Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2007-79

Union Pacific
Schuyler, NE
December 10, 2007

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

FRA FACTUAL RAILROAD ACCIDENT REPORT

FRA File # HQ-2007-79

1.Name of Railroad Operating Train #1: Union Pacific RR Co. [UP]	1a. Alphabetic Code: UP	1b. Railroad Accident/Incident No.: 1207CB005
2.Name of Railroad Operating Train #2: N/A	2a. Alphabetic Code: N/A	2b. Railroad Accident/Incident No.: N/A
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.: 1207CB005
5. U.S. DOT_AAR Grade Crossing Identification Number:	6. Date of Accident/Incident: Month 12 | Day 10 | Year 2007	7. Time of Accident/Incident: 07:14:00 ☑ AM ☐ PM

8. Type of Accident/Indicent (single entry in code box)					Code
1. Derailment	4. Side collision	7. Hwy-rail crossing	10. Explosion-detonation	13. Other (describe in narrative)	01
2. Head on collision	5. Raking collision	8. RR grade crossing	11. Fire/violent rupture		
3. Rear end collision	6. Broken Train collision	9. Obstruction	12. Other impacts		

9. Cars Carrying HAZMAT	10. HAZMAT Cars Damaged/Derailed	11. Cars Releasing HAZMAT	12. People Evacuated	13. Division
0	N/A	N/A	0	Council Bluffs

14. Nearest City/Town	15. Milepost (to nearest tenth)	16. State Abbr	16. State Code	17. County
Schuyler	68.4	N/A	NE	COLFAX

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
10 F		1		2		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. West	Code
Main Track No 2		5	152		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
	1	1. Yes	1	CBTND908

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

30. Trailing Tons (gross tonnage, excluding power units): 17750

31. 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)				
d	g	h	N/A	N/A

31a. Remotely Controlled Locomotive?
0 = Not a remotely controlled
1 = Remote control portable
2 = Remote control tower
3 = Remote control transmitter - more than one remote control transmitter
0

32. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded (yes/no)
(1) First involved (derailed, struck, etc)	CEFX 40621	38	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	2	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	125	0	0	0	0
(2) Total Derailed	23	0	0	0	0

37. Equipment Damage This Consist	38. Track, Signal, Way, & Structure Damage	39. Primary Cause Code	40. Contributing Cause Code
$152,675.00	$144,716.00	T214	N/A

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 8 Mi 14	Hrs 8 Mi 14

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. Yes	1	1. Yes	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
	N/A	1. Yes	N/A	N/A

56. Speed (recorded speed, if available) R - Recorded E - Estimated		Code
N/A MPH		N/A

58. 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

58a. Remotely Controlled Locomotive?
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/A N/A N/A N/A N/A

2 = Remote control tower
3 = Remote control transmitter - more than one remote control transmitter N/A

59. 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

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/A

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	N/A	N/A	N/A	N/A	N/A
(2) Total Derailed	N/A	N/A	N/A	N/A	N/A

63. 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

64. Equipment Damage This Consist N/A

65. Track, Signal, Way, & Structure Damage N/A

66. Primary Cause Code N/A

67. Contributing Cause Code N/A

Number of Crew Members

68. Engineer/ Operators	69. Firemen	70. Conductors	71. Brakemen
N/A	N/A	N/A	N/A

Length of Time on Duty

72. Engineer/Operator Hrs N/A Mi N/A

73. Conductor Hrs N/A Mi N/A

Casualties to:	74. Railroad Employees	75. Train Passengers	76. Other
Fatal	N/A	N/A	N/A
Nonfatal	N/A	N/A	N/A

77. EOT Device? 1. Yes 2. No N/A

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. 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)*

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

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

Rail Equipment Involved

111. 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)*

112. Position of Car Unit in N/A

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110. Position	Code	113. Circumstance	Code
1.Stalled on Crossing 2.Stopped on Crossing 3.Moving Over Crossing 4. Trapped	N/A	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? 1. Highway User 2. Rail Equipment 3. Both 4. Neither	N/A	114b. Was there a hazardous materials release 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	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					

116. Signaled Crossing *(See instructions for codes)*	Code	117. Whistle 1. Yes 2. No 3. Unknown	Code
	N/A		N/A

118. Location of Warning 1. Both Sides 2. Side of Vehicle Approach 3. Opposite Side of Vehicle Approach	Code	119. Crossing Warning with Highway Signals 1. Yes 2. No 3. Unknown	Code	120. Crossing Illuminated by Street Lights or Special Lights 1. Yes 2. No 3. Unknown	Code
	N/A		N/A		N/A

121. Age	122. Driver's Gender 1. Male 2. Female	Code	123. Driver Drove Behind or in Front of and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown	Code	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		N/A		N/A		N/A

