Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2007-72

Union Pacific
Niland, CA
November 10, 2007

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

FRA FACTUAL RAILROAD ACCIDENT REPORT

FRA File # HQ-2007-72

1.Name of Railroad Operating Train #1: Union Pacific RR Co. [UP]	1a. Alphabetic Code: UP	1b. Railroad Accident/Incident No.: 1107LA017
2.Name of Railroad Operating Train #2: Union Pacific RR Co. [UP]	2a. Alphabetic Code: UP	2b. Railroad Accident/Incident No.: 1107LA017
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.: 1107LA017
5. U.S. DOT_AAR Grade Crossing Identification Number:	6. Date of Accident/Incident: Month 11 Day 10 Year 2007	7. Time of Accident/Incident: 12:03: ☐ 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: 03

9. Cars Carrying HAZMAT	10. HAZMAT Cars Damaged/Derailed	11. Cars Releasing HAZMAT	12. People Evacuated	13. Division
0	0	0	0	Los Angeles

14. Nearest City/Town	15. Milepost *(to nearest tenth)*	16. State Abbr	16. State Code	17. County
Niland	646.3	N/A	CA	IMPERIAL

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
74 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	5	89.25	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	RVVCGC-07

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

30. Trailing Tons *(gross tonnage, excluding power units)*: 8218

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): e | 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)*	UP8694	1	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
0	1

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	6	0	0	0	0
(2) Total Derailed	3	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	60	0	0	0	0
(2) Total Derailed	3	0	0	0	0

37. Equipment Damage — This Consist: $735,000.00

38. Track, Signal, Way, & Structure Damage: $0.00

39. Primary Cause Code: H221

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 9 Mi 18

46. Conductor: Hrs 9 Mi 18

Casualties to:	47. Railroad Employees	48. Train Passengers	49. Other
Fatal	2	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
1	1	IGSMN4-08

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

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)*: 6656

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): e | N/A | N/A | N/A | N/A

2 = Remote control tower
3 = Remote control transmitter - more than one remote control transmitter: 0

59. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded *(yes/no)*
(1) First involved *(derailed, struck, etc)*	BRAB7128	111	yes
(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
0	0

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

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	5	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	111	0	0	0	0
(2) Total Derailed	8	0	0	0	0

64. Equipment Damage This Consist: $381,263.00

65. Track, Signal, Way, & Structure Damage: $68,975.00

66. Primary Cause Code: M505

67. Contributing Cause Code: N/A

Number of Crew Members

68. Engineer/ Operators	69. Firemen	70. Conductors	71. Brakemen
1	0	1	0

Length of Time on Duty

72. Engineer/Operator: Hrs 8 Mi 3

73. Conductor: Hrs 8 Mi 3

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: 1

78. Was EOT Device Properly Armed? 1. Yes 2. No: 1

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: 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: 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)*: N/A

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

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

Rail Equipment Involved

111. Equipment Code: 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

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	117. Whistle Ban 1. Yes 2. No 3. Unknown	Code
Code(s) N/A N/A N/A 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

