Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2005-28

Union Pacific (UP)
Rialto, California
April 5, 2005

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-2005-28

1.Name of Railroad Operating Train #1: Union Pacific RR Co. [UP]	1a. Alphabetic Code: UP	1b. Railroad Accident/Incident No.: 0405LA011
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.: 0405LA011
4. U.S. DOT_AAR Grade Crossing Identification Number	5. Date of Accident/Incident: Month 04 / Day 04 / Year 2005	6. Time of Accident/Incident: 08:30: ☐ 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
28	8	1	200	LA Service Unit

13. Nearest City/Town	14. Milepost (to nearest tenth)	15. State Abbr	15. State Code	16. County
Rialto	490.0	N/A	CA	SAN BERNARDINO

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
60 F		4		1		3

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
Siding Track		3	30		1

OPERATING TRAIN #1

25. Type of Equipment Consist (single entry)	A. Spec. MoW Equip.	Code	26. Was Equipment Attended? 1. Yes 2. No	Code	27. Train Number/Symbol
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		1		1	M-WCRV-03

28. Speed (recorded speed, if available) R - Recorded E - Estimated: 25 MPH; Code: E

29. Trailing Tons (gross tonnage, excluding power units): 6747

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	6	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
N/A	N/A

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
(1) Total in Train	3	0	0	0	2
(2) Total Derailed	0	0	0	0	0

35. Cars	Loade a. Freight	Loade b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Equipment Consist	44	0	36	0	0
(2) Total Derailed	8	0	6	0	0

36. Equipment Damage This Consist	37. Track, Signal, Way, & Structure Damage	38. Primary Cause Code	39. Contributing Cause Code
441281	203918	T101	N/A

Number of Crew Members

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

Length of Time on Duty

44. Engineer/Operator	45. Conductor
Hrs 1 Mi 50	Hrs 1 Mi 50

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: 2

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

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

OPERATING TRAIN #2

52. Type of Equipment Consist (single entry)	A. Spec. MoW Equip.	Code	53. Was Equipment Attended? 1. Yes 2. No	Code	54. Train Number/Symbol
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		N/A		N/A	N/A

55. Speed (recorded speed, if available) R - Recorded E - Estimated: N/A 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)	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)	2 = Remote control tower 3 = Remote control transmitter - more than one remote control transmitter
N/A			N/A N/A N/A N/A N/A	N/A

58. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded (yes/no)	59. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box.	Alcohol	Drugs
(1) First involved (derailed, struck, etc)	N/A	N/A	N/A		N/A	N/A
(2) Causing (if mechanical cause reported)	N/A	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	62. Cars	Loade a. Freight	Loade b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Train	N/A	N/A	N/A	N/A	N/A	(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	(2) Total Derailed	N/A	N/A	N/A	N/A	N/A

63. Equipment Damage This Consist	64. Track, Signal, Way, & Structure Damage	65. Primary Cause Code	66. Contributing Cause Code
N/A	N/A	N/A	N/A

Number of Crew Members				Length of Time on Duty	
67. Engineer/ Operators N/A	68. Firemen N/A	69. Conductors N/A	70. Brakemen N/A	71. Engineer/Operator Hrs N/A Mi N/A	72. Conductor Hrs N/A Mi N/A

Casualties to:	73. Railroad Employees	74. Train Passengers	75. Other
Fatal	N/A	N/A	N/A
Nonfatal	N/A	N/A	N/A

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

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

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

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

86a. Was the highway user and/or rail equipment involved in the impact transporting hazardous materials? — Code: N/A
1. Highway User 2. Rail Equipment 3. Both 4. Neither

Rail Equipment Involved

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

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

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

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

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 — Code	91. Crossing Warning Interconnected with Highway Signals — Code	92. Crossing Illuminated by Street Lights or Special Lights — Code
1. Both Sides 2. Side of Vehicle Approach 3. Opposite Side of Vehicle Approach	1. Yes 2. No 3. Unknown	1. Yes 2. No 3. Unknown
N/A	N/A	N/A

93. Driver's Age	94. Driver's Gender — Code	95. Driver Drove Behind or in Front of Train and Struck or was Struck by Second Train — Code	96. Driver — Code
N/A	1. Male 2. Female N/A	1. Yes 2. No 3. Unknown N/A	1. Drove around or thru the Gate 4. Stopped on Crossing 2. Stopped and then Proceeded 5. Other (specify in narrative) 3. Did not Stop N/A

