Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2008-77

Burlington Northern Santa Fe/Union Pacific (BNSF/UP)
Bond, CO
October 6, 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.

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

FRA FACTUAL RAILROAD ACCIDENT REPORT

FRA File # HQ-2008-77

1.Name of Railroad Operating Train #1: BNSF Rwy Co. [BNSF]	1a. Alphabetic Code: BNSF	1b. Railroad Accident/Incident No.: CO1008103
2.Name of Railroad Operating Train #2: Union Pacific RR Co. [UP]	2a. Alphabetic Code: UP	2b. Railroad Accident/Incident No.: 1008DV004
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: Union Pacific RR Co. [UP]	4a. Alphabetic Code: UP	4b. Railroad Accident/Incident No.: 1008DV004
5. U.S. DOT_AAR Grade Crossing Identification Number:	6. Date of Accident/Incident: Month 10 | Day 06 | Year 2008	7. Time of Accident/Incident: 10:22: ☑ 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: 03

9. Cars Carrying HAZMAT	10. HAZMAT Cars Damaged/Derailed	11. Cars Releasing HAZMAT	12. People Evacuated	13. Division
0	N/A	N/A	0	Denver Service Unit

14. Nearest City/Town	15. Milepost *(to nearest tenth)*	16. State Abbr / Code	17. County
Bond	126	N/A / CO	EAGLE

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
55 F	2	2	1

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	2	53.4	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	HDENRRB105

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?
21 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)*: 7901

Code(s): e | N/A | N/A | N/A | N/A

32. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded *(yes/no)*
(1) First involved *(derailed, struck, etc)*	BNSF7532	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
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	3	0	0	0	2
(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	56	0	24	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
$12,000.00	$4,517.00	H605	H199

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 6 Mi 52	Hrs 6 Mi 52

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	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
1	1	CDYBR01

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)*: 2630

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): e | 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)*	CMO530673	107	no
(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
N/A	N/A

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	63. Cars	Loaded a. Freight	Loaded b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Train	3	0	0	0	0	(1) Total in Equipment Consist	0	0	104	0	0
(2) Total Derailed	0	0	0	0	0	(2) Total Derailed	0	0	11	0	0

64. Equipment Damage This Consist: $80,060.00

65. Track, Signal, Way, & Structure Damage: $4,517.00

66. Primary Cause Code: H605

67. Contributing Cause Code: H199

Number of Crew Members

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

Length of Time on Duty

72. Engineer/Operator: Hrs 5 Mi 47

73. Conductor: Hrs 5 Mi 47

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: 1

78. Was EOT Device Properly Armed? 1. Yes 2. No: 1

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: 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	90. Cars	Loaded a. Freight	Loaded b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Train	N/A	N/A	N/A	N/A	N/A	(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	(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

110. Position	Code
1.Stalled on Crossing 2.Stopped on Crossing 3.Moving Over Crossing 4. Trapped	N/A

113. Circumstance	Code
1. Rail Equipment Struck Highway User 2. Rail Equipment Struck by Highway User	N/A

114a. Was the highway user and/or rail equipment involved in the impact transporting hazardous materials?	Code
1. Highway User 2. Rail Equipment 3. Both 4. Neither	N/A

114b. Was there a hazardous materials release	Code
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	4.Wig Wags	7.Crossbucks	10.Flagged by crew
	2.Cantilever FLS	5.Hwy. traffic signals	8.Stop signs	11.Other *(spec. in narr.)*
	3.Standard FLS	6.Audible	9.Watchman	12.None

