Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2006-43

Union Pacific
Monpelier, ID
June 6, 2006

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-2006-43

1.Name of Railroad Operating Train #1: Union Pacific RR Co. [UP]	1a. Alphabetic Code: UP	1b. Railroad Accident/Incident No.: 0606PC003
2.Name of Railroad Operating Train #2: N/A	2a. Alphabetic Code: N/A	2b. Railroad Accident/Incident: N/A
3.Name of Railroad Responsible for Track Maintenance: Union Pacific RR Co. [UP]	3a. Alphabetic Code: UP	3b. Railroad Accident/Incident No.: 0606PC003
4. U.S. DOT_AAR Grade Crossing Identification Number	5. Date of Accident/Incident: Month 06 / Day 06 / Year 2006	6. Time of Accident/Incident: 03:48: ☐ 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): 01

8. Cars Carrying HAZMAT	9. HAZMAT Cars Damaged/Derailed	10. Cars Releasing HAZMAT	11. People Evacuated	12. Division
3	2	0	0	Pocatello

13. Nearest City/Town	14. Milepost (to nearest tenth)	15. State Abbr	15. State Code	16. County
Montpelier	103.5	N/A	ID	BEAR LAKE

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
90 F		2		1		1

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
Main		4	56		4

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: 1

26. Was Equipment Attended? 1. Yes 2. No — Code: 1

27. Train Number/Symbol: MNPH K-05

28. Speed (recorded speed, if available) — R - Recorded; E - Estimated: 37 MPH — Code: R

29. Trailing Tons (gross tonnage, excluding power units): 5871

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)				
e	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: 0

31. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded (yes/no)
(1) First involved (derailed, struck, etc)	N/A	61	yes
(2) Causing (if mechanical cause reported)	N/A	N/A	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	3	0	0	0	0	(1) Total in Equipment Consist	28	0	76	0	0
(2) Total Derailed	0	0	0	0	0	(2) Total Derailed	10	0	8	0	0

36. Equipment Damage This Consist	37. Track, Signal, Way, & Structure Damage	38. Primary Cause Code	39. Contributing Cause Code
582539	193750	T109	N/A

Number of Crew Members

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

Length of Time on Duty

44. Engineer/Operator	45. Conductor
Hrs 6 Mi 48	Hrs 6 Mi 48

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 — 1

50. Was EOT Device Properly Armed? 1. Yes 2. No — 1

51. Caboose Occupied by Crew? 1. Yes 2. No — 2

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: N/A

53. Was Equipment Attended? 1. Yes 2. No — Code: N/A

54. Train Number/Symbol: N/A

55. Speed (recorded speed, if available) — R - Recorded; E - Estimated: 0 MPH — Code: N/A

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): 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

