



***Federal Railroad Administration  
Office of Safety  
Headquarters Assigned  
Accident Investigation Report  
HQ-2010-02***

***Burlington Northern Santa Fe (BNSF)  
Lomoyne, NE  
January 13, 2010***

***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 Union Pacific RR Co. [UP ]			1a. Alphabetic Code UP			1b. Railroad Accident/Incident No. 0110NP014			
2. Name of Railroad Operating Train #2 Union Pacific RR Co. [UP ]			2a. Alphabetic Code UP			2b. Railroad Accident/Incident No. 0110NP015			
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. 0110NP014			
5. U.S. DOT_AAR Grade Crossing Identification Number			6. Date of Accident/Incident Month 01 Day 14 Year 2010			7. Time of Accident/Incident 09:35: <input type="checkbox"/> AM <input checked="" 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 01									
9. Cars Carrying HAZMAT 0		10. HAZMAT Cars Damaged/Derailed N/A		11. Cars Releasing HAZMAT N/A		12. People Evacuated 0		13. Division North Platte	
14. Nearest City/Town Keystone				15. Milepost (to nearest tenth) 43.2		16. State Abbr Code N/A NE		17. County KEITH	
18. Temperature (F) (specify if minus) 23 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 Main Track No 2				23. FRA Track Code Class (1-9, X) 4		24. Annual Track Density (gross tons in millions) 245.1		25. Time Table Direction Code 1. North 3. East 2. South 4. West 3	
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			A. Spec. MoW Equip. Code			
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 3CEBJK914			
29. Speed (recorded speed, if available) Code R - Recorded E - Estimated 26 MPH R			31. Method(s) of Operation (enter code(s) that apply)						31a. Remotely Controlled Locomotive?
			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) Code(s) e. Traffic k. Direct traffic control f. Interlocking l. Yard limits						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) 17049			d		e		N/A N/A N/A		0
32. Principal Car/Unit									
a. Initial and Number		b. Position in Train		c. Loaded (yes/no)		33. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box.			
(1) First involved (derailed, struck, etc) JECX1409		11		yes		Alcohol 0			
(2) Causing (if mechanical cause reported) JECX1409		11		yes		Drugs 0			
34. Was this consist transporting passengers? (Y/N) N									
35. Locomotive Units									
a. Head End		Mid Train		Rear End		36. Cars			
b. Manual		c. Remote		d. Manual		c. Remote		Loaded	
								Empty	
(1) Total in Train 2		0		0		1		a. Freight	
(2) Total Derailed 0		0		0		0		b. Pass.	
								c. Freight	
								d. Pass.	
								e. Caboose	
								0	
								0	
								0	
								0	
37. Equipment Damage									
This Consist \$2,056,743.00			38. Track, Signal, Way, & Structure Damage \$632,432.00			39. Primary Cause Code E54C			
						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 4 Mi 30	
								46. Conductor Hrs 4 Mi 30	
Casualties to:									
47. Railroad Employees		48. Train Passengers		49. Other		50. EOT Device? 1. Yes 2. No 1			
Fatal 0		0		0		51. Was EOT Device Properly Armed? 1. Yes 2. No 1			
Nonfatal 0		0		0		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			A. Spec. MoW Equip. Code			
3. Commuter train			6. Cut of cars			9. Maint./inspect.car			
						54. Was Equipment Attended? Code 1. Yes 2. No 1			
						55. Train Number/Symbol COKNA13			
56. Speed (recorded speed, if available) Code R - Recorded E - Estimated 40 MPH R			58. Method(s) of Operation (enter code(s) that apply)						58a. Remotely Controlled Locomotive?
			a. ATCS g. Automatic block m. Special instructions b. Auto train control h. Current of traffic n. Other than main track						0 = Not a remotely controlled 1 = Remote control portable

57. Trailing Tons (gross tonnage, excluding power units) 2847	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) d e N/A N/A N/A	2 = Remote control tower 3 = Remote control transmitter - more than one remote control transmitter 0
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59. Principal Car/Unit (1) First involved (derailed, struck, etc) UP5712	a. Initial and Number	b. Position in Train 1	c. Loaded(yes/no) N/A	60. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box. Alcohol: N/A Drugs: N/A
(2) Causing (if mechanical cause reported) 0	0	0	N/A	61. Was this consist transporting passengers? (Y/N) N