Code(s)							
	N/A	N/A	N/A	N/A	N/A	N/A	N/A

116. Signaled Crossing *(See instructions for codes)*	Code
	N/A

117. Whistle Ban	Code
1. Yes 2. No 3. Unknown	N/A

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

119. Crossing Warning with Highway Signals	Code
1. Yes 2. No 3. Unknown	N/A

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

121. Age	122. Driver's Gender	Code
N/A	1. Male 2. Female	N/A

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

124. Driver	Code
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)*	N/A

125. Driver Passed Highway Vehicle	Code
1. Yes 2. No 3. Unknown	N/A

126. View of Track Obscured by *(primary obstruction)*	Code
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	N/A

Casualties to:	Killed	Injured
129. Highway-Rail Crossing Users	N/A	N/A

127. Driver	Code
1. Killed 2.Injured 3. Uninjured	N/A

128. Was Driver in the Vehicle?	Code
1. Yes 2. No	N/A

130. Highway Vehicle Property Damage *(est. dollar damage)*
N/A

131. Total Number of Highway-Rail Crossing Users *(include driver)*
N/A

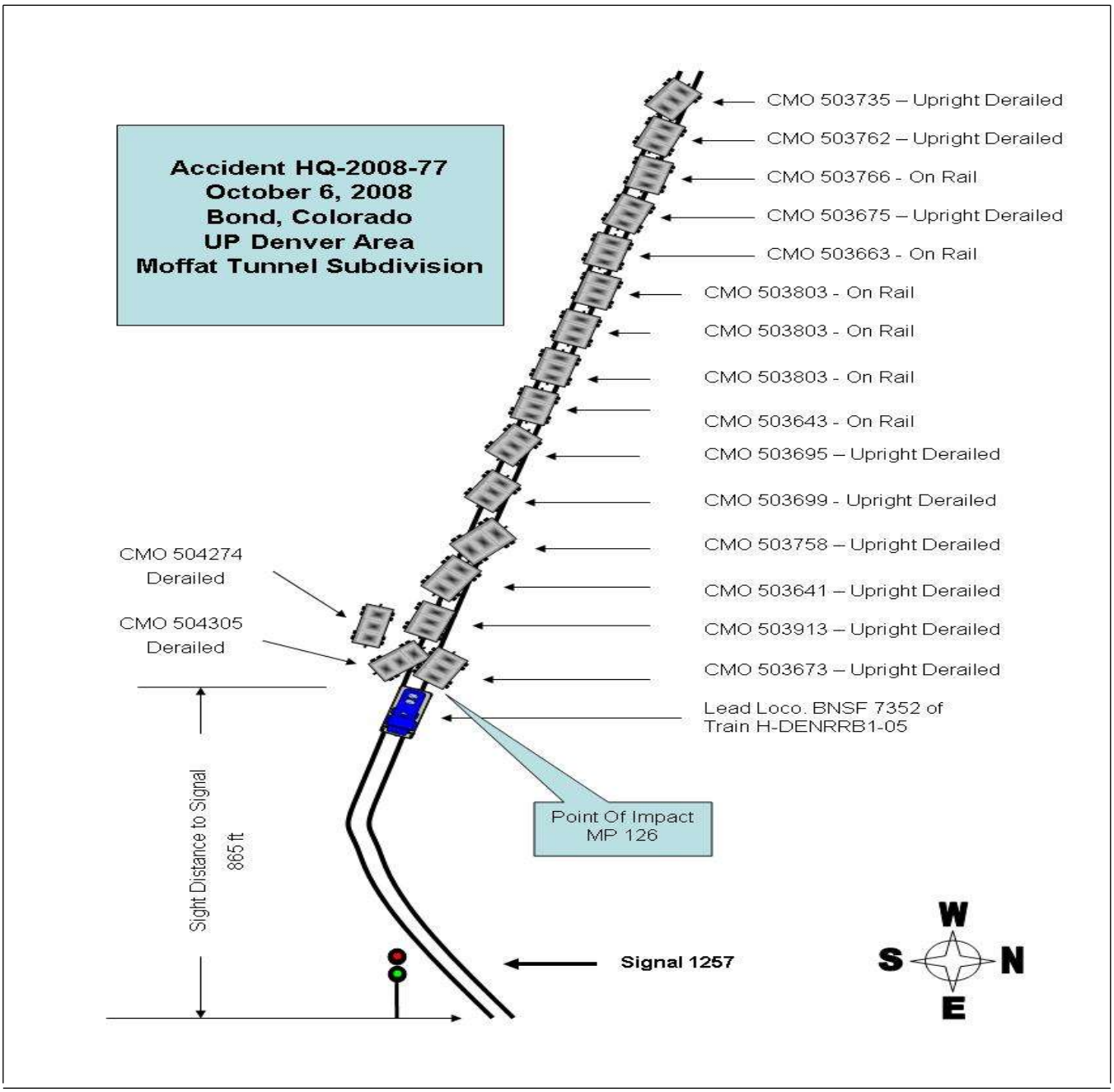
132. Locomotive Auxiliary Lights?	Code
1. Yes 2. No	N/A

