Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2008-52

Union Pacific (UP)
Elgin, TX
June 3, 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-2008-52

1.Name of Railroad Operating Train #1: Union Pacific RR Co. [UP]	1a. Alphabetic Code: UP	1b. Railroad Accident/Incident No.: 0608SA004
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.: 0608SA004
5. U.S. DOT_AAR Grade Crossing Identification Number:	6. Date of Accident/Incident: Month 06 | Day 03 | Year 2008	7. Time of Accident/Incident: 06:10:00 ☐ 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: 01

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

14. Nearest City/Town	15. Milepost *(to nearest tenth)*	16. State Abbr	16. State Code	17. County
Elgin	944.55	N/A	TX	BASTROP

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
91 F	2	1	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	3	27.5	2

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	ROGBT02

29. Speed *(recorded speed, if available)* R - Recorded; E - Estimated: 44 MPH — Code: R

30. Trailing Tons *(gross tonnage, excluding power units)*: 13585

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): j | N/A | N/A | 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)*	CHTT386492	36	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	3	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	95	0	0	0	0
(2) Total Derailed	39	0	0	0	0

37. Equipment Damage — This Consist: $1,088,782.00

38. Track, Signal, Way, & Structure Damage: $793,641.00

39. Primary Cause Code: M507

40. Contributing Cause Code: 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: Hrs 11 Mi 40

46. Conductor: Hrs 11 Mi 40

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: 1

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

56. Speed *(recorded speed, if available)* R - Recorded; E - Estimated: 0 MPH — Code: 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

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

FRA FACTUAL RAILROAD ACCIDENT REPORT

FRA File # HQ-2008-52

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)*	0	0	N/A
(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/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	0	0	0	0	0
(2) Total Derailed	0	0	0	0	0

63. Cars	Loaded a. Freight	Loaded 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

64. Equipment Damage This Consist $0.00

65. Track, Signal, Way, & Structure Damage $0.00

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
0	0	0	0

Length of Time on Duty

72. Engineer/Operator Hrs 0 Mi 0

73. Conductor Hrs 0 Mi 0

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 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 0

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)*	0	0	N/A
(2) Causing *(if mechanical cause reported)*	0	0	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	0	0	0	0	0
(2) Total Derailed	0	0	0	0	0

90. Cars	Loaded a. Freight	Loaded 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

91. Equipment Damage This Consist $0.00

92. Track, Signal, Way, & Structure Damage $0.00

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
0	0	0	0

Length of Time on Duty

99. Engineer/Operator Hrs 0 Mi 0

100. Conductor Hrs 0 Mi 0

Casualties to:	101. Railroad Employees	102. Train	103. Other
Fatal	0	0	0
Nonfatal	0	0	0

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 0

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

FRA FACTUAL RAILROAD ACCIDENT REPORT

FRA File # HQ-2008-52

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 Ban 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