62. Locomotive Units	a. Head End	Mid Train b. Manual c. Remote	Rear End d. Manual c. Remote	63. Cars	Loaded a. Freight b. Pass.	Empty c. Freight d. Pass.	e. Caboose
(1) Total in Train	2	0 0	0 1	(1) Total in Equipment Consist	0 0	135 0	0
(2) Total Derailed	1	0 0	0 0	(2) Total Derailed	0 0	0 0	0

64. Equipment Damage This Consist \$20,000.00	65. Track, Signal, Way, & Structure Damage \$0.00	66. Primary Cause Code M101	67. Contributing Cause Code N/A
Number of Crew Members		Length of Time on Duty	

68. Engineer/Operators 1	69. Firemen 0	70. Conductors 1	71. Brakemen 0	72. Engineer/Operator Hrs 2 Mi 45	73. Conductor Hrs 2 Mi 45
Casualties to:	74. Railroad Employees	75. Train Passengers	76. Other	77. EOT Device? 1. Yes 2. No   1	78. Was EOT Device Properly Armed? 1. Yes 2. No   1
Fatal	0	0	0	79. Caboose Occupied by Crew? 1. Yes 2. No   N/A	
Nonfatal	0	0	0		

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
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83. Speed (recorded speed, if available) Code R - Recorded E - Estimated N/A MPH   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
84. Trailing Tons (gross tonnage, excluding power units) N/A				

86. Principal Car/Unit (1) First involved (derailed, struck, etc) N/A	a. Initial and Number	b. Position in Train N/A	c. Loaded(yes/no) N/A	87. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box. Alcohol: N/A Drugs: N/A
(2) Causing (if mechanical cause reported) N/A	N/A	N/A	N/A	88. Was this consist transporting passengers? (Y/N) N/A

89. Locomotive Units	a. Head End	Mid Train b. Manual c. Remote	Rear End d. Manual c. Remote	90. Cars	Loaded a. Freight b. Pass.	Empty c. Freight 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