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

59. 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

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

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

63. Equipment Damage This Consist: 0

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

65. Primary Cause Code: N/A

66. Contributing Cause Code: N/A

Number of Crew Members

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

Length of Time on Duty

71. Engineer/Operator: Hrs 0 Mi 0

72. Conductor: Hrs 0 Mi 0

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: N/A

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

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

Highway User Involved

79. Type: 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

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

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

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

86a. 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

Rail Equipment Involved

83. 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

84. Position of Car Unit in Train: N/A

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

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

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

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

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

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

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

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

93. Driver's Age: 0

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

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

96. 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

97. Driver Passed Standing Highway Vehicle 1. Yes 2. No 3. Unknown — Code: N/A

98. 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

101. Casulties to Highway-Rail Crossing Users	Killed	Injured
	0	0

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

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

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

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

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

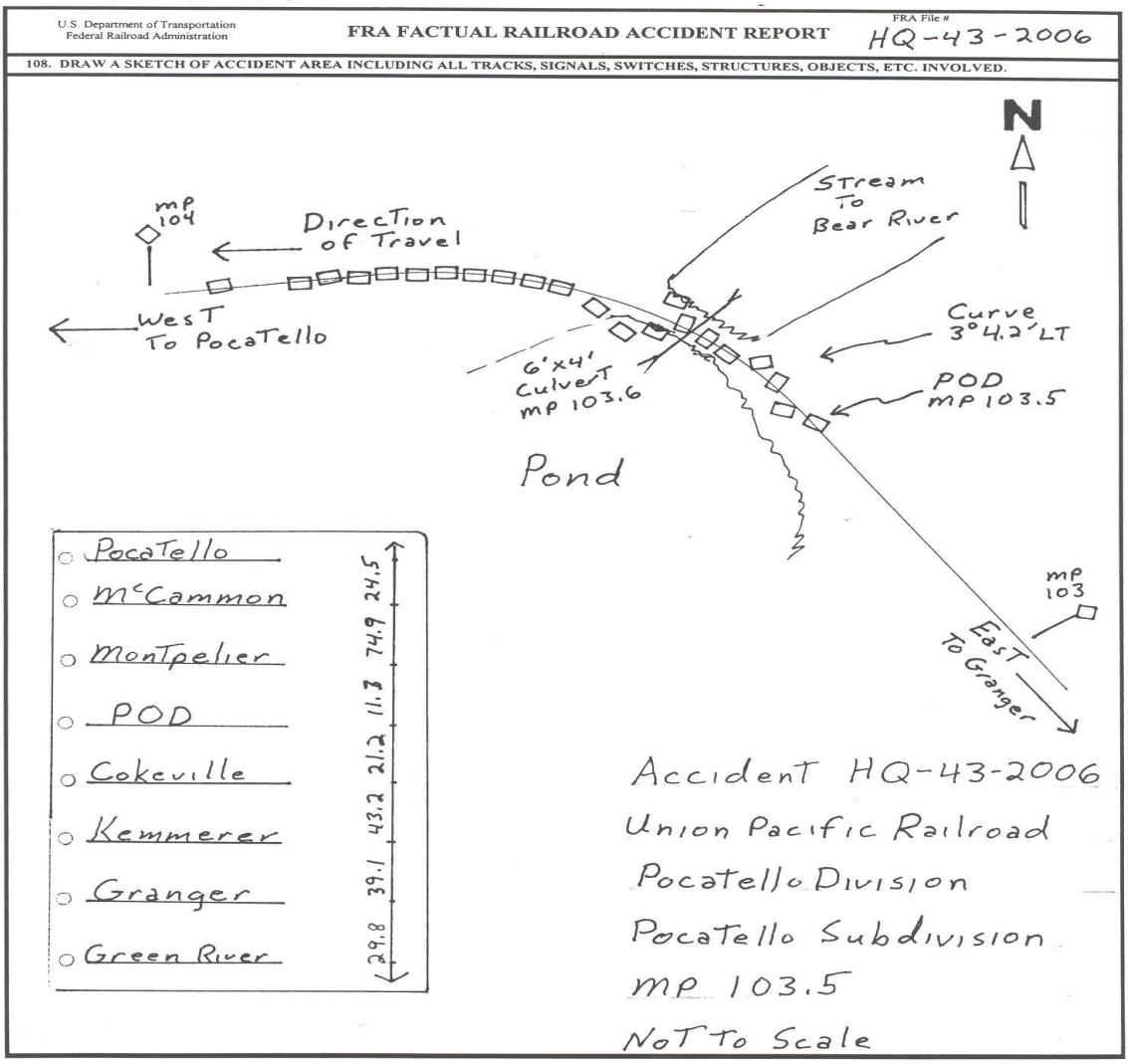
105. Locomotive Auxiliary Lights Operational? 1. Yes 2. No — Code: N/A

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

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

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

HQ-43-2006sketch.jpg



109. SYNOPSIS OF THE ACCIDENT

On June 6, 2006, westward Union Pacific Railroad Company (UP) train MNPHK-05 derailed 18 cars 11.3 miles east of Montpelier, Idaho. The manifest train was operating at 37 mph and consisted of three locomotives, 28 loaded and 76 empty cars. The first eight derailed cars remained upright with only the rear set of wheels off the rail. The last ten cars piled up with four cars coming to rest in a waterway leading to the Bear River. The incident occurred at 3:48 p.m. MDT, at milepost 103.5 on the Pocatello Subdivision in Bear Lake County.

Two of the derailed cars were carrying hazardous material. The UTLX 662465, loaded with molten phenol, remained upright, and had only the rear set of wheels off the rails. The ECUX 459007, loaded with methyl ethyl ketone remained upright but perpendicular to the rails after the derailment. There were no injuries, no hazardous materials released and no evacuation. At the time of the derailment it was partly cloudy and the temperature was 90 °F.

The probable cause for the derailment is track alignment irregular (buckled/sunkink) T109. Recent track maintenance and a temperature change of 38 °F between the morning low temperature and the temperature at the time of the derailment suggests thermal distortion of the track as the cause of the derailment.

Total damages reported were $776,289 ($582,539 to rail cars and $193,750 to track structure).

110. NARRATIVE

Circumstances prior to the Accident
A Union Pacific (UP) crew consisting of a locomotive engineer and a conductor went on duty at their away from home terminal on June 6, 2006 at 9:00 a.m. MDT, Green River, Wyoming. Both employees had received more than the statutory off duty period prior to reporting for duty. They were assigned to operate UP train symbol MNPHK-05. After reviewing their orders they boarded their train and departed Green River at 10:30 a.m.