133. Locomotive Auxiliary Lights Operational?	Code
1. Yes 2. No	N/A

134. Locomotive Headlight Illuminated?	Code
1. Yes 2. No	N/A

135. Locomotive Audible Warning Sounded?	Code
1. Yes 2. No	N/A

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



137. SYNOPSIS OF THE ACCIDENT

On October 6, 2008, at approximately 10:22 a.m., MDT, Burlington Northern Santa Fe Railway Company (BNSF) westbound freight Train H-DENRRB1-05, traveling at a recorded speed of 21 mph on the Main Track, collided into the rear of stopped a Union Pacific Railroad Company (UP) westbound empty coal Train CDYBR -01. This accident occurred on the UP's Denver Service Unit, Moffat Tunnel Subdivision, at milepost (MP) 126.0, in Bond, Colorado.

As a result of the collision, lead Locomotive No. BNSF 7532 on BNSF Train H-DENRRB1-05 was slightly damaged. Elevn cars near the rear end of UP Train CDYBR-01 derailed with minor damage. The derailed cars listed in order from the rear of the train included cars 1 through 8, 14, and 16 through 17. Damages to the BNSF locomotive were $12,000. Damages to the UP train were $80,060, and damages to the UP track were $4,517. There were no signal damages. There was no hazardous materials incident or evacuation involved with the accident. Also, there were no reportable injuries to the crew of either train.

At the time of the accident, it was daylight and cloudy. The temperature was 55° F.

The probable cause of this accident was the failure of the BNSF engineer of Train H-DENRRB1-05 to comply with restricted speed in connection with the restrictive indication of a block signal (H605). His physical condition resulting from fatigue was also considered as a contributing factor in the accident (H199).

138. NARRATIVE

CIRCUMSTANCES PRIOR TO THE ACCIDENT

BNSF TRAIN H-DENRRB1-05

The crew of BNSF Train H-DENRRB1-05 included a locomotive engineer and a conductor. They went on duty in Grand Junction, Colorado, at 3:30 a.m. MDT, on October 6, 2008. This was the home terminal for both crewmembers, and they both received more than the required statutory off-duty rest period prior to reporting for duty.

BNSF Freight Train H-DENRRB1-05 consisted of 3 locomotives on the head end, 2 distributed power locomotives on the rear end, 56 loaded cars of several varieties, and 24 empty rail cars. It was 5,183 feet in length with 7,901 gross tons. According to the BNSF Mechanical Locomotive System Report and Yard Status History, dated October 5, 2008, Locomotive BNSF 7532 was inspected by a qualified mechanical employee at 5:30 a.m., in Denver, Colorado. The train also received a Class 1 terminal air brake test by the original crew assigned to this train at 11:30 p.m., prior to departure.

The crew stated that they were originally called on duty at 3:30 a.m., for BNSF Train ANPVODEN 104A. They took that train to Kremmling, Colorado. They arrived around 9:00 a.m., and then boarded BNSF Train H -DENRRB1-05 to return to Grand Junction. During the trip, they had no work en route and had no meets. They had all green signals through controlled points at Gore, Azure, and Radium. Nothing out of the ordinary occurred until they arrived at Controlled Point (CP) East Yarmony (DS 123 at MP 122.7), where they had an "approach medium" signal indication. The crew said that at CP West Yarmony (DS 125 at MP 124.6), they had an "approach" signal indication, and then a "restricted proceed" signal indication (indicated by a "red" aspect) at the intermediate Signal 1257 at MP 125.7.