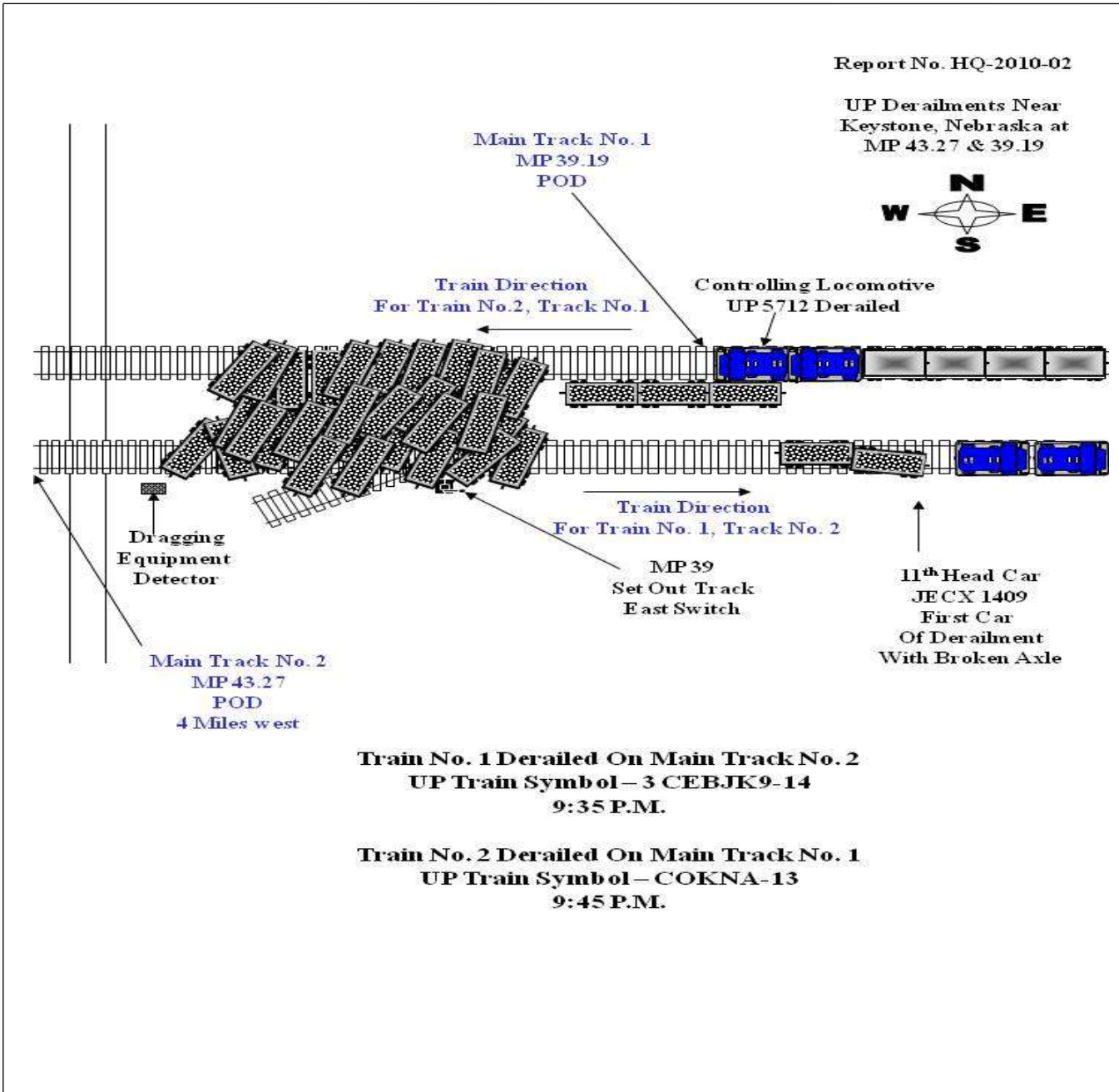
91. Equipment Damage This Consist N/A	92. Track, Signal, Way, & Structure Damage N/A	93. Primary Cause Code N/A	94. Contributing Cause Code N/A
Number of Crew Members		Length of Time on Duty	

95. Engineer/Operators N/A	96. Firemen N/A	97. Conductors N/A	98. Brakemen N/A	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	104. EOT 1. Yes 2. No   N/A	105. Was EOT Device Properly 1. Yes 2. No   N/A
Fatal	N/A	N/A	N/A	106. Caboose Occupied by Crew? 1. Yes 2. No   N/A	
Nonfatal	N/A	N/A	N/A		

Highway User Involved				Rail Equipment Involved			
107. C. Truck-Trailer A. Auto B. Truck 108. Vehicle Speed (est. MPH at impact) N/A	F. Bus G. School Bus H. Motorcycle	J. Other Motor Vehicle K. Pedestrian M. Other (spec. in narrative) N/A	Code N/A	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) N/A	Code N/A
109. geographical 1. North 2. South 3. East 4. West   N/A				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 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 N/A	116. Signaled Crossing (See instructions for codes)				Code N/A	117. Whistle Ban 1. Yes 2. No 3. Unknown		Code N/A	
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			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 3. Passing Train 5. Vegetation 2. Standing Railroad Equipment 4. Topography 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

Eastbound Union Pacific Railroad (UP) loaded coal train 3 CEBJK9-14 derailed Thursday, January 14, 2010 at 9:35 p.m. MST. The derailment occurred about 16 miles west of the town of Keystone, Nebraska in Keith County at UP Milepost (MP) 43.27 on Main Track # 2, located on the UP's South Morrill Subdivision of the North Platte Service Unit. Trains operate under Centralized Traffic Control (CTC). The UP train was traveling at a recorded speed of 26 mph at the time of the incident. Starting from the head-end locomotive consist the 11th head car and the 13th through the 46th head cars were derailed. The UP Main Line Tracks # 1 and # 2 were fouled.