97. Driver Passed Standing Highway Vehicle — Code	98. View of Track Obscured by (primary obstruction) — Code
1. Yes 2. No 3. Unknown N/A	1. Permanent Structure 3. Passing Train 5. Vegetation 7. Other (specify in narrative) 2. Standing Railroad Equipment 4. Topography 6. Highway Vehicle 8. Not obstructed N/A

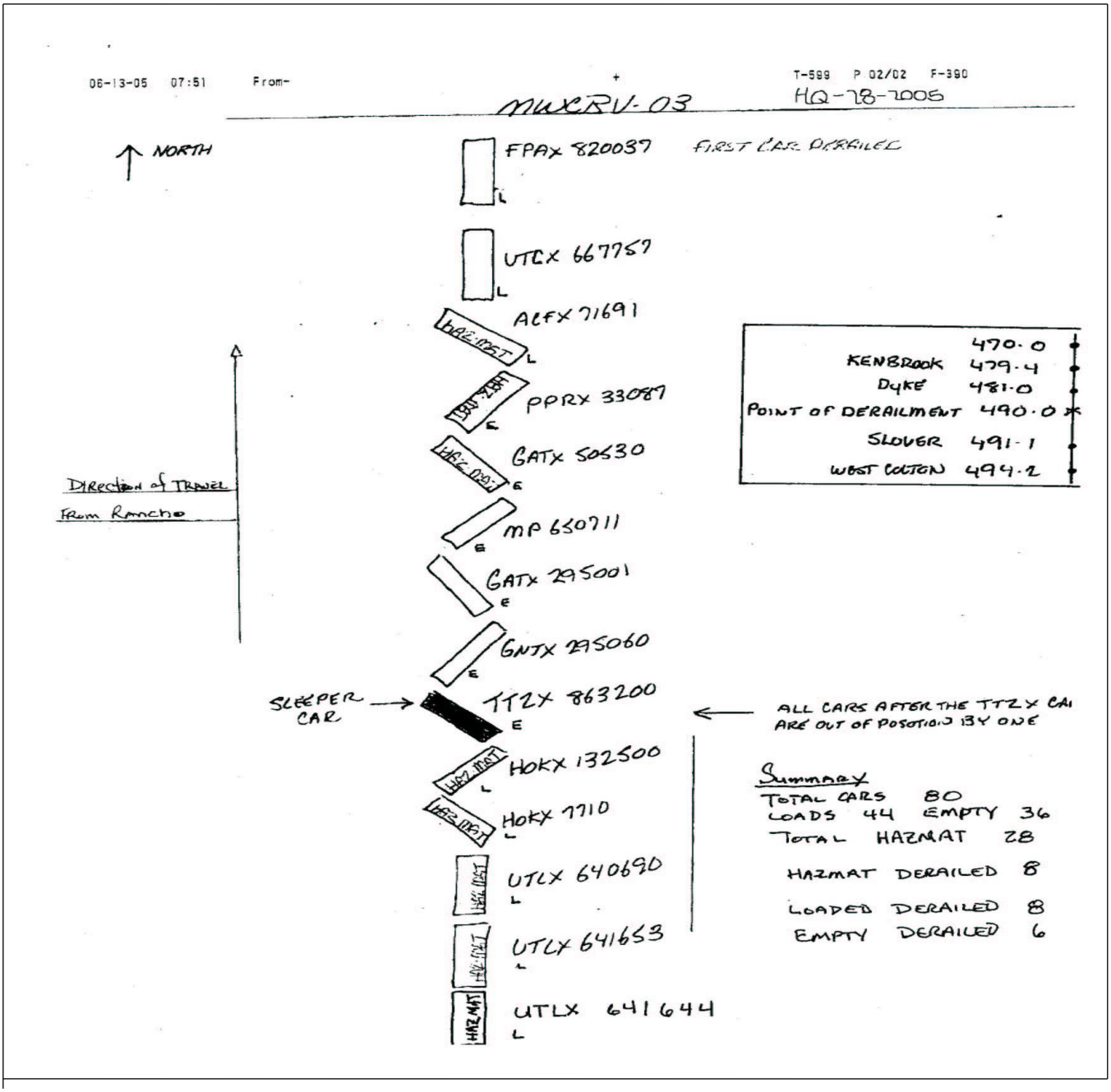
101. Casulties to Highway-Rail Crossing Users	Killed	Injured
	N/A	N/A