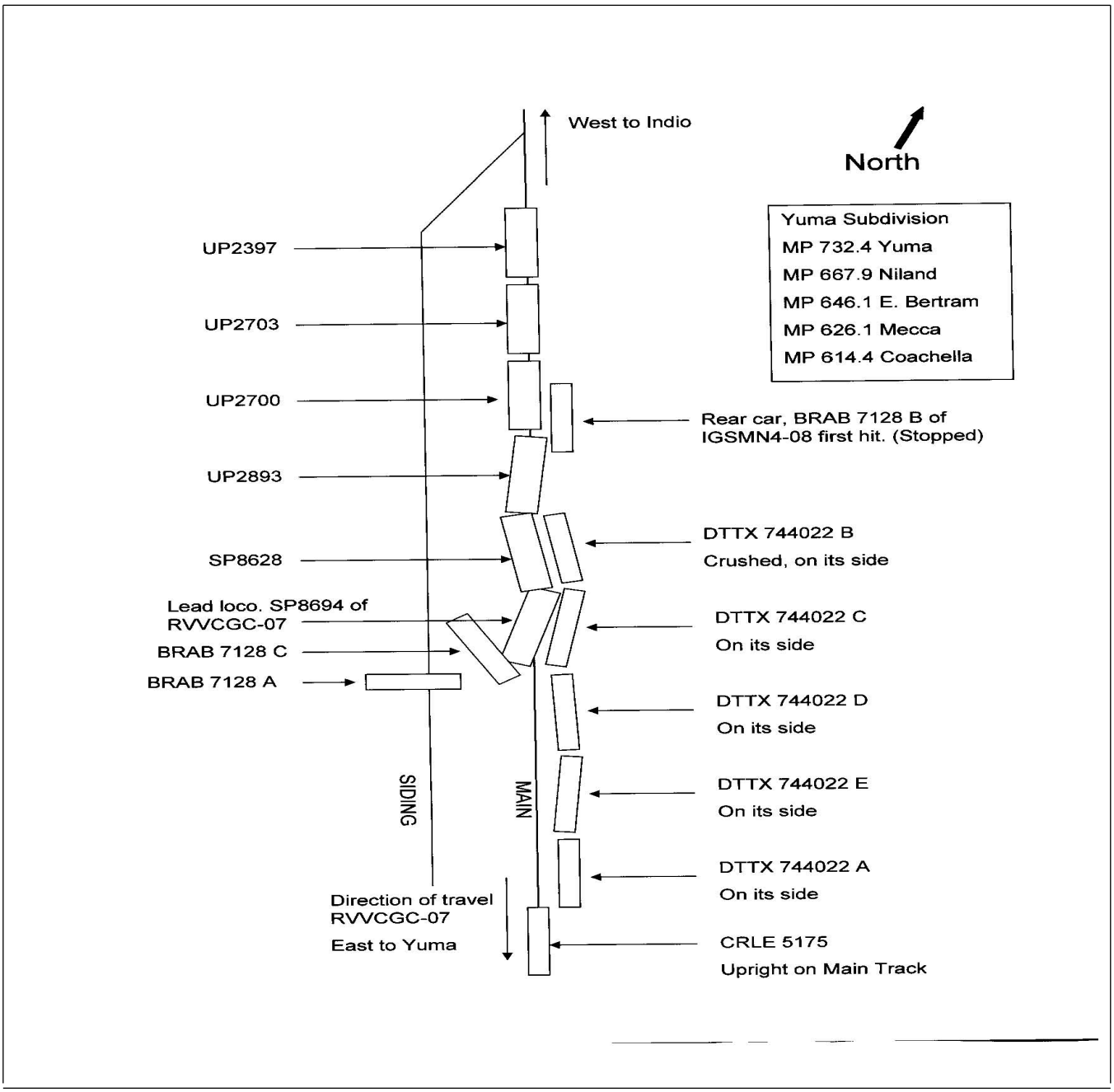
121. Age N/A	122. Driver's Gender 1. Male 2. Female	Code N/A	123. Driver Drove Behind or in Front of and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown	Code N/A	124. Driver 1. Drove around or thru the Gate 2. Stopped and then Proceeded 3. Did not Stop 4. Stopped on Crossing 5. Other *(specify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

IGSMN4-08On November 10, 2007, at approximately 12:03 p.m. PST, eastbound Union Pacific (UP) Train RVVCGC-07, consisting of six locomotives and 60 loaded cement cars and traveling at a recorded speed of 28 mph, rear-ended eastbound UP Intermodal Train IGSMN4-08 that was stopped on the single main track between switches at milepost 647.6 at Bertram, California. UP Train IGSMN4-08, consisting of five locomotives and 111 loaded rail cars, was waiting for a westbound UP Intermodal Train IBPCI to enter the siding at the east end of Bertram. As a result of the collision, both UP Train RVVCGC-07 crew members, a locomotive engineer and conductor, were killed and three of the six locomotives derailed. The lead and second locomotive caught on fire due to a ruptured diesel fuel tank. The collision derailed the last eight cars of standing eastbound UP Train IGSMN4-08 however neither of its crew members were injured.

No hazardous materials cars derailed and there were no hazardous materials released. The accident occurred on the UP Los Angeles Service Unit, Yuma Subdivision. Train movements in area of the railroad are governed by Centralized Traffic Control (CTC) by a dispatcher in San Bernardino, California.

