Code	29. Trailing Tons (gross tonnage, excluding power units)
	10	MPH	E	7016

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)				
n	N/A	N/A	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: 3

31. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded (yes/no)
(1) First involved (derailed, struck, etc)	N/A	104	N/A
(2) Causing (if mechanical cause reported)	0	0	N/A

32. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box.

Alcohol	Drugs
0	0

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	35. Cars	Loade a. Freight	Loade b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Train	2	0	0	0	0	(1) Total in Equipment Consist	42	0	60	0	0
(2) Total Derailed	0	0	0	0	0	(2) Total Derailed	0	0	3	0	0

36. Equipment Damage This Consist	37. Track, Signal, Way, & Structure Damage	38. Primary Cause Code	39. Contributing Cause Code
49404	4400	M507	N/A

Number of Crew Members

40. Engineer/ Operators	41. Firemen	42. Conductors	43. Brakemen
N/A	0	0	1

Length of Time on Duty

44. Engineer/Operator	45. Conductor
Hrs 4 Mi 48	Hrs 0 Mi 0

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

49. EOT Device? 1. Yes 2. No	50. Was EOT Device Properly Armed? 1. Yes 2. No
N/A	N/A

51. Caboose Occupied by Crew? 1. Yes 2. No: N/A

OPERATING TRAIN #2

52. 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	53. Was Equipment Attended? 1. Yes 2. No	Code	54. Train Number/Symbol
	7	1		YMEM 371202

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

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
1534			n N/A N/A N/A N/A	3

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)	BN5605 02	12	no		1	0
(2) Causing (if mechanical cause reported)	0	0	N/A	60. Was this consist transporting passengers? (Y/N)		N

61. 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

62. Cars	Loade a. Freight	Loade b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Equipment Consist	13	0	6	0	0
(2) Total Derailed	2	0	2	0	0

63. Equipment Damage This Consist	64. Track, Signal, Way, & Structure Damage	65. Primary Cause Code	66. Contributing Cause Code
28269	0	M507	N/A

Number of Crew Members

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

Length of Time on Duty

71. Engineer/Operator	72. Conductor
Hrs 0 Mi 0	Hrs 4 Mi 49

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

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

Highway User Involved

79. Type — Code: N/A
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) — Code: N/A
1.North 2.South 3.East 4.West

82. Position — Code: N/A
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? — Code: N/A
1. Highway User 2. Rail Equipment 3. Both 4. Neither

Rail Equipment Involved

83. Equipment — Code: N/A
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: 0

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

86b. Was there a hazardous materials release by — Code: N/A
1. Highway User 2. Rail Equipment 3. Both 4. Neither

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)							
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

88. Signaled Crossing Warning (See instructions for codes) — Code:

89. Whistle Ban — Code: N/A
1. Yes 2. No 3. Unknown

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

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

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

93. Driver's Age: 0

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

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

96. Driver — Code: N/A
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: N/A
1. Yes 2. No 3. Unknown

98. View of Track Obscured by (primary obstruction) — Code: N/A
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
	0	0