99. Driver Was — Code	100. Was Driver in the Vehicle? — Code
1. Killed 2.Injured 3. Uninjured N/A	1. Yes 2. No N/A
102. Highway Vehicle Property Damage (est. dollar damage) N/A	103. Total Number of Highway-Rail Crossing Users (include driver) N/A

104. Locomotive Auxiliary Lights? — Code	105. Locomotive Auxiliary Lights Operational? — Code
1. Yes 2. No N/A	1. Yes 2. No N/A
106. Locomotive Headlight Illuminated? — Code	107. Locomotive Audible Warning Sounded? — Code
1. Yes 2. No N/A	1. Yes 2. No N/A

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

HQ-28-2005.jpg



109. SYNOPSIS OF THE ACCIDENT

At approximately 8:30 p.m. PST on April 4, 2005, Union Pacific Railroad Company (UP) train symboled M-WCRV-03, consisting of five locomotives, 44 loads and 36 empties derailed 14 cars at milepost 490.0, near Rialto, California. (The train consist showed 44 loads and 35 empties; however, one additional "sleeper" car for a total of 80 cars was discovered following the derailment.) The train was departing the North Slover switch and derailed about 30 feet north of the switch. The estimated speed was 25 mph. Cars derailed were positioned 3 through 16 from the trailing locomotive.

The FRA determined that eight hazardous materials cars were involved in the derailment. The placarded cars were two Residue last Contained, Liquified Petroleum Gas; two Chlorine loads; and four Combustible Liquid N.O.S., loads. The first reports were correct in that there were no hazardous material releases at the time of the derailment.

However, a post accident release occurred while attempting to move tank car ACFX 71691. Approximately 200 gallons of Combustible Liquid N.O.S. (Diethylene Glycol, Monomethyl Ether) NA 1993. PG III were released when the tank car slipped from a sling while being lifted, fell back on a broken rail and was punctured. The spill was dug out on site and covered for removal at a later time.
Two other tank cars involved in the derailment contained Chlorine 2.3, UN1017. HOKX 7710, developed a one inch crack located five inches from the bottom on the B-left side of the car. The HOKX 7710 was built in 1977 and because of the crack was trans-loaded at the site. The second tank car, HOKX 132500, was intact and moved without incident. HOKX 132500 was built in 1989 and only had slight jacket, coupler, and brake damage. Both cars were DOT-105J500W high pressure tank cars.

110. NARRATIVE

The following information was obtained from an investigation that was conducted by the Federal Railroad Administration.

Location and Method of Operation:

The Union Pacific Mojave Subdivision is part of the Los Angeles Division and runs in a timetable north-south direction between Rancho, CA at milepost 492.7 and North Bakersfield at milepost 310.8. The Mojave Subdivision consists of multiple main track territory with sidings and crossovers operating by a Traffic Control System (TCS). The maximum timetable speed for trains operating through milepost 490.07 is 40 mph for both passenger and freight train traffic control with the dispatcher located in San Bernardino, CA. The UP 2004 tonnage report reflects 30 million gross tons annually accumulated by 28 trains traversing this route on a daily basis.

Circumstances Prior to the Accident:

The crew of UP train MWCRV-03 consisted of a locomotive engineer, student engineer, and a conductor. They went on duty on April 4, 2005 at 6:40 p.m. in West Colton Yard in Bloomington, CA, their home terminal after receiving the statutory off duty period prior to reporting for duty.

The train consisted of five locomotives and 80 freight cars. It was operated with three lead locomotives and two remote locomotives located at the rear of the train. The crew had a job briefing and inspected the air slip provided by the car department prior to departure. The conductor released the hand brakes on the train and got on the lead locomotive. The train departed from yard track 314 at about 8:00 p.m. with the student engineer at the controls.

The trip was uneventful from West Colton to Rialto, CA, and there were no exceptions taken on train handling. There was a yellow over red signal entering the South Slover siding. The student engineer was seated in the engineer's seat at the controls of the locomotive. The engineer was seated in the fireman's fold down seat in the center of the cab. The conductor was seated on the conductor's seat on the left side of the locomotive compartment.