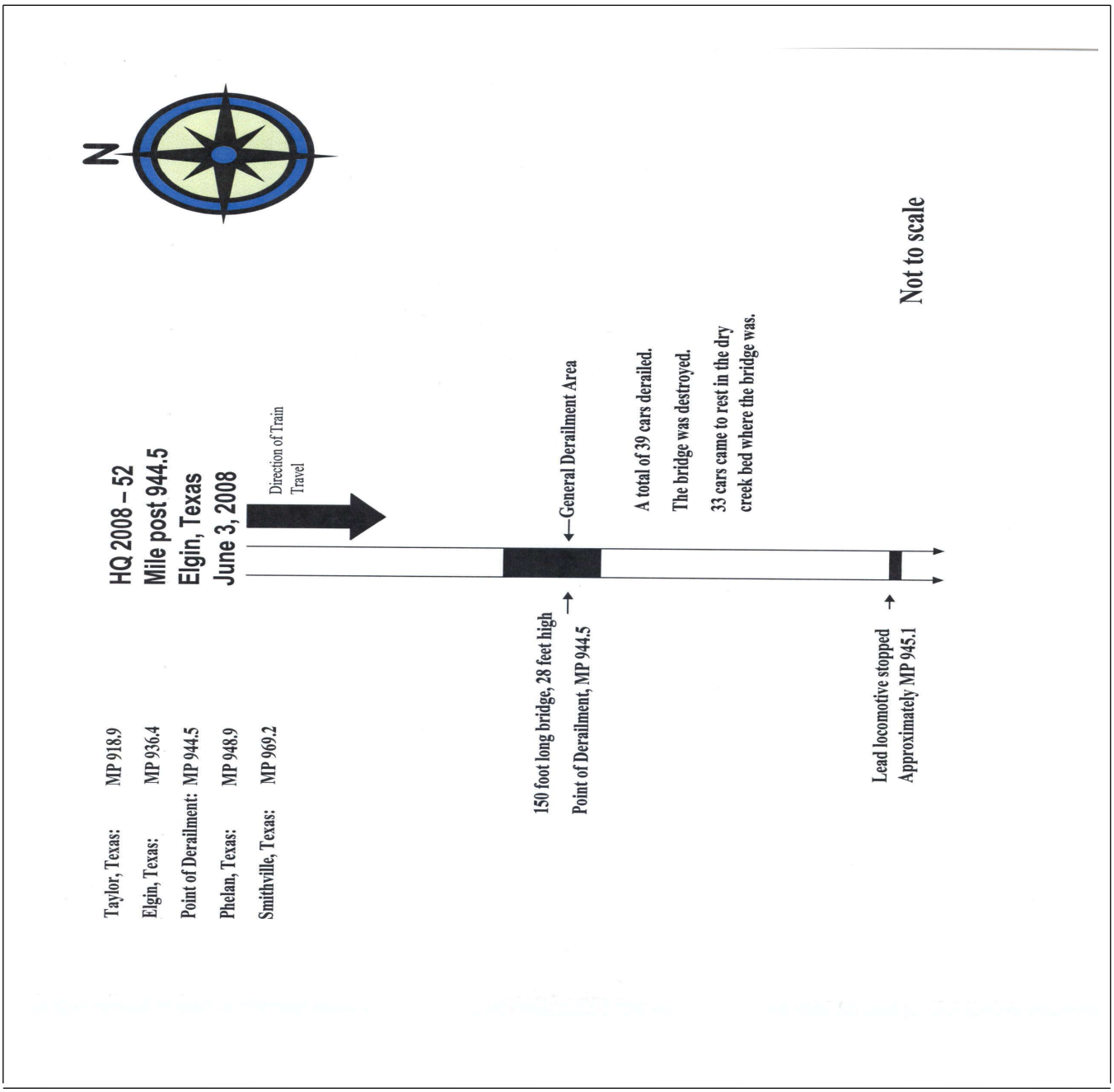
121. Age	122. Driver's Gender 1. Male 2. Female	Code	123. Driver Drove Behind or in Front of and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown	Code	124. Driver 1. Drove around or thru the Gate 2. Stopped and then Proceeded 3. Did not Stop 4. Stopped on Crossing 5. Other *(specify in narrative)*	Code
0		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	127. Driver 1. Killed 2.Injured 3. Uninjured	Code	128. Was Driver in the Vehicle? 1. Yes 2. No	Code
				N/A		N/A
129. Highway-Rail Crossing Users	0	0	130. Highway Vehicle Property Damage *(est. dollar damage)*	0	131. Total Number of Highway-Rail Crossing Users *(include driver)*	0

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

On June 3, 2008 at 6:10 p.m. CDT southbound Union Pacific (UP) freight train ROGBT-02, derailed at UP Milepost 944.55 on the Waco Subdivision of the San Antonio Service Unit. This is a rural area approximately ten miles south of Elgin, Texas. Thirty-nine cars of the 95 car train loaded with rock derailed. No hazardous materials were involved and no injuries were reported.