Westbound UP empty coal train COKNA-13 was traveling on Main Track # 1 and derailed at 9:45 p.m. MST. The engineer initiated an emergency train air brake application after hearing a dragging equipment alarm (set off by UP Train 3 CEBJK9-14), and losing the locomotive cab signal. The recorded speed of the train was 40 mph. UP Train COKNA-13 impacted the piled up coal on Main Track # 1 at MP 39.19. As a result of the impact lead locomotive # UP5712 was derailed. The train derailed as a result of spilled coal on to Main Track # 1 from UP Train 3 CEBJK9-14.

There were no injuries to the UP crews of either train. There were no hazardous materials involved. Damage estimates to the equipment of UP Train 3 CEBJK9-14, were \$2,056,743. Damage estimates to UP Train COKNA-13 were \$ 20,000. Damage estimates to the track were \$632,432.

At the time of the accident the conditions were dark and clear with a temperature of 23°F.

The FRA's investigation determined the probable cause of the derailment of UP Train 3 CEBJK9-14 was due to a broken axle on car # JECX 1409. FRA Cause Code- E54C- Journal Fractured, new cold break. This investigation also determined the probable cause of derailment of the UP Train Symbol COKNA-13, was due to piled up coal on Main Track # 1 as a result of UP Train CEBJK9-14 derailing. FRA Cause Code, M101- snow, ice, mud, gravel, coal, and etc. on track.

## 138. NARRATIVE

## CIRCUMSTANCES PRIOR TO THE ACCIDENT

## UP Train 3 CEBJK9-14

UP coal train 3 CEBJK9-14 was delivered by the Burlington Northern Santa Fe Railway (BNSF) as a loaded coal train to the UP RR at Northport, Nebraska. The train originated as loaded BNSF Coal Train C EBMNNJO -12 on January 13, 2010 at the North Antelope Coal Mines near Bill, Wyoming. When the train was delivered from the BNSF to the UP at Northport, the train symbol changed to UP Train 3 CEBJK9-14.

The two person crew of UP Train 3 CEBJK9-14 consisted of a locomotive engineer and a conductor. They went on duty at 5:05 p.m. MST, on January 14, 2010 at South Morrill, Nebraska. The two person crew was taken by vehicle from South Morrill to Northport to board their train. Each crewmember received more than the required statutory off-duty rest period prior to reporting for duty. The consist upon leaving Northport was equipped with two locomotives at the front of the train, one distributive power locomotive unit (DPU) on the rear, and 123 loaded coal cars. It was 6,864 feet long, and weighed 17,049 tons. The train was scheduled to travel to Jeffery, Kansas.

The last Class I air brake test was performed at Donkey Creek, Wyoming on January 12, 2010 at 8:36 p.m. as empty westbound coal Train E NPJEBM0-11. The air brake test was successfully performed on the BNSF by BNSF personnel. The required locomotive inspections were successfully performed on January 13, 2010 by BNSF personnel. The train departed Northport at approximately 7:50 p.m.

As the loaded coal train approached the accident area both crewmembers were present in the control compartment of the lead locomotive when the derailment occurred. The engineer was positioned on the south side of the locomotive at the controls and the conductor was positioned in the conductors' seat on the north side of the locomotive. Interviews performed by FRA revealed that the trip was uneventful prior to the derailment. The FRA investigated event recorder data and confirmed that UP Train 3 CEBJK9-14 was

traveling at a recorded speed of 26 mph prior to the derailment.

#### UP Train COKNA-13

The two person crew of UP Train COKNA-13 consisted of a locomotive engineer and a conductor. The crew went on duty at 7:00 p.m. MST on January 14, 2010 at North Platte, Nebraska which is their home terminal. Each crewmember had received more than the required statutory off-duty rest period prior to reporting for duty. The train upon departing North Platte was equipped with two locomotives at the front of the train, one DPU on the rear, and 135 empty coal cars. It was 7,512 feet long and weighed 2,847 tons. This train was scheduled to travel from North Platte to the North Antelope Coal Mines located near Bill. The last Class I air brake test was performed by mechanical personnel in North Platte on January 14, 2010 at 7:19 p.m. MST. The test was conducted successfully by UP personnel. The train departed North Platte at approximately 8:40 p.m. MST.