The weather was clear with good visibility; the temperature was 74 degrees Fahrenheit. The geographic direction in the area of the derailment is north-south and the timetable direction is east-west. For the purpose of this report, timetable directions will be used.

Damage to equipment was reported to be $1,116,263 for track and $68,975 for signal damages.

PROBABLE CAUSE

The probable cause is the failure of the crew of UP Train RVVCGC-07 to comply with automatic block or interlocking signal displaying a stop indication.

138. NARRATIVE

CIRCUMSTANCES PRIOR TO THE ACCIDENT

UP TRRAIN RVVCGC-07:

The crew of UP Train RVVCGC-07 included a locomotive engineer and a conductor. They went on duty at 2:45 a.m. PST, November 10, 2007, in Colton, California. This is the home terminal and both received more than the required statutory off duty rest period prior to reporting for duty. The assigned train consisted of six locomotives, 60 loaded hopper cars. The train was 2,927 feet long and weighed 8,218 tons. The train was scheduled to travel from Colton, California to Yuma, AZ, over the Union Pacific Yuma Subdivision.

Approaching the accident site in an eastward direction, there is a slight ascending grade of .30 percent at the east end at milepost 646.2 and descending to 0 percent at the west end at Bertram. There is a 30 minute left hand compound curve entering the west end of Bertram to the Point Of Derailment (POD) at milepost 646.3 on the Main Track.

UP TRAIN IGSMN4-08:

The crew of the UP Train IGSMN4-08 included a locomotive engineer and a conductor. They went on duty at 4:00 a.m. PST, November 10, 2007, in Colton, California. This is the home terminal and both received more than the required statutory off duty rest period prior to reporting for duty. The assigned train consisted of five locomotives and 111 loaded rail cars. The train was 6,704 feet long and weighed 6,457 tons. The train was also scheduled to travel from Colton to Yuma over the UP Yuma Subdivision.

UP Train IGSMN4-08 was stopped on the Main Track at the east end of Bertram between switches, approximately 500 feet ahead of the east siding switch, waiting for the westward UP Intermodal Train IBPCI to enter the siding at the east end. Once in the siding, UP Intermodal Train IBPCI would get a signal to proceed east towards Yuma. While stopped, the conductor of UP Train IGSMN4-08 observed the headlight of the expected approaching train and exited the head end locomotive on the north side to give UP Intermodal Train

IBPCI a roll by inspection as it passed. The crew of UP Intermodal Train IBPCI and the conductor of UP Train IGSMN4-08 acknowledged each other by waving. When the crew of UP Intermodal Train IBPCI was approximately a third of the way into the siding, they called the conductor of UP Train IGSMN4-08 to inform him that his train had some cars that were derailed and fouling the siding track. The crew of the UP Intermodal Train IBPCI brought their train safely to a stop approximately 800 feet short of the derailed cars of UP Train IGSMN4-08.

THE ACCIDENT

UP Train RVVCGC-07 traveling eastbound at a recorded speed of 28 mph struck the rear of UP Intermodal Train IGSMN4-08 on the Main Track between the switches at Bertram and derailed the first three locomotives of the UP Train RVVCGC-07. The UP Train RVVCGC4-07 locomotive engineer and conductor were killed as a result of the collision. Due to the collision, the diesel fuel tank of lead locomotive UP 8694 of UP Train RVVCGC-07 ruptured, spilling approximately 4,500 gallons of fuel. As a result, a fire ensued and both the lead and second locomotives caught fire. The impact also derailed the last eight cars of UP Intermodal Train IGSMN4-08. The derailment blocked the Main Track and siding.

The first car struck on UP Intermodal Train IGSMN4-08 was BRAB 7128B. It was crushed and on its side on the north side of the Main Track. Rail car BRAB 7128C was crushed and on the south side of the Main Track between the siding and the Main Track and was upright and perpendicular to the track and fouling the siding at Bertram. The other five cars, DTTX 744022 A thru E were derailed on their sides on the north side of the Main Track. No hazardous materials on-board UP Intermodal Train IGSMN4-08 were involved. According to the engineer, the impact moved the head end of the standing train approximately 33 feet forward.