Prior to the accident, the conductor went back to the second locomotive unit to use the bathroom and took the two-way company radio with him. He heard the engineer call out an "advanced approach" signal at CP East Yarmony. When he got back to the lead locomotive he asked the engineer what kind of signal they were

operating on and was told that they were operating on an “approach” signal indication. The conductor said that as the train speed was reducing they were going by the west siding switch at Yarmony and then by the hot box detector at MP 125. Subsequently the conductor saw a “red” indication at the intermediate signal beyond. At this time the conductor reached and retrieved his lunch from the cooler. He heard the engineer say something as he was setting the air. The conductor looked up and reached over to pull the emergency switch over his desk simultaneously.

The engineer was seated at the controls on the north side of the locomotive as the train approached the accident site and at the time of the collision. The conductor was standing in the cab as they collided with the train ahead.

UP TRAIN CDYBR-01

The crew of UP Train CDYBR-01 included a locomotive engineer and a conductor. They went on duty in Grand Junction, at 4:35 a.m., MDT, on October 6, 2008. This was the home terminal for both crewmembers and they had both received more than the required statutory off-duty rest period prior to reporting for duty.

The crew was transported by van to Bond at approximately 7:30 a.m. Later, they were transported to CP West Radium at MP 117.8 to relieve a Denver crew and board UP Train CDYBR-01 and proceed west to Grand Junction. The crew made a safety check on the train in the siding. After a ballast train went around them, they called the dispatcher and received an “approach” signal indication. They left CP West Radium around 9:30 a.m., proceeding to Bond where they stopped at CP East Bond, DS 127 at MP 127 on a double red signal displaying "stop". The crew stated that a UP work train was ahead of them, but they did not know if the train went up the branch at Bond or not. At 9:59 a.m., the conductor announced on the radio they were stopped on the Main Track at MP 127.

The assigned freight train consisted of 3 locomotives and 104 empty rail cars. It was 5,838 feet in length with 2,630 gross tons.

At the time of the accident, the engineer was seated at the controls on the north side of the locomotive. The conductor was seated on the south side of the locomotive.

When their train was stopped waiting for a proceed indication granting authority for westbound movement, the crew heard the crew of UP Train H-DENRRB1-05 on the radio call out an “advance approach” signal indication at CP East Yarmony, and an “approach” at CP West Yarmony. They then heard the hot box detector report an entrance message at MP 125. They said they did not hear the crew call out a “red” signal indication at Intermediate Signal 1257 at MP 125.7.

In this area of the railroad sight distance from Intermediate Signal 1257 to the end of the train marker on UP Train CDYBR-01 stopped ahead was approximately 650 feet. There is a 0.4-percent descending grade with a 4-degree right-hand curve.

The railroad timetable direction of both trains was west. The geographic direction was also west. Timetable directions are used throughout this report.

THE ACCIDENT

UP TRAIN H0DENRRB1-05:

After passing the intermediate signal at MP 125.7, which displayed a “red” aspect, the train was being operated at 21 mph approaching the accident area. The train crew’s view of the track ahead was limited and obstructed by a 4-degree right-hand curve. As soon as the lead locomotive unit emerged from the curve, the rear end of stopped UP Train CDYBR-01 came into view. The crew became aware of the impending collision about 365 feet in advance, at which time the locomotive engineer told the conductor to brace for impact. He simultaneously initiated an emergency train air brake application. The maximum authorized operating speed was 25 mph as designated in the current UP Timetable No. 3.

UP TRAIN CDYBR-01:

UP TRAIN CDYBR-01 had been stopped for approximately 22 minutes before it was struck by UP Train H-DENRRB1-05. The engineer of UP TRAIN CDYBR-01 called 911 when he heard the crew of Train No. 1 trying to contact the dispatcher. The conductor of Train No. 2 then asked his engineer to contact the dispatcher and notify him of the derailment. He then walked back and inspected the derailed cars.