As the empty coal train approached the accident area, both crewmembers were present in the control compartment of the lead locomotive. The engineer was positioned on the north side of the locomotive at the controls and the conductor was positioned in the conductor's seat on the south side of the locomotive. Interviews performed by FRA revealed that the trip was uneventful prior to the derailment. The FRA investigated event recorder data and confirmed that UP Train COKNA-13 was traveling at a recorded speed of 40 mph prior to the derailment.

This portion of the South Morrill Subdivision has two freight main tracks: Main Track # 1 (north side), Main Track # 2 (south side). UP Train 3 CEBJK9-14 was traveling east on Main Track # 2. UP Train CONKA-13 was traveling west on Main Track # 1. Main Tracks # 1 and # 2 are tangent constructed with concrete cross ties placed on 24 inch centers. The rail is 133 lbs continuous welded rail (CWR) and was laid new in 1999. Traveling east or west in the area of the derailment the grade is practically level.

The railroad timetable direction of UP Train 3 CEBJK-14 was east and the geographic direction was also east. The railroad timetable direction of UP Train COKNA-13 was west and the geographic direction was also west. Timetable directions are used throughout this report.

#### THE ACCIDENT

##### UP Train 3 CEBJK9-14

UP Train 3 CEBJK9-14 was traveling eastward on Main Track # 2 at a recorded speed of 26 mph. The speed was recorded by the event recorder of the controlling locomotive UP # 5986. The maximum operating speed for a loaded coal train is 50 mph as designated by the current UP North Platte Timetable # 3. An axle broke behind the backing ring of the L2 wheel on the 11th head car # JECX 1409 at MP 43.27. UP officials found the L2 roller bearing on the south side of the right-of-way at this location. This is considered the point of derailment (POD). The train crew was unaware that the train had derailed one car. The train continued to drag the derailed car about 4 miles.

As the train approached MP 39, both the engineer and the conductor stated that they felt a tug on the train. Within a couple of seconds, the crew felt another tug and then they experienced an undesired emergency application of the train air brakes. The crew stated there was an approaching train on Main Track # 1. The conductor said that he could see the lead locomotive number of the approaching train. He said that he got on the radio and called out the approaching locomotives number, UP locomotive # 5712. He said he called out emergency three times. He stated that their train had just gone into emergency over the radio. After he made the emergency call on the radio, both the engineer and the conductor stated that they heard an alarm go off over the radio. The alarm was from a dragging equipment detector in the area. Both crewmembers said that it only alerted for a few seconds. The engineer said that the head-end of his train came to a stop near MP 38.5 and that the head-end power of the approaching train had just passed them as they came to a stop.

After UP Train 3 CEBJK9-14 came to a stop the conductor stated that he dismounted the locomotive to inspect the train. He said that when he got back to the 11th car from the head-end, he saw a gap between those first cars and the remainder of the train. He then saw that there were cars turned over on their side blocking both main line tracks. The conductor said that he notified the dispatcher of his findings. The 11th car and the 13th through the 46th cars were derailed. All car counts include the head-end locomotives. The

12th head car was not derailed. Three of the coal cars were turned over on their sides next to Main Track # 1. The coal from these cars spilled onto Main Track # 1 at MP 39.19. The remaining derailed cars were in an accordion pile at the derailment site.

#### UP Train COKNA-13

UP Train COKNA-13 was traveling westward on UP Main Track # 1 at a recorded speed of 40 mph just prior to the derailment. The speed was recorded by the event recorder of the controlling locomotive # UP 5712. The maximum operating speed for an empty coal train is 50 mph as designated by the current UP North Platte Timetable # 3.

