Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2007-25

Amtrak/Union Pacific Railroad Company (ATK/UP)
Ontario, California
May 3, 2007

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-2007-25

1.Name of Railroad Operating Train #1: Amtrak [ATK]	1a. Alphabetic Code: ATK	1b. Railroad Accident/Incident No.: 1042640001
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.: 0507LA004
5. U.S. DOT_AAR Grade Crossing Identification Number:	6. Date of Accident/Incident: Month 05 Day 02 Year 2007	7. Time of Accident/Incident: 04:04: ☐ 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	Los Angeles

14. Nearest City/Town	15. Milepost (to nearest tenth)	16. State Abbr	16. State Code	17. County
Ontario	523.8	N/A	CA	SAN BERNARDINO

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
75 F		2		1		3

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.	Code
Guasti Siding		3	N/A		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
		2		1	ATM02-02

29. Speed (recorded speed, if available) R - Recorded E - Estimated	Code	31. Method(s) of Operation (enter code(s) that apply)	31a. Remotely Controlled Locomotive?
29 MPH	R	a. ATCS; b. Auto train control; c. Auto train stop; d. Cab; e. Traffic; f. Interlocking; g. Automatic block; h. Current of traffic; i. Time table/train orders; j.Track warrant control; k. Direct traffic control; l.Yard limits; m.Special instructions; n. Other than main track; o. Positive train control; p. Other (Specify in narrative)	0 = Not a remotely controlled; 1 = Remote control portable; 2 = Remote control tower; 3 = Remote control transmitter - more than one remote control transmitter: 0

30. Trailing Tons (gross tonnage, excluding power units): 0

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

32. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded (yes/no)
(1) First involved (derailed, struck, etc)	ATK87	2	no
(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
N/A	N/A

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

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	1	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	0	8	0	0	0
(2) Total Derailed	0	820	0	0	0

37. Equipment Damage This Consist	38. Track, Signal, Way, & Structure Damage	39. Primary Cause Code	40. Contributing Cause Code
201857	50876	T110	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 2 Mi 34	Hrs 2 Mi 34

Casualties to:	47. Railroad Employees	48. Train Passengers	49. Other
Fatal	0	0	0
Nonfatal	0	0	1

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

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	Code	58. Method(s) of Operation (enter code(s) that apply)	58a. Remotely Controlled Locomotive?
0 MPH	N/A	a. ATCS; b. Auto train control; g. Automatic block; h. Current of traffic; m.Special instructions; n. Other than main track	0 = Not a remotely controlled; 1 = Remote control portable

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57. Trailing Tons (gross tonnage, excluding power units): 0

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

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

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 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. A. Auto; B. Truck; C. Truck-Trailer.; D. Pick-Up Truck; E. Van; F. Bus; G. School Bus; H. Motorcycle; J. Other Motor Vehicle; K. Pedestrian; M. Other (spec. in narrative) Code: N/A

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

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

Rail Equipment Involved

111. Equipment 1.Train(units pulling); 2.Train(units pushing); 3.Train (standing); 4.Car(s) (moving); 5.Car(s) (standing); 6.Light Loco(s) (moving); 7.Light(s) (standing); 8.Other (specify in narrative) Code: N/A

112. Position of Car Unit in: N/A

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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								116. Signaled Crossing (See instructions for codes)	Code N/A	117. Whistle 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