Their assigned freight train consisted of three locomotives, 28 loaded and 76 empty cars for a total of 104 cars, 5,871 tons, and was 6,957 feet in length. The train originated in North Platte, Nebraska with its destination Hinkle, Oregon. This crew was to operate the train west from Green River, Wyoming, to Pocatello, Idaho, a distance of 245.9 miles and were not scheduled to make any stops en route. According to Union Pacific Train List Issue No. 7 on the lead locomotive, the train received an initial airbrake and EOT test before leaving North Platte, at 9:20 a.m. on June 5, 2006.

As the MNPHK-05 approached the accident area, the engineer was seated at the controls on the north side of the leading locomotive, UP 8913. The conductor was seated on the south side of the locomotive. The engineer and conductor both reported the trip was uneventful until the accident.

Timetable direction of the train was west. Geographical direction of travel was north west. Timetable direction will be used in this report.

Approaching the point of derailment is a 3-degree, 3-minute curve to the left followed by a 3,000 foot tangent to the point of derailment at the entrance of a 3-degree 4-minute curve to the left. The grade approaching the site is 0.08-percent descending.

According to the printout of the event recorder on the leading locomotive the train was being operated at 45 mph approaching the accident area. The throttle position was in idle and the engineer had placed the train in dynamic braking in approach to a temporary speed restriction of 40 mph at MP 104. The maximum authorized speed for trains in this area is 50 mph as designated in the UP Portland Service Area Timetable No. 3.

The Accident
According to the engineer, as the train approached the accident area the engineer felt a bump, similar to going over a speed bump in an automobile. The train slowed to 37 mph and then to 35 mph when the train then experienced a train line induced emergency application of the brakes. The train traveled 629 feet and came to a stop. The speeds were recorded by the locomotive event recorder on the lead locomotive, UP 8913. Maximum authorized speed for this train was 50 mph as designated in UP Portland Area Timetable No. 3 dated June 26, 2005

The engineer notified the dispatcher by radio that they had gone into emergency and were stopped. The conductor left the locomotive to inspect the train. The conductor radioed the engineer and told him there were cars on the ground, and that track ties were on fire. He requested the engineer bring a fire extinguisher to help him put the fire out. The conductor reported that two of the derailed cars were loaded with hazardous material and were still upright and not damaged or leaking. The engineer then contacted the dispatcher and informed him that they had cars on the ground an then went to assist the conductor.

The conductor found 18 cars, the 58th through 61st, the 63rd car, and the 67th through 79th cars of the train had derailed. The first seven derailed cars remained upright, the next four cars were on their sides and the last seven derailed cars were all upright and turned at various angles to the rail. Two of the cars derailed were loaded with hazardous materials. The 61st car was loaded with molten phenol and the 78th car was loaded with methyl ethyl ketone. There was no leakage of hazardous material from any of the derailed cars.

Analysis and Conclusion

Analysis

The accident did not meet the criteria of FRA Post Accident Testing, Subpart C.

The engineer and conductor were tested under the railroad's drug testing policy. Results were negative.

Flange marks on the web of the south rail were found at milepost 103.5, indicating the point of derailment.

Marks on the trackage bed indicate that after the first car derailed the train traveled approximately 2,000 feet before stopping. This indicates the train was traveling about 37 mph at the time of the derailment.

Investigation of the rail cars at the scene did not reveal any problems with the wheels that could have caused the accident.

The assigned track inspector high-railed this territory on May 31, 2006, and again on June 4, 2006, two days before the accident. He took no exceptions to any conditions in the vicinity of the accident.

The derailed cars were in the last half of the train and the first seven cars involved only had the rear set of wheels off the rail suggesting track distortion as the cause of the derailment.

A void in the ballast along the south ends of the ties indicating the ties had shifted northward. Both the north and south rails had rolled toward the south under the derailed cars indicating the track had shifted under the train.

Records indicate a rail slug was installed in the north rail 200 feet east of the point of derailment in February of 2006 to correct a broken rail. The slug rail was two inches longer than the piece of rail that was removed. Several new ties installed in the vicinity of the derailment within the previous two weeks to correct gauge problems in the area may have disturbed the ballast.

The low temperature the morning before the derailment was 52°F and the temperature at the time of the derailment was 90°F, a difference of 38°.

The factors of voided ballast at the tie ends, additional rail installed in winter, and a high temperature difference indicate thermal distortion of the track structure as the cause of this derailment.

Conclusion
An investigation performed by the Federal Railroad Administration concluded that the probable cause of this accident was track alignment irregular (buckled/sunkink) T109.