The Accident:

The conductor said that they had just departed the north end switch of Slover siding doing about 25 mph at milepost 490.0 when they felt a quick tug. The train jerked left and then right. The train then went into emergency and came to a rough stop. The conductor got off the train and started walking to the rear inspecting the train as he went. The engineer was calling Dispatcher 48 to inform him of the undesired emergency. The conductor noticed during his inspection that a number of railcars had derailed. He immediately called Dispatcher 48 on the radio to inform him of the derailment.

The derailment happened at approximately 8:30 p.m. on April 4, 2005. The first evacuation took place at approximately 8:40 p.m., on April 4th, totaling about 200 people on both sides of the main tracks. On the geographical west side there was a trailer park and on the geographical east side there were single family homes. UP began trans-loading the damaged chlorine tank car after the evacuations were completed. At 4:00 a.m., on April 5th, residents began coming back to their homes due to misinformation passed on by the San Bernardino Police Department. The police lifted the evacuation order without checking with the UP or the San Bernardino Fire Department. All residents were evacuated again at about 4:15 a. m. and were told that they would be advised when they could return. The second evacuation order was lifted at 2:40 a. m. on April 6, 2005

After the second evacuation, trans-loading resumed. However, a post accident release occurred while attempting to move tank car ACFX 71691. Approximately 200 gallons of Combustible Liquid N.O.S. (Diethylene Glycol, Monomethyl Ether) were released when the tank car slipped from a sling while being lifted, fell back on a

broken rail and was punctured. The spill was dug out on site and covered for removal at a later time.

Two other tank cars involved in the derailment contained Chlorine 2.3, UN1017. HOKX 7710, developed a one inch crack located five inches from the bottom on the B-left side of the car. The HOKX 7710 was built in 1977 and because of the crack was trans-loaded at the site. The second tank car, HOKX 132500, was intact and moved without incident. HOKX 132500 was built in 1989 and only had slight jacket, coupler, and brake damage. Both cars were DOT-105J500W high pressure tank cars.

Post Accident Investigation:

Hazardous Materials Investigation

At 10:30 p.m. on April 4, 2005, FRA Hazardous Materials Inspector was assigned to the derailment, at Rialto, CA. The following is an account of that investigation:

Prior to arriving at the derailment site, a train consist for Union Pacific Railroad Company (UP) train MWCRV-03 was retrieved from the UP West Colton Yard located in Bloomington, CA. The inspector arrived on site at approximately 12:00 a.m. The derailed train was northbound and all cars that were involved in the derailment were confined to the head end. According to first reports, there was a total of 79 cars in the train. Covered hopper car FPAX 820037, designated as number 77 on the train consist, was the first car derailed and located third behind the training locomotive. Upon further investigation of the train lineup it was found that there was a car in the train that was not listed on the train consist. Car TTZX 863200 was positioned between the 69th and 70th car on the consist. Not only were there now 80 cars in the train instead of 79, the placement of all cars located after the TTZX car, an empty lumber car, were now out of position by one each. Twenty-eight of these cars contained hazardous material. Upon further investigation of all hazardous materials cars revealed that the contents of these cars were not described properly on the train consist. All cars affected were described as Esters N.O.S., Class 3 , UN 3272 , PG II. The correct identification should have been Combustible Liquids N.O.S. NA 1993, PG III. The correct description was verified by railroad waybills and shipper bills of lading. It was also noted that because of the mistakes on the train consist, the wrong information was also shown concerning the emergency response information for each material. A violation was filed against the UP for a consist that did not reflect the current position of placarded cars, the wrong description of a hazardous material, and incorrect emergency response information for a total of nine counts.

Some of the cars were re-railed. Others were damaged to the point they had to be removed by truck and taken to a tank car repair facility at West Colton.

Analysis and Conclusions:

Mechanical Derailed Car Inspection Report

Mechanical inspection by FRA MP&E Inspector of covered hopper car FPAX 820037, (first car derailed) found the wheels had very little wear as indicated by the flanges. The axles and the bearings had no defects. The truck sides and the bolsters were not defective and showed very little wear. The truck bolster gibs were measured and they were all within the allowed tolerances. The wear on all four sides of the bolsters were one inch per side (combined inside and outside wear). There were no signs of spring rotation or friction casting defects.

From the post accident investigation, there is no indication observed and described above that were contributing factors in this accident.

Equipment Damage: $441,281

Signal Inspection Report

FRA Signal Inspector observed UP inspection and obstruction test made to power switch machine at North Slover siding; no defects were noted. A hand switch ahead on the main to