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

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

102. Highway Vehicle Property Damage (est. dollar damage): 0

103. Total Number of Highway-Rail Crossing Users (include driver): 0

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

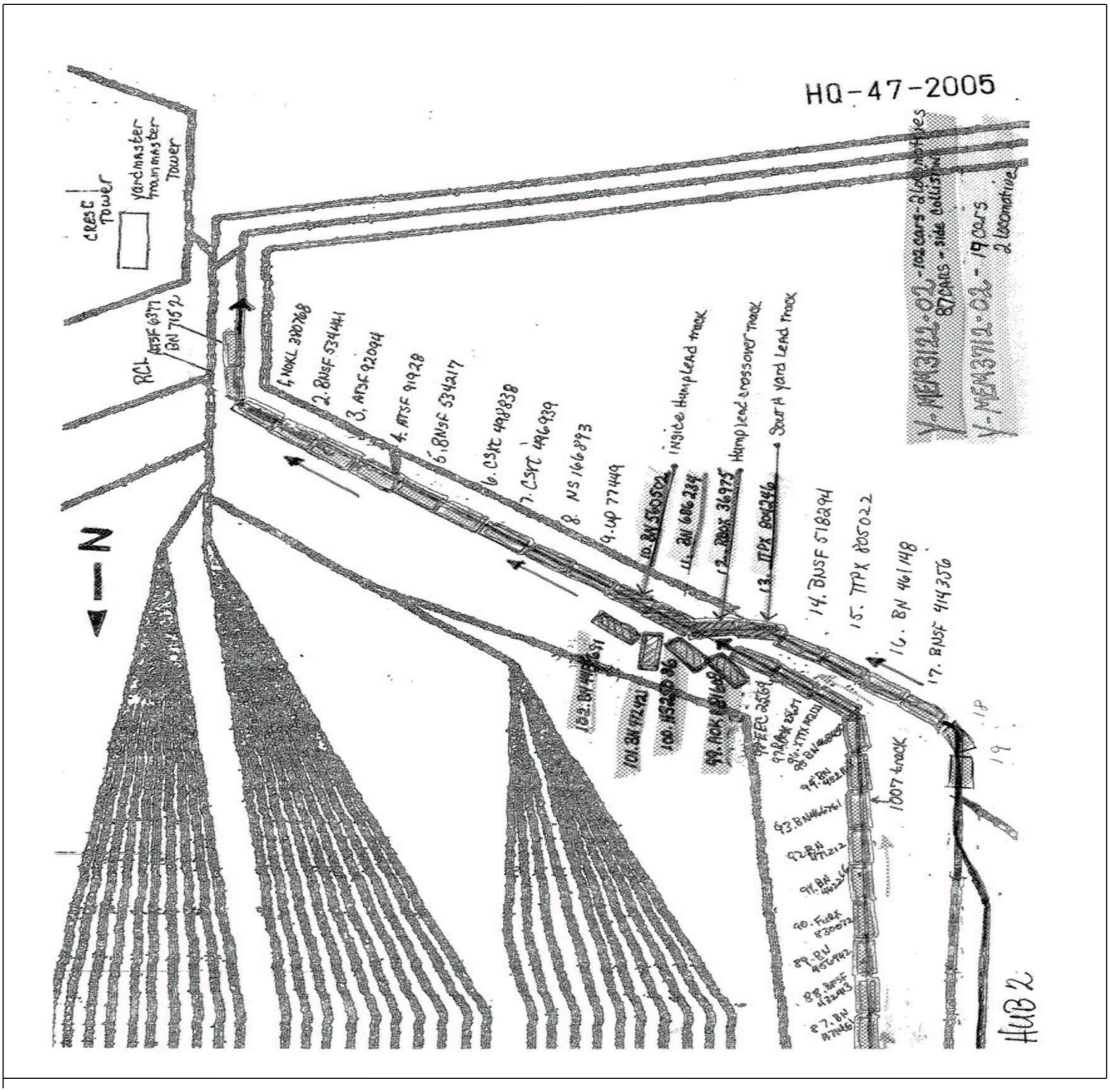
105. Locomotive Auxiliary Lights Operational? — Code: N/A
1. Yes 2. No

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

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

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

HQ-47-
2005
sketch.jpg



109. SYNOPSIS OF THE ACCIDENT

Synopsis of Accident

On June 3, 2005, at about 3:50 a.m. Central Standard Time (CST), BNSF Railway Remote Control Locomotive (RCL) Yard Trim Job Y-Mem 3122-02 was working the BNSF Yard in Memphis,
Tennessee (TN). It consisted of two locomotives and 102 mixed freight cars. Y-Mem 3122-02 was shoving south into the departure yard on Track No. 1007 when an unintended uncoupling occurred between the 14th and 15th cars. This uncoupling caused 87 cars to roll free about 3,000 feet, striking the 10th car of RCL Yard Hump Job Y-Mem 3712-02 that was working on the hump lead. Y-Mem 3712-02 consisted of two locomotives and 19 mixed freight cars.