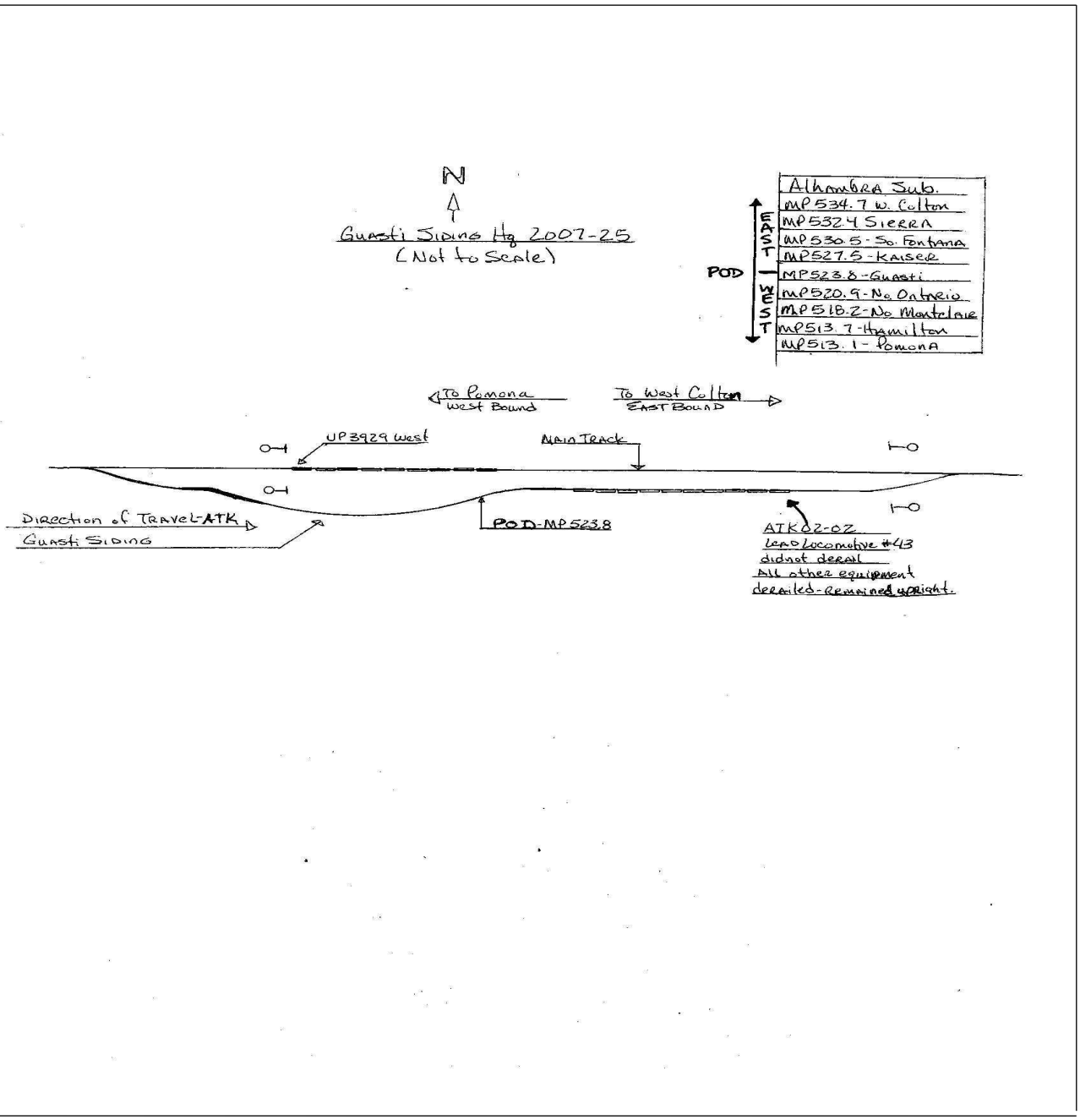
121. Age N/A	122. Driver's Gender 1. Male 2. Female	Code N/A	123. Driver Drove Behind or in Front of and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown	Code N/A	124. Driver 1. Drove around or thru the Gate 2. Stopped and then Proceeded 3. Did not Stop 4. Stopped on Crossing 5. Other (specify 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 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

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

On May 2, 2007, at 4:04 p.m. PDT, eastbound Amtrak passenger train ATM02-02 Sunset Limited, traveling at a recorded speed of 29 mph, derailed on the Guasti Siding, Ontario, California, at milepost 523.8. The Guasti Siding is located on the Union Pacific's (UP) Los Angeles Service Unit, Alhambra Subdivision. The consist included two locomotives with eight passenger cars. ATM02-02 was scheduled to operate between Los Angeles, California and Orlando, Florida. The crew was scheduled to take the train from Los Angeles to Maricopa, Arizona. Train movements in this part of the railroad are under centralized traffic control, controlled by a UP dispatcher located in San Bernardino, CA. The authorized speed on the Guasti Siding is 30 mph, FRA Class 3 track.

The second locomotive and the eight passenger cars derailed but remained upright; the lead locomotive did not derail. A total of 198 passengers were aboard.

One service crew member, a cook, was slightly injured when his right elbow hit a table in the dining car. He was taken to a local hospital and was released from the area hospital and returned to duty with no time lost. No other injuries were reported among the train crew members, service crew members or passengers.

The weather was clear, visibility was good, and the temperature was 75 degrees Fahrenheit.

Damage was reported at $201,857 for equipment and $50,876 for track and signal.

The probable cause of the accident was wide gage due to defective or missing crossing ties, T110.

138. NARRATIVE

Circumstances Prior to the Accident

The crew of train No. ATM02-02 included a locomotive engineer, an assistant engineer, a conductor, and an assistant conductor. They first went on duty at 1:30 p.m PDT, May 2, 2007, at Union Station, Los Angeles, California. This is the home terminal for the crew members and all received more than the statutory off duty period prior to reporting for duty. Their assigned train consisted of two locomotives and eight passenger cars. It was 566 feet long. The train was scheduled to travel from Los Angeles to Maricopa, Arizona, with a final destination of Orlando, Florida. The train was diverted into Guasti Siding because a westbound UP 3929 West freight train was stopped on the main track at the west bound control signal at West Guasti.

As the train approached the accident area, the assistant engineer was seated at the controls on the south side of the lead locomotive and the engineer was seated on the north side of the locomotive. The conductor and the assistant conductor were in the second to last passenger car.

After leaving Ontario, the dispatcher informed the engineers that they would be going into the siding at Guasti. Approaching the siding they had a diverging approach (red over yellow) then entered Guasti on the west end. As the train entered in an eastward direction, there was a slight ascending grade of .36 percent to the point of derailment (POD) at milepost 523.8 in the Guasti Siding. Entering the siding there is a right hand, number 14 turnout then slight left and right hand curves of less than 1 degree. The POD at MP 523.8 was located on the right hand curve with an ascending grade of .36 percent.