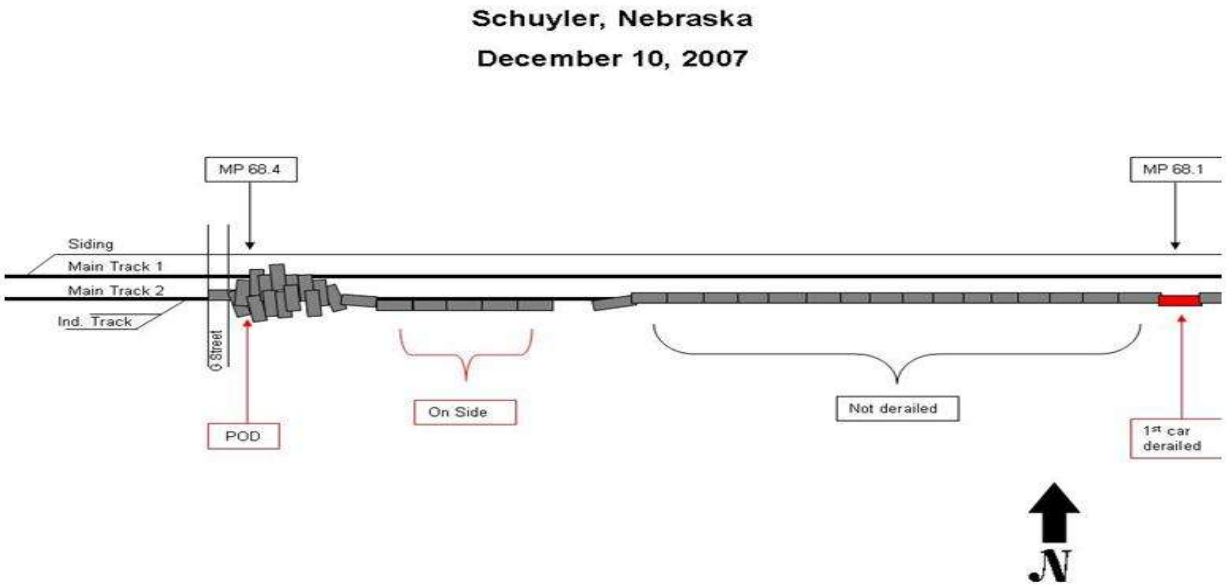
125. Driver Passed Highway Vehicle 1. Yes 2. No 3. Unknown	Code	126. View of Track Obscured by *(primary obstruction)* 1. Permanent Structure 2. Standing Railroad Equipment 3. Passing Train 4. Topography 5. Vegetation 6. Highway Vehicle 7. Other *(specify in narrative)* 8. Not obstructed	Code
	N/A		N/A

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

127. Driver 1. Killed 2.Injured 3. Uninjured	Code	128. Was Driver in the Vehicle? 1. Yes 2. No	Code
	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	133. Locomotive Auxiliary Lights Operational? 1. Yes 2. No	Code
	N/A		N/A
134. Locomotive Headlight Illuminated? 1. Yes 2. No	Code	135. Locomotive Audible Warning Sounded? 1. Yes 2. No	Code
	N/A		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 Company (UP) Unit Coal Train CBTND9-08 consisting of two locomotives and 125 loaded coal hopper cars derailed 23 cars on December 10, 2007, at 7:14 a.m. CST. The accident occurred in Schuyler, Nebraska, at milepost (MP) 68.4, on the UP Council Bluffs Service Unit, Columbus Subdivision.

There were no injuries reported and no hazardous material spills reported as a result of the derailment. Total damages reported as a result of the derailment were $1,297,391.

At the time of the accident, it was dawn and cloudy with a temperature of 10° F.

Probable Cause:"

The probable cause of the derailment is being ruled as T-214 – Joint bar broken (insulated).

138. NARRATIVE

CIRCUMSTANCES PRIOR TO THE ACCIDENT

The train crew of UP Train CBTND9-08 consisted of an engineer and conductor. They first went on duty at 11:00 p.m., CST, December 9, 2007, at North Platte, Nebraska. This is the home terminal and both had received more than the required statutory off-duty rest period prior to reporting for duty.

The assigned train consisted of two locomotives on the head-end, 125 loaded coal hopper cars. The train was 7,050 feet long and with 17,750 trailing tons. The crew was scheduled to operate the train to Fremont, Nebraska.

The train had received a Class 1 train air brake test just prior to departing North Platte. The test was performed by UP mechanical personnel in North Platte, on December 9, 2007.

There was no work performed en route after departing, and the trip was uneventful for the 221 miles leading up to the derailment.

As the eastbound train approached the accident area, the locomotive engineer was seated at the controls on the south side of the lead locomotive. The conductor was seated on the north side of the same locomotive.