The Y-Mem 3712-02 Hump Job had placed cars in the Intermodal Hub and was pulling south on the hump lead. The yardmaster instructed them to clear the train and leave it standing because of runaway cars on Track No. 1007 that were heading toward their train. The yardmaster observed the separation of Y-Mem 3122-02 on monitors from the tower mounted cameras in the yard. As a result of the collision, 7 cars derailed with damage to three additional cars.

The freight car damage is $82,073. Damage to the track, track structures, and roadbed is $4,400. All the cars were cleared at 8 a.m. and the track was returned to service at 1 p.m. There were no personal injuries or hazardous material involved. At the time of the accident it was dark and cloudy with a temperature of 56 °F.

After a full investigation by BNSF Police, BNSF Railway, and FRA Safety Inspectors, a probable cause of the uncoupling could not be determined.

110. NARRATIVE

The following information was obtained from an investigation that was conducted by the Federal Railroad Administration.

Circumstances Prior to the Accident

Trimmer Yard Job: Y-Mem 3122-02

The crew of the RCL Y-Mem 3122-02 included a Remote Control Operator (RCO) foreman and a RCO helper. They first went on duty at 11:01 p.m., June 2, 2005, at BNSF Yard in Memphis, TN. The RCO foreman and RCO helper both received a statutory off duty period of 16 hours. The crew started working about 11:45 p.m. after a job briefing with the yardmaster. Their job assignment was to assemble cars for an outbound train in the yard. The RCO foreman worked on the ground and the RCO helper stayed on the lead locomotive that was facing a northward direction. They switched the cars, alternating and transferring control of the locomotive using Canac Remote Control transmitter belt packs.

An utility switchman went on duty at 11:04 p.m., in the BNSF yard and attached himself to RCL Y-Mem 3122-02 at 3:40 a.m. assisting in the classifying and assembling of the railroad cars. This was his home terminal and he received a statutory off duty period of 14 hours and 24 minutes. Y-Mem 3122-02 consisted of two RCL locomotives, 42 loads, 60 empty cars, was 6,096 feet long and weighed 7,016 tons.

When the crew of Y-Mem 3122-02 began making up their train, they made their first coupling in Track No. 39 of ten cars, then pulled these cars out and made the second coupling in Track No. 44. They pulled nine cars out and set the last car to Track No. 43. The crew then went back to Track No. 44 and coupled to the remaining cars. They pulled these cars out of 44 track and coupled to an additional two cars in 43 track. Then the crew coupled to 47 track adding 35 cars and then to number 31 track adding 22 cars. The cars that later separated came from the track 39. The crew had no trouble with the couplings on the cars as they assembled the outbound train in the Class Yard. As the yard trim job approached the separation site, the RCO helper was on the lead locomotive shoving south on the north end of Track No. 1007, the RCO foreman was in the Trimmer Building, and the utility switchman was about midway in Track No. 1007.

The track north of the separation is tangent for 250 feet, preceded by a 100 foot 7-degree-30 minute curve and back to 150 foot of tangent track.

The railroad timetable direction of the runaway cars was south. The geographic direction was east. Timetable directions are used throughout this report.

Hump Yard Job: Y-Mem 3712-02

The crew of the RCL Y-Mem 3712-02 included a RCO foreman and a RCO helper. They first went on duty at 11:02 p.m., June 2, 2005, at BNSF yard in Memphis, TN. This was the home terminal for both crew members. The RCO foreman received a statutory off duty period of 23 hours and 23 minutes. The RCO helper received a statutory off duty period of 23 hours and nine minutes.

Y-Mem 3712-02 consisted of two RCL's, 13 loads, six empty cars, was 970 feet long, and weighed 1,534 tons. The Y-Mem 3712-02 job assignment was to assemble cars for classification. The crew pulled 36 cars from the receiving yard and placed 17 cars into Hub No. 2, made a cut and pulled 19 cars to the hump. As the southbound RCL hump job approached the collision area, the RCO foreman was on the lead locomotive facing south and the RCO helper was in the general area of the hump. Prior to the collision, the crew was notified by the yardmaster of the impending danger of the runaway cut of cars. The Y-Mem 3712-02 crew left the locomotives and cars standing on the hump lead and moved to a safe area near the tower as the runaway cars approached the hump lead.