The Accident

As the train proceeded through the turnout at an estimated speed of 25 to 27 mph, the assistant engineer increased his speed to 30 mph once the train was in the siding. He felt a slight tug approaching milepost 523.8 then placed a minimal set on the air of about eight pounds, allowing the train to come to a smooth stop. After applying the air application, both of the engineers saw a lot of dust in the air from the rear view mirrors. The assistant engineer also saw that the second locomotive was leaning to one side and could not see the rest of the train. The train traveled approximately three-tenths of a mile into the siding when it derailed the second locomotive and the eight passenger cars; all equipment remained upright.

The assistant engineer went back to see what had happened and discovered that the train had derailed. He returned to the lead locomotive and contacted the dispatcher to inform her that they were on the ground in the siding at Guasti. The dispatcher then instructed UP 3929 West train not to move until they heard back from her.

The conductor and assistant conductor also inspected the train and checked on their passengers. The conductor stated that he made two passes through the train and none of the passengers reported any injuries. One Amtrak cook reported a minor injury to his right elbow.

Emergency personnel from the Ontario Fire and Police Department and UP and Amtrak managers arrived a short time later. After the cook was examined by emergency personnel, he was transported to White Memorial Hospital in Los Angeles where he was treated and released.

Post Accident Investigation

FRA inspectors responded to the scene to conduct the investigation. The crew was interviewed that evening by an Amtrak track manager. During the interviews, all crew members stated that the trip was uneventful until the train was in the siding at Guasti.

The assistant engineer stated that the trip was uneventful until he felt a slight tug while in the siding. Once the whole train was in the siding he then set about eight pounds of air bringing the train to a smooth stop. After the train was stopped, he looked back from his rear view mirror and saw a lot of dust and the second locomotive leaning over.

A review of the event recorder downloads indicated the train was being operated within the posted track speed and the assistant engineer's train handling did not contribute to the accident. The locomotives and passenger cars were inspected and found to be in compliance and did not contribute to the cause of the accident.

A post accident investigation of the signal system found that the signal system functioned as intended.

A post accident track inspection found that the track was in compliance with FRA track safety standards but was not in compliance with UP Engineering Track Maintenance Field Manual Instructions. A review of UP track inspection reports, rail detector analysis, derailment notes, and Geometry Analysis report found that the UP failed to follow UP's Engineering Track Maintenance Field Manual where a change in gage within 31 feet was not in compliance with those instructions. In the UP track standards for FRA class 3 track, the rate of change in gage within 31 feet cannot be more than 3/4 of an inch. Priority limits for gage are shown in table 2-H, class of track 2 and 3, in which gage cannot be less than 56 inches and more than 57 ½ inches with a maximum change in 31 feet of 3/4 of an inch. An analysis of the UP Geometry Test Car conducted on March 16, 2007, recorded gage at the point of derailment at 57.66 inches and a rate of change in gage of 1.16 inches, which exceeded the allowable rate of change by .41 of an inch. Per the UP track standards for FRA class 3 track, it was also .16 of an inch over the maximum allowable gage.

The unacceptable rate of change was primarily due to defective or missing crossties. In the area of the derailment the ties were not FRA defective but did not hold the rate of change in gage within UP track standards. According to FRA Track Safety Standards, each 39 foot segment of track shall have a sufficient number of crossties which in combination provide effective support that will hold gage within the prescribed limits in 49 CFR Part 213.53. The UP has prescribed those limits to be more restrictive. Because of the more restrictive limits, the crossties, although not FRA track standard defective, were in fact not in compliance with its track standards.

Analysis and Conclusions

Analysis

The derailment was investigated by FRA, UP, and Amtrak managers from Mechanical and Maintenance of Way (MOW) Engineering. The locomotive event recorder download was reviewed by FRA MP&E inspectors, an Amtrak road foreman, and UP mechanical officers. They all concurred that train handling did not contribute to the cause of the derailment. The locomotives and passenger car wheels were also inspected and found to be in compliance and did not contribute to the derailment. The signal system functioned as intended and did not contribute to the accident.

UP Maintenance of Way failed to act on geometry car readings which indicated an unacceptable rate of change in gage causing a wide gage condition attributed to defective or missing crossties .

Conclusions

The UP MOW failed to comply with UP Engineering Track Maintenance Field Manual Instructions revised January 1, 2003, Rule 2.3.4 Gage Limits. The UP MOW also failed to follow up on all reported defective conditions found by the UP Geometry Car. Because of this failure UP management disqualified the track inspector and demoted the Manager of Track Maintenance. Instructions have been issued to require all future UP Geometry defects to be numbered. These numbered defects will be inspected and verified after each geometry car run with the corrective action documented.

As a result of the derailment, UP's operating instructions were modified through an Office Notice, effective May 12, 2007, which directed that passenger trains must hold the main track at meeting points, except when meeting another passenger train. Exceptions must be authorized by the Dispatching Center Superintendent or higher authority.

Probable Cause and Contributing Factors

FRA concludes the probable cause of the accident was wide gage due to defective or missing crossing ties, T110.