UP equipment damage is $1,088,782. Track damage, including a 150 foot long bridge which was destroyed, is $793,641.

At the time of the derailment it was clear and the temperature was 91°.

The UP listed the cause of the derailment as FRA cause code T-299; other rail and joint bar defects -CWR.

The probable cause determined by the FRA will be M-507, investigation complete, cause could not be determined.

138. NARRATIVE

CIRCUMSTANCES PRIOR TO THE ACCIDENT

On June 3, 2008 after completing the required statutory off duty rest period the crew of UP train ROGBT-02, consisting of an engineer and conductor, reported for duty at 6:30 a.m. at their home terminal in New Braunfels, Texas. They were transported by van to Corbyn Yard. From there they operated two locomotives to Ogden Yard where the crew picked up a third locomotive. At that time the crew performed an engine air test. Next, the crew picked up and doubled two tracks of loaded rock cars. The two tracks containing the rail cars were air-brake tested prior to the arrival of the crew and were on yard air.

The train which consisted of 3 locomotives and 95 loaded rock cars weighing 13,585 tons and 4,310 feet in length departed Ogden Yard at 11:40 a.m. They were scheduled to travel to Smithville, Texas via the UP's Austin and Waco Subdivisions, a distance of approximately 142 miles.

As the southbound train approached the accident area the locomotive engineer was seated at the controls on the west side of the leading locomotive. The conductor was seated on the east side of the leading locomotive.

In this area of the railroad there are, in succession, a 3 degree curve to the right 1,677 feet in length, followed by a tangent 1,845 feet in length, followed by a 1 degree 30 minute curve to the left about 1,700 feet in length to the point of derailment and 134 feet beyond. The grade of the railroad at the point of derailment (POD) is .52 percent ascending approaching from the north. The railroad time table direction of the train and geographic direction are both south.

THE ACCIDENT

As UP freight train ROGBT-02 approached the POD the locomotive was being operated at a recorded speed of 44 mph. The maximum authorized speed for this train was 40 mph identified in the UP Dallas / Fort Worth Timetable #3. The train crew reported they did not observe or feel anything unusual prior to the derailment.

A speed of 44 mph was recorded by an event recorder on the lead locomotive at the time of the incident.

The train experienced an emergency application of the train air brakes as the train was proceeding over the bridge at MP 944.55. The conductor looked back and observed the loaded rock cars derailing. The lead locomotive stopped about 2,600 feet south of the bridge. Three locomotives and 29 cars, 2 of which were derailed, were still attached to the locomotive. A total of 39 cars derailed.

After notifying the dispatcher that the train was stopped in emergency near milepost 945 the conductor disembarked and walked back to inspect the train. He observed the derailed rock cars and demolished bridge. The engineer informed the dispatcher of the derailment and reported that there were no injuries.

No hazardous materials were involved in the derailment and no evacuations were ordered. The derailment occurred in a remote area.

ANALYSIS AND CONCLUSIONS:

ANALYSIS - TOXICOLOGICAL TESTING:

The UP Officials performed toxicological testing under railroad authority. FRA investigators determined that the accident met the criteria for 49 CFR, Part 219, Subpart C, "Post Accident Toxicological Testing" and two violations were recommended by the FRA for testing without proper authority. Test results were negative.

CONCLUSION:

Intoxication was not a factor and did not contribute to the accident.

ANALYSIS - EVENT RECORDER:

FRA analyzed event recorder data retrieved from the lead locomotive and provided by UP Officials. This data suggested that the emergency application of the air brakes was induced by the train line due to the train separation. The data showed that speed, amperage, throttle, and air brake pressure was constant until the unintentional emergency brake application occurred. The engineer was operating UP locomotive ROGBT-02 at 44 mph in throttle position # 5 when he experienced an emergency application of the train air brake system. The speed was reduced from 44 mph to zero in about one-half mile.

CONCLUSION:

Although the train was being operated at a speed of 44 mph, 4 mph in excess of the 40 mph maximum authorized timetable speed, train handling or train speed was not a factor in the derailment.