In this area of the railroad there is little or no grade and is a segment of tangent track that runs 22.5 miles. Approximately 200 feet prior to the point of derailment (POD), there is a No. 10, left hand trailing point switch followed by a grade crossing approximately 30 feet west of the POD.

The track at and leading up to the POD is constructed of 133 lb Continuous Welded Rail (CWR) on wood crossties. It is box anchored on every tie with Unit Channel Anchors leading both into and away from the grade crossing at MP 68.45.

The railroad timetable direction and geographic direction of the train was east.

THE ACCIDENT

The train was being operated at recorded speed of 36 mph approaching the derailment area. According to the train crew, they did not observe or feel anything unusual prior to the derailment. The recorded speed at the time of the derailment was 35 mph. Both speeds (approaching and at the time of derailment) were recorded by the event recorder of the controlling locomotive. The train was traversing a 40 mph track slow order at the time of the accident. Maximum authorized speed for this train was 50 mph as designated in current UP Council Bluffs Area Timetable #3.

Approximately 30 feet after traversing a grade crossing, the train experienced an undesired emergency application of the train air brake system. Immediately following the emergency application, the train crew contacted the UP dispatcher and told him that
they were in emergency. The conductor of the derailed train walked back to check the train and discovered the 36th head car derailed, the next 16 were not derailed and then
an additional 22 cars were derailed in a pile blocking both main tracks
and a siding to the north.

ANALYSIS AND CONCLUSIONS

ANALYSIS: CREW MEMBERS

The two crew members of UP Unit Coal Train CBTND9-08 were Federal Railroad Administration (FRA) mandatory post-accident toxicologically tested because this accident exceeded the $1 million dollar major accident threshold.

CONCLUSION:

The test results obtained from the FRA Alcohol and Drug Control Program Manager were negative.

The event recorder for the controlling locomotive revealed nothing inconsistent with normal train handling at or prior to the time of the derailment.

ANALYSIS: TRACK

The track was last traversed and inspected by hi-rail vehicle the previous day, with no exceptions taken in the area of the derailment. The last ultra sonic rail detection test through this area was on November 8, 2007, with one exception noted in this area for a bolt-hole crack. According to a UP official, defective rail was replaced in accordance to FRA regulations. The last geometry car survey with the railroads EC-5 car was on September 28, 2007, with no FRA defects noted in the area of POD. The survey revealed some profile deviations that did not meet UP maintenance standards, but were within the parameters of FRA standards.

All on-foot joint bar inspections were performed since January 1, 2007, in accordance to §213.119(g)(6) with the last inspection being made on October 20, 2007.

Track inspection records revealed that this track was inspected well within the required frequency the prior month before the accident, with no exceptions noted in this area.

The track inspector stated he inspected the derailment area the previous day of the accident and took no exceptions. He stated there had been surfacing work performed in this area approximately two months prior to address surface conditions found by their geometry car. He also stated that the 40 mph slow order through this area was because of surface conditions approximately 700 feet prior to the POD. The track inspector further stated there were five total rail joints in the POD area. Two were insulated joints (one on each the north and south rail), and three conventional joints on the south rail. He did not recall any particular problems with these joints other than routine maintenance i.e; loose bolts or an occasional cracked bar.

The UP forwarded six suspect pieces of rail to Rail Sciences Inc., in Omaha, Nebraska for further evaluation. One of these pieces included half of an insulated joint bar with noticeable fatigue cracks initiating in the top of the bars. Unfortunately the other half of this joint was not recovered during clean-up activities.

The pieces of rail revealed they had broken, not because of a defect, but due to an overload rupture caused by the insulated bars breaking. This piece exhibited extreme receiving batter consistent with the markings found on the wheels and one derailed car that passed over this area prior to the catastrophic pile of cars.

The last hotbox/dragging equipment detector at MP 81.03 noted no exceptions.

No suspicious mechanical equipment was found in the wreck or during clean-up activities.

CONCLUSION:

The railroad was in compliance with their own and all applicable FRA standards. There were no witnesses to the accident.

The data reviewed from the event recorder ruled out train handling as a cause. There were no marks found on the rail or ties prior to the pile-up. Also there were no track components, i.e. bridges, grade crossings or culverts at the point of derailment (POD) area that contributed to the cause. The one grade crossing just west of the POD was not damaged by the derailment and did not contribute to this accident. The grade and curvature of the track were not a factor in the derailment.

It was determined that 10 rail cars prior to the first car derailed had definitive marks on the south wheels, consistent with them striking a blunt object. This indicated that the insulated joint most likely broke under the train causing the eventual accident.

PROBABLE CAUSE AND CONTRIBUTING FACTORS:

The evidence discovered on the insulated joint substantiates the cause of the derailment. The probable cause has been determined to be T214 - Broken joint bar (insulated). No contributing cause is suspected.