As a result of the collision, lead Locomotive No. BNSF 7532 on Train No. 1 was slightly damaged. On UP Train No. 2, 11 cars near the rear of the train derailed with minor damage. The derailed cars listed in order from the rear of the train included cars 1 through 8, 14, 16, and 17. The derailment blocked the main track and the siding.

Soon after the accident, UP and BNSF representatives arrived at the scene and initiated an investigation. They estimated damages at $241,000 to UP cars and $12,000 to the BNSF locomotive. Due to the initial estimation of damages exceeding $150,000, the crew of BNSF Train No. 2 was given FRA mandatory post-accident toxicological testing, as required under Title 49 Code of Federal Regulations (CFR) Part 219.

After the accident, both UP and BNSF managers interviewed the subject BNSF train crew at the scene. The BNSF crew revealed that they knew they were following a train and heard a train ahead calling signals and "highballing" Bond. However, as they found out, that train was not the one immediately ahead of them. At that time, the engineer set the air at the "approach" signal and was going to stop at the curve beyond, but kicked off the brakes instead, because of the hot box detector west of CP West Yarmony. The BNSF crew said they didn't want to get a message because their train was going too slow. The engineer admitted the impact was his fault. He said he should have stopped at the west switch at Yarmony. When the BNSF crew was asked if they used cellular phones anytime during their tour of duty, they said after leaving Kremmling, there is no service.

The UP signal personnel downloaded the information from the event recorders at CP West Yarmony and the intermediate Signal 1257, and compared them with the signal indication log from the Omaha office. They confirmed the signal aspect displayed at the intermediate Signal 1257 was a "red" at the time of the accident.

Due to the serious nature of the accident, BNSF officials withheld the crew of Train No. 1 from service pending results of the investigation. They scheduled an investigation with the engineer and conductor of BNSF Train H DENRRB1-05 in Grand Junction on Friday, October 17, 2008, for the purpose of ascertaining the facts and determining the responsibility, if any, of the involved train crew in connection with the accident.

ANALYSIS AND CONCLUSIONS

ANALYSIS - EVALUATION AND TESTING OF EQUIPMENT:

Testing was conducted on signals involved in the accident by UP signal personnel. All signal indications, as well as speeds of BNSF Train H-DENRRB1-05 while passing equipment detectors were also verified. The UP signal personnel downloaded the information from the event recorders at Intermediate Signal 1257 and CP West Yarmony, and compared them with the indication logs from the Omaha office. They confirmed the signal aspect displayed at Signal 1257 was "red" at the time of the accident.

A review of all records, tests, and inspections on the signal system indicated they functioned as intended. A post-accident test revealed the signals were all visible and the signal system did not contribute to the accident.

Locomotive and train inspection records were provided by the BNSF and UP. All required inspections were performed on all equipment involved in the accident.

CONCLUSION:

Neither signal nor equipment failure was a factor.

ANALYSIS -TOXICOLOGICAL TESTING:

FRA post-accident toxicological testing was performed on the BNSF crew of BNSF Train H-DENRRB1-05. All

test results were negative. The UP crew of Train CDYBR-01 was not tested.

CONCLUSION:

Drugs and alcohol were not factors.

ANALYSIS - CREW OPERATING PERFORMANCE:

Information gathered from the locomotive event recorder and camera on the lead locomotive of BNSF Train H -DENRRB1-05 indicated that after passing Intermediate Signal 1257 the engineer of BNSF Train H-DENRRB1-05 did not have any activity which would require him to reduce the speed of his train prior to the emergency brake application. As a result, after coming out of a 4-degree right-hand curve, the involved crew had approximately a 365-foot preview to the rear end of stopped UP Train CDYBR-01. At this time, the engineer manipulated the throttle from throttle Position 8 to dynamic brake and the conductor pulled the emergency switch. They hit the Federal rear-end device (FRED) on the last car of the standing train.

As BNSF Train H-DENRRB1-05 approached Bond from the east at a recorded speed of 21 mph, the crew failed to react to the intermediate Signal at MP 125.7 which displayed a restricted precede indication (red aspect). They should have reduced their train to a speed that would have allowed them to stop within one-half the range of vision short of a train occupying the track ahead.