The Accident

Trimmer Yard Job: Y-Mem 3122-02

At 3:40 a.m., an utility switchman attached himself to the crew of Y-Mem 3122-02. The utility switchman used a Kawasaki Mule vehicle to move throughout the yard. As the yard job pulled north about a mile the RCO foreman moved to the Trimmer Building. The utility switchman stopped the move when the cars cleared the north end switches. He then lined the switches for the 1007 track and instructed the RCO helper to start shoving the cut of cars southward for 25 car lengths. Mid-track he instructed the RCO helper to stop. The utility switchman stopped the movement at 3:48 a.m. to clean his vehicle front window. At 3:57 a.m., nine minutes later, the RCO helper was instructed to shove another 25 car lengths south. The movement restarted and continued southward into Track No. 1007. The Trimmer Yardmaster was observing the yard monitor in the tower and saw a separation of three or four cars near the 1007 switch. He informed the crew of Y-Mem 3122-02 via radio that cars had separated. The utility switchman notified the RCO helper to stop the shove because of the uncoupling. The time was recorded as 4 a.m.

The Hump Yardmaster, also stationed in the tower, announced an "emergency broadcast" to all in the yard, to clear the path of the runaway cars. The utility switchman was on the south end of the cut and drove ahead and lined three of four switches that were lined against the movement. He was not able to line the last switch because of the distance and speed of the runaway cars. The railroad estimated the speed at 10 miles per hour (mph). The cars ran through the last switch and continued south toward the hump colliding with Y-Mem 3712-02 on the hump lead crossover. The 102nd car was the first to collide with the Hump Yard Job and derailed. The 101st and 100th cars also derailed. The 99th car sustained side damage, but did not derail. The total car damage was $ 49,404 on Y-Mem 3122-02. There were no injuries to the crew.

At the time of the collision the RCO Helper was on the lead locomotive with 14 cars stopped at the north end of T rack No. 1007. The RCO Foreman was in the Trimmer Building, and the utility switchman was safe and in the clear at the south end of the yard.

After the side collision, the utility switchman drove his vehicle to the Trimmer Building, picked up the RCO foreman, and continued to the separation site of the Y-Mem 3122-02. The location where the cars separated in 1007 track is adjacent to an asphalt road at the entrance to the yard. They inspected the couplers with the trainmaster and found nothing. The north end coupler of the 15th car was in the open position and the south end of the 14th car was in the closed position.

The crew was instructed by the trainmaster to couple the cars together and clear the accident site. The 14th and 15th cars were coupled together, then the utility switchman drove to the accident site and uncoupled the first car that was not involved in the derailment and the cars were pulled back.

Hump Yard Job: Y-Mem 3712-02

Y-Mem 3712-02, nineteen cars and two locomotives were stationary. The locomotives were headed south on the Inside Hump Lead. The damaged cars were on the inside hump lead and hump lead crossover, with the remainder of cut on the South Yard lead track. The point of collision was at the 10th car of the 19 car cut. The 10th, 11th, and 12th cars derailed. The 13th car involved in the side collision sustained major damage. The total car damages were $28,269 on Y-Mem 3712-02. There were no injuries to the crew.

Analysis and Conclusion

Analysis

Railroad Police Investigation
The BNSF Police assigned two Senior Special Agents to investigate the accident for the possibility of outside interference or vandalism. The BNSF Police investigation was independent of the Railroad and FRA. The officers used a yard video, audio CD of crew radio communication, and interviews in their investigation. The officers interviewed three crew members of Y-Mem 3122-02 and three crew members of Job Mem 361 who were in the north end of the yard during the time frame. The six interviews were attended only by the officers and interviewee. The officers used the interviews and video to verify the position of all personnel on the ground. They were able to identify personnel by vehicle lights and switchman lanterns. The officers pointed out in the video that the separation was near the 1007 switch. Their report indicated there was no evidence of an intentional uncoupling by outside sources.