As UP Train IBPCI was heading into the siding, the conductor notified the crew of Train UP Intermodal Train IGSMN4-08 of the derailment. They also notified the dispatcher that they had heard a “big bang” and saw a lot of smoke ahead. As they rounded the curve, they saw a number of cars derailed and fouling the siding track. The engineer safely brought the train to a stop 800 feet short of the derailment. About that same time, the conductor of UP Intermodal Train IGSMN4-08 notified the dispatcher that he too heard a loud noise and their train had experienced an undesired emergency activation of the train air brake system.

The dispatcher immediately notified UP representatives and emergency services. Fire department and emergency medical personnel from Imperial County responded to the scene, as well as UP officials and investigators from the National Transportation Safety Board (NTSB), Federal Railroad Administration (FRA), and California Public Utilities Commission (CPUC).

It appears the locomotive engineer and conductor of UP Train RVVGCG-07 rode out the collision and were killed. The engineer was found in his seat outside the destroyed locomotive’s cab, his body consumed by the fire. The conductor was found in his seat in the cab, his death apparently caused by head trauma.

POST - ACCIDENT INVESTIGATION:

As UP Train RVVCGC-07 approached Bertram siding, they went by two intermediate signals, one at milepost 643.4, displaying an advance approach indication, and one at 644.8, displaying an approach indication, both of which would have required a specific reaction from the engineer and the recording of the signal indications on the Conductors Report Form. At the milepost 643.3 intermediate signal, UP System Special Instructions (SSI) 9.2.4, advance approach, would have required UP Train RVVCGC-07 crew to “proceed prepared to stop at second signal; freight trains exceeding 40 mph must immediately reduce to 40 mph.” At the milepost 644.8 intermediate signal, UP SSI 9.2.6, approach, would have required the crew to “proceed prepared to stop before any part of train or engine passed the next signal; freight trains exceeding 30 mph must immediately reduce train speed to 30 mph.” As confirmed in the event recorded download with the train traveling at approximately 45 mph, the engineer made the emergency brake application 420 feet west of the absolute signal displaying a stop indication (UP SSI 9.2.15) at the west end of Bertram, milepost 646.14, and traveled a total of 2,660 feet before colliding with the rear end of the stopped train at a recorded speed of 28 mph.

The event recorder download data of the locomotive UP 8694 was forwarded to the NTSB lab for testing. Prior to release, the event recorder was reviewed and analyzed by NTSB, FRA, and UP officials. The data revealed that the train was being operated in throttle position 3 at an approximate speed of 45 mph. The

engineer's last horn indication was approximately 11:53 a.m. with no other activity until he applied the emergency brake application at 12:01 p.m. The conductor's log did not have any other entries after 11:36 a.m. This would indicate that the crew was inattentive approximately 25 minutes prior to the emergency brake application and approximately eight minutes following the engineer's last horn application.

A review of the Conductor Report Form, required by UP SSI 1.47-A5, revealed the last notation was made in the log at Mecca, milepost 627.0 at 11:36 a.m., approximately 20 miles west of Bertram. According to the rule, the conductor must record the name of other than clear signals, speed of the train as head end passes and the location. Under the provisions of this rule, restrictive signals located at milepost 643.4 and 644.8 and other required information should have been recorded but was not. The absence of this information on the form further indicates the inattentiveness of the crew in the minutes prior to the collision.

It was noted there were no radio communications received from the crew of UP Train RVVCGC-07 in the critical area approaching Bertram, further evidence supporting the inattentiveness of the crew. UP SSI 1.47-C3 requires, "...a crew member must transmit the engine number, direction, location and signal name when the head end of the train...passes a signal that requires being prepared to Stop at the next signal; being prepared to pass next signal at Restricted Speed; or, Restricted Speed; or, Stops for a signal that requires stopping."

Post-accident equipment testing of the brakes on UP Train RVVCGC-07 was conducted by NTSB and found to be working within FRA braking rules and regulations. The physical inspection of the equipment noted no defects that would have prevented the train from stopping properly. While en route and in radio contact with the dispatcher, the crew made no mention of train or braking defects. In addition, the train passed over two train equipment defect detectors within 20 miles prior to the collision and no defects were reported to the train.

FRA post-accident Locomotive Crash Worthiness Test discovered that the collision post on the left side of the locomotive was sheared while the collision post on the right side was bent downward. The crew cab was destroyed during the collision. Also noted was a failure to make a written/electronic report of daily inspection of all six locomotives of UP Train RVVCGC-07 on November 9, 2007, as required by 49 CFR 229.21(a).