During the course of the investigation, the FRA took an exception under Title 49 CFR Section 240.305(a) (2) for the crew's failure to comply with restricted speed requirements.

Title 49 CFR Section 240.305 Prohibited conduct.
(a) It shall be unlawful to:
(2) Operate a locomotive or train at a speed which exceeds the maximum Authorized limit by at least 10 miles per hour. Where restricted speed is in Effect, only those violations of the conditional clause of restricted speed rules (i.e., the clause that requires stopping within one half of the locomotive Engineer's range of vision), or the operational equivalent thereof, which cause Reportable accidents or incidents under part 225 of this chapter, shall be Considered instances of failure to adhere to this section;

As a result of BNSF's investigation of the accident, the crew was dismissed from employment for failure to comply with General Code of Operating Rules (GCOR) Rule 6.27, effective April 3, 2005, as amended; and UP Revised System Special Instruction (SSI), Item 20, Rule 9.2.14, effective July 30, 2007, as amended. These rules are noted in part as follows:

UP System SSI Item 20, Rule 9.2.14 Restricted Proceed

Proceed at restricted speed.

GCOR Rule 6.27 Movement at Restricted Speed
When required to move at restricted speed, movement must be made at a speed that Allows stopping within half the range of vision. Movement must stop short of:
- Train.
- Engine.
- Railroad car.
- Men or equipment fouling the track.
- Stop signal, or
- Derail or switch lined improperly.

When a train or engine is required to move at restricted speed, the crew must keep A look out for broken rail and not exceed 20 MPH.

Comply with these requirements until the leading wheels reach a point where Movement at restricted speed is no longer required.

CONCLUSION:

The involved BNSF train crew failed to comply with restricted speed in connection with the restrictive indication of a block signal (H605). This is the primary cause which led to the impact accident.

ANALYSIS - FATIGUE:

FRA uses an overall effectiveness rate of 77.5 percent as the baseline for fatigue analysis, which is equivalent to blood alcohol content (BAC) of 0.05. At or above this baseline, we do not consider fatigue as probable for any employee. Software sleep settings vary according to information obtained from each employee. If an employee does not provide sleep information, FRA uses the default software settings.

FRA obtained fatigue related information, including a 10-day work history, for the employees involved in this accident, including the locomotive engineers and conductors assigned to both BNSF Train H-DENRRB1-05 and UP Train CDYBR-01.

CONCLUSION:

Upon analysis of that information FRA concluded that fatigue was not probable for the crew assigned to neither the UP train, nor the conductor assigned to the BNSF train. However, the FRA analysis concluded fatigue was probable for the locomotive engineer assigned to the BNSF train.

OVERALL CONCLUSIONS:

The UP was in compliance with their rules and all applicable Federal regulations. However, the train crew of BNSF Train H-DENRRB1-05 was not in compliance with Title 49 CFR Section 240.305(a) (2), GCOR Rule 6.27, and UP SSI Item 20, Rule 9.2.14. After passing Intermediate Signal 1257 which displayed a red aspect indicating a “restricted proceed” at the time of the accident, the involved crew continued to operate their train at a speed of 21 mph. This exceeded the restricting speed requirement thus preventing them from stopping within one-half of the locomotive engineer’s range of vision. Their failure to comply with restricted speed, in connection with the restrictive indication of a block signal, resulted in the rear end collision of BNSF Train H-DENRRB1-05 with UP Train CDYBR-01 (H605).

During the course of the investigation through the use of the Fatigue Avoidance Scheduling Tool analysis of the engineer of BNSF Train H-DENRRB1-05, FRA concluded that his physical condition resulting from fatigue was considered as a contributing factor in the accident (H199).

PROBABLE CAUSE AND CONTRIBUTING FACTOR

The probable cause of this accident was the failure of the BNSF engineer of BNSF Train H-DENRRB1-05 to comply with restricted speed in connection with the restrictive indication of a block signal (H605). His physical condition resulting from fatigue may also be considered as a contributing factor in the accident (H199).