Freight Cars Inspection
The utility switchman, RCO foreman, and trainmaster inspected the separated cars around 4:30 a.m. They inspected both cars and did not see any damage or defective conditions. They coupled the cars together and pulled the cut north to clear the accident site. The 15th car, IC 563291, was found with the coupler knuckle open and the 14th car, WCCL 47420, had the coupler knuckle closed. The two cars uncoupled were inspected at the site by the BNSF mechanical forces at about 6:30 a.m. on June 3, 2005. The coupler arrangements on IC 563291 and WCCL 47420 were inspected and found to be working as intended. No exceptions were taken to any components of either car.

The FRA motive power and equipment inspector inspected the two cars on June 3, 2005, at about 10 a.m. in 1007 track. The coupler conditions including uncoupling levers, draft conditions, truck conditions, coupler carriers, coupler height, and car body were inspected with the cars coupled. The BNSF separated the cars and same inspections were made. The Standard E Couplers were gaged with a Contour Limit Gage No. 28293. No exceptions were taken.

The two cars were taken out of the train and sent to the Repair Facility within this yard. The cars were inspected by the lead man and car repairmen on June 4, 2005. The cars were inspected and side bearing clearances were measured. There were no exceptions or repairs made, and the cars were returned to service.

Re-Enactment
About 11:00 a.m. June 3, 2005, re-enactments were conducted with the same cars and locomotives minus four cars that were involved in the accident. The cars

the terminal manager, the mechanical general foreman, and a FRA motive power and equipment inspector.

Track Inspection
The railroad inspected the yard track shortly after the accident. No repairs or adjustments were made in this area. Switching operations immediately continued using the north end of Track No. 1007.

Track No. 1007 was visually inspected at the north end of the yard on June 3, 2005, at 4:30 p.m. by the FRA track inspector and all conditions were within Class 1 requirements. The FRA track inspector inspected this area with a level board, string line, and measuring tape with three locomotives used for load testing. The level was measured in 31 foot stations southward from the north switch point No. 0323 of 1007 track into the 1007 curve south. The 12 measurements totaled 496 feet and were in limits for Class 1 track. This inspection was performed June 16, 2005, in the presence of FRA operating practices inspectors and a FRA motive power and equipment inspector. This area of track was measured because BNSF police video showed this as the points where separation occurred.

Event Recorder Download
The relevant event recorder data was downloaded by the road foreman of engines at the accident site and analyzed by FRA operating practices inspectors and BNSF road foreman of engines. The analysis disclosed the RCO foreman and helper operated the RCL as intended. The download revealed after the second stop, the amperage built to 400, then climbed to one thousand, then decreased very rapidly to zero. This indicates the cars were uncoupled when the movement stopped for the utility switchman to clean his windshield. When the movement started again, the 87 cars had already started rolling away. That is the reason for the spike in the amperage, then the rapid decrease in the amperage, as noted on the event recorder data.

Video-VHS
The video was of poor quality, black and white with a grainy texture. The video was examined by FRA, BNSF Railroad Police and the BNSF Transportation Department. Identifications of railroad personnel positions were indicated by their vehicle head lights and switchmen lanterns. The examination of the yard video indicated the separation near the 1007 switch. The yard video of Y-Mem 3122-02 shoving into track 1007 did not show anyone in the area prior to the separation.

Radio Communication-Audio CD
The radio communication between the Y-Mem 3122-02 crew did not indicate anything unusual. A transcript was produced from BNSF radio communications recorder. This transcript was examined by FRA, BNSF Railroad Police and the BNSF Transportation Department with nothing of an unusual nature noted.
Toxicological Test
FRA Post-Accident Toxicological was performed on the three crew members of the Trimmer Yard Job: Y-Mem 3122-02 and the results were negative.

Conclusion

The derailment occurred after an uncoupling between two cars in Train Y-Mem 3122-02, which then allowed 87 cars to roll away and into the side of Train Y-Mem 3712-02. After a thorough investigation the cause of the uncoupling could not be determined. The BNSF Police investigation, which included interviews of the train crews, review of all available video of the area, and radio recordings could not show vandalism from outside sources. The mechanical inspection of the freight car couplers did not reveal any reasons that would have caused the cars to uncouple. The track condition at the point of the separation was found to be in good condition. Both the cars and track were returned to service without repairs or adjustments. Finally, a review of event recorder information on the train handling