As the train approached the accident area, the engineer stated that he had just turned back around in his seat after his train negotiated a curve near MP 37. The engineer said that when he turned back around he looked at his speedometer and the train was traveling 43 mph. At that time both crewmembers stated that they heard a dragging equipment alarm over the radio. Both crewmembers said that the cab signals dropped as the head-end of the approaching train went past. Both crewmembers stated that the lighted signal in front of them at MP 39 was no longer in view. At that time, the engineer said that he reduced the brake pipe pressure by 15 psi from the train and throttled the locomotives down to throttle notch # 2. This was recorded by the event recorder on controlling locomotive # UP 5712. He said that the conductor had gotten up out of his seat and stepped behind him. The engineer said that the conductor was telling him to throw the train into emergency. The engineer stated that he initiated an emergency brake application. He said that by the time the train stopped it had impacted the spilled coal from the derailed cars of Train # 1. This was at MP 39.19, which is the POD for UP Train COKNA-13. The emergency application was recorded by the event recorder on the controlling locomotive. The engineer stated that he and the conductor realized that the coal and coal dust from UP Train CEBJK9-14 had blocked them from seeing the signal just before the derailment of their train. The crew of this train stated that only the controlling locomotive was derailed. This locomotive sustained damage to the front end but remained upright after the derailment.

After UP officials arrived at the scene of the accident the engineer and the conductor of UP Train CEBJK9-14 were taken to a local area hospital for the required alcohol and drug testing. There was about 960 feet of Main Track # 1 destroyed. It was put back in-service at 6:15 p.m. MST, on January 15, 2010. There was about 1,440 feet of Main Track # 2 destroyed. It was put back in-service at 6:30 p.m. MST, on January 16, 2010. There were no injuries to the UP crews of either train. There were no hazardous materials involved. Damage estimates to the equipment of UP Train CEBJK9-14 were \$2,056,743. Damages estimates to UP Train COKNA-13 were \$20,000. Damage estimates to the track were \$632,432.

#### ANALYSIS AND CONCLUSIONS:

##### ANALYSIS - TOXICOLOGICAL TESTING:

The crewmembers of UP Train CEBJK9-14 were tested for alcohol and drug usage in accordance with FRA post-accident criteria. There were no toxicological tests performed on the crewmembers of UP Train COKNA-13.

##### CONCLUSION:

Results of the tests were negative. Intoxication was not a factor.

##### ANALYSIS - LOCOMOTIVE ENGINEER OPERATING PERFORMANCE:

On UP Train CEBJK9-13, lead locomotive # UP 5986 was equipped with a speed indicator and an event recorder as required by Federal Regulations. The relevant event recorder data was downloaded by the manager of operating practices at the derailment site and was analyzed by UP Officials at the UP South Morrill terminal. UP Train COKNA-13, lead locomotive # UP 5712 was equipped with a speed indicator and an event recorder as required by Federal Regulations. The relevant event recorder data was downloaded by the UP Manager of Operating Practices at the derailment site and was analyzed at the UP South Morrill terminal.

##### CONCLUSION:



The locomotive engineers of both trains were in compliance with all applicable railroad operating and train handling requirements.

**ANALYSIS - FATIGUE:**

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

**CONCLUSION:**

FRA concluded fatigue was not probable for any of the employees.

**ANALYSIS - MECHANICAL INFORMATION:**

UP Train CEBJK9-14 received a Class I train air brake test and inspection on January 12, 2010 at Donkey Creek, Wyoming by BNSF employees. At the time of the test the train was identified as BNSF Train E-NPJEBO-11, a BNSF extended haul train. The FRA post investigation of the inspection and repair records of lead locomotive # UP 5986 and trailing locomotive # BNSF 6205 revealed that both locomotives had received the required mechanical inspections. The UP mechanical personnel made a post inspection of lead locomotive # UP 5986 and trailing locomotive # BNSF 6205, and the eight head-end loaded coal hopper cars that did not derail. Recorded data received from the UP shows that the train passed by a hotbox and dragging equipment detector at UP MP 46 before the derailment. During the investigation subsequent to the accident, the 11th head car # JECX 1409 was discovered with a broken axle at the # 2 location. This broken axle and the L2 roller bearing that broke off the axle were sent to the UP laboratory in Omaha for analysis.

UP Train COKNA-13 received a Class I train air brake test and inspection on January 14, 2009 at North Platte by the UP. The FRA post investigation of the inspection and repair records of lead locomotive # UP 5712 and trailing locomotive # UP 6772 revealed that both locomotives had received the required mechanical inspections.