A review of all records, tests and inspections on the signal system indicated they functioned as intended. A post-accident re-enactment revealed that the signals were all visible and the signal system did not contribute to the accident. Although there are no current Federal Regulations requiring it, it was noted that the approach signals at milepost 644.8 and the two preceding signals, located at mileposts 643.4 and 641.88, did not have available recorder modules installed. According to an FRA Signal and Train Control inspector, these available recorders could have been used to provide critical post-accident analysis data. UP managers also addressed the lack of available recorders and indicated the signal recorders are scheduled for installation between stations Garnet and Rogoza, mileposts 588.3 and 656.1, respectively.

ANALYSIS AND CONCLUSIONS:

ANALYSIS: - UP TRAIN RVVCGC-07

As UP Train RVVCGC-07 approached Bertram from the west at 45 mph, the crew failed to react to intermediate signals that would have reduced the train speed and prepared them for the stop indication at the west end of Bertram on the main line. As a result, the engineer placed the train into emergency only 420 feet west of the stop indication and traveled 2,660 feet before striking the rear of standing UP Intermodal Train IGSMN4-08 at a recorded speed of 28 mph.

CONCLUSION:

The crew of UP Train RVVCGC-07 failed to comply with UP Rules SSI 9.2.4, 9.2.6 and 9.2.15 relative to absolute block and interlocking signals and went by a stop indication at the west end of Bertram.

The conductor of UP TRAIN RVVCGC-07 failed to maintain the Conductor Report Form signal log as required by UP SSI Rule 147-A5.

According to the UP Systems Special Instructions, Rule 1.47-A5, the conductor must record restrictive signals on the signal log. The last notation was made in the log at Mecca, milepost 627.0 at 11:36 a.m.,

approximately 20 miles west of Bertram.

The crew of UP Train RVVCGC-07 failed to make proper radio communication as required by UP SSI 1.47-C3 as the head end passed the intermediate signals at mileposts 643.4 and 644.8. This finding further supports the inattentiveness of the crew for at least the period between 11:36 a.m. and the emergency application of the brake at 12:01 p.m.

Download of event recorder indicated that the engineer of UP Train RVVCGC-08 did not have any activity of the controls for about eight minutes prior to the emergency brake application and the conductor's log last entry was entered at 11:36 a.m., indicating approximately 25 minutes of inactivity. A follow-up meeting held by UP officers and managers confirmed the inactivity of the engineer and conductor.

ANALYSIS: - POST-FRA TOXICOLOGICAL TESTING:

Post-FRA toxicological tests were administered to the crews of UP Train RVVCGC-07 and UP Train IGSMN4-08, and to the UP Dispatcher on duty at the time of the accident. With the exception of the conductor of RVVCGC-07, all tests were negative.

CONCLUSION:

The conductor of UP Train RVVCGC-07 tested positive for a benzodiazepine and alprazolam in both his blood and his urine. FRA's investigation revealed that the decedent had a legal ongoing prescription for the medication which he had been taking for a number of years. The concentrations reported in the laboratory test results, i.e.,
hydroxyalprazolam in urine at 130 mg/mL and parent alprazolam in blood at 20.7 mg/mL are not inconsistent with concentrations expected during an ongoing clinical course of the drug. The conductor had also been on a long term course of treatment of two other potentially impairing medications, both of which are not tested by the FRA's post-accident panel. The prescribing physician for all four drugs was aware of decedent's position as a conductor.

After review of the toxicological data and his physician's verification of long term use of each prescribed medication, there was no evidence that his medications were causing any impairment or impacting conductor judgment at the time of the accident. However, impairment cannot be ruled out since other potentially contributing factors such as fatigue, not taking the medication before the accident, unreported side effects, etc., are unknown.

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 that information FRA concluded that one or more of the employees may have been working at a diminished level of safety (effectiveness) due to mental and/or physical attributes associated with fatigue, which may have contributed to the cause of the accident.

PROBABLE CAUSE AND CONTRIBUTING FACTORS:

The probable cause is the failure of the crew of UP Train RVVCGC-07 to comply with automatic block or interlocking signal displaying a stop indication.