ANALYSIS: - FATIGUE

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

CONCLUSION:

Upon analysis of the data information FRA concluded that fatigue was not a probable causal factor for any of the employees.

ANALYSIS - MECHANICAL:

Three wheel sets with broken wheels and four wheels that had broken from their hubs were shipped to Rail Sciences Inc. in Omaha, Nebraska to determine if these components had caused the derailment or were damaged as a result of the derailment.

CONCLUSION:
Rail Sciences Inc. concluded that the eleven components tested were broken as a result of the derailment and did not cause the derailment. Due to the severe destruction of the rock cars mechanical parts could not

be matched with specific cars at the accident site.

ANALYSIS - BRIDGE AND STRUCTURES:

A 150 feet open deck wood trestle bridge was located at mile post 944.55. The bridge was 28 feet in height over a dry creek bed. The POD occurred on the bridge which was totally destroyed in the derailment. Thirty-three of the derailed cars came to rest in the creek bed below the bridge.

The last annual bridge inspection was on 01-16-2008. Between 11-01-2007 and 02-14-2008, a stringer plug was installed between spans four and five. A cap and shim had also been replaced. Stringers one through four had been replaced and eleven bents re-surfaced. No specific bridge components were identified which could have caused or contributed to the derailment.

CONCLUSION:

The bridge was totally destroyed during the derailment. It was not possible to determine if a bridge component failed while the train was on the bridge. Investigators concluded that the bridge damage was the result of the derailment and not a casual or contributing factor.

ANALYSIS - TRACK:

The point of derailment occurred on a 150 foot long open deck wood trestle bridge passing over a dry creek bed 28 feet below. The POD was on the south end of a 1-degree 30 minute curve to the left. The track structure constructed with wood crossties was re-tied and re-surfaced in March 2008. The high rail in the curve was Nippon 1998 133 lb Head Hardened Continuous Welded Rail (CWR) and the low rail was Nippon 1993 133 lb CWR. There are no joints on or near the bridge. The maximum timetable train speed for this location is FRA Class 3, 40 mph track.

UP Geometry Car EC-4 tested the track geometry on February 11, 2008. No exceptions were noted in the derailment area as a result of that test.

A UP track inspector conducted a hi-rail inspection of the track in the derailment area on June 2, 2008. No exceptions were noted in the derailment area.

The UP took track measurements on June 4, 2008 which were verified by the FRA investigators. At the POD and for 45 feet to the north, measurements could not be taken because of track damage. The measurements taken indicate that the track was in compliance with all FRA Class 4 track standards.

The rail was ultrasonically tested by a Dabco rail detector car on May 30, 2008. No defective rails were found in the derailment area. Four sections of broken rail discovered at the crash site were shipped to Rail Sciences in Omaha, Nebraska for evaluation to determine if these rails had caused the derailment.

CONCLUSION:

All the fractures in the rail supplied for evaluation were due to overload, no defects were found. These sections of rail failed during the derailment and did not cause it.

All other evidence found indicates that the track was not the cause of the derailment.

OVERALL CONCLUSIONS:

Information obtained from the event recorder indicates that train handling was not an issue, nor was crew fatigue a factor. Track measurements indicate that the track complied with the FRA Track Safety Standards for Class 4 track. Four sections of rail sent to a laboratory indicate they did not cause the derailment.

Four wheel sets sent to the laboratory for analysis indicates they did not cause the derailment. Due to the total destruction of the cars wheel sets and various car components at the derailment site could not be matched up to specific cars.

The bridge was destroyed during the derailment. Because of thirty-nine loaded rock cars piled on each other at the bridge site, it could not be determined if the bridge failed as the train was passing over it.

PROBABLE CAUSE

The UP lists the primary cause code as T 299, rail and joint bar defects in CWR territory. The evidence does not support these conclusions. The FRA lists the primary cause code as M507, investigation complete, cause could not be determined.