**CONCLUSION:**

The equipment involved in the derailment of UP Train CEBJK9-14 was 35 loaded coal cars of aluminum construction. The air brake test and locomotive inspections were performed as required by the FRA. No defects were found. The post inspection performed by the UP on locomotive # UP 5986, locomotive # BNSF 6205, and the eight head-end cars found no defects. There were no defects reported by the hot box and dragging equipment detector at MP 46.7, prior to the derailment. The laboratory analysis report on the broken axle on car # JECX 1409 confirmed that the axle broke due to pitting of the axle under the roller bearing. This pitting was believed to have caused the cold break of the axle just behind the backing ring of the L2 roller bearing. Results of the investigation by the FRA found that a broken axle is the probable cause of the derailment of UP Train CEBJK9-14.

The equipment involved in the derailment of UP Train COKNA-13 was lead locomotive # UP 5712. The train air brake test and locomotive inspections were performed as required by the FRA. No defects were found. Results of the mechanical inspection found no mechanical problems that might have been a casual or contributing factor in this derailment.

**ANALYSIS - LAB:**

The 11th head car # JECX 1409 was found with a broken axle at the # 2 location. This broken axle and the L2 roller bearing that broke off the axle were sent to the UP laboratory in Omaha for analysis. The director of mechanical maintenance at North Platte stated that the Omaha laboratory confirmed pitting on the axle underneath the L2 backing ring.

**CONCLUSION:**

The laboratory analysis determined the broken axle was the probable cause of the accident; however, the lab report was not available at the time this report was completed.

#### ANALYSIS - TRACK:

Records were obtained of the required track inspection of the area 30 days prior to the derailment for track inspections, detector car (DC45) defects, and geometry car (EC4) results. The UP also performed a post derailment track geometry measurements west for UP Train 3 CEBJK9-14.

#### CONCLUSION:

Results of track inspections in the area for the previous month in the area of the accident revealed that the track was in good condition, with no FRA defects. There were no defective conditions in the area reported by the rail flaw detector car DC45. The EC4 car evaluation on September 23, 2009, revealed no defective conditions in the area of the accident, and there were no slow orders in place for this area of track the day of the accident. Accounts of the condition of the track and surface conditions of the area were provided by UP's Director of Track Maintenance. In addition, copies of documented inspection reports were also provided by the UP to the FRA. All indicate that the track and surface conditions met FRA requirements. Results of the track inspections and track conditions prior to the derailment found no problems that might have been a casual or contributing factor to the derailment of either train.

#### ANALYSIS - WEATHER:

The weather on the night of the accident was clear and cold. The temperature on the night of the accident was 23° F with no drastic change in the 24 hours prior to the derailment.

#### CONCLUSION:

The weather at the time of the derailment, and 24 hours prior, was cold but constant. This temperature range is typical for this time of year. Weather was not a factor in this derailment.

#### OVERALL CONCLUSIONS:

The railroad was in full compliance with their own and all applicable Federal regulations and standards. Results of toxicological testing were negative indicating that intoxication was not a factor. Neither train crew knew of any outstanding information as to why the cars derailed. The locomotive engineers were in compliance with all applicable railroad operating and train handling requirements indicating train handling was not the cause. Fatigue analysis testing of the train crews indicated that fatigue was not probable for either crew. The mechanical investigation indicates that a broken axle on car # JECX 1409 caused the derailment of UP Train 3 CEBJK9-14. As a result of that derailment, coal spilled from three cars onto Main Track # 1, subsequently causing the derailment of UP Train COKNA-13. Results of the track inspections and track conditions prior to the derailment found no problems that might have been a casual or contributing factor to the derailment of UP Train 3 CEBJK9-14. The weather was normal for this time of the year and was not a contributing cause to this derailment.

#### PROBABLE CAUSE AND CONTRIBUTING FACTORS:

The FRA's investigation determined the probable cause of the derailment of UP Train 3 CEBJK9-14, was due to a broken axle on car # JECX 1409. The Cause Code- E54C- Journal Fractured, new cold break. This investigation also determined the probable cause of derailment of the UP Train COKNA-13, was due to piled up coal on Main Track # 1 as a result of UP Train 3 CEBJK9-14 derailling. The Cause Code, M101- snow, ice, mud, gravel, coal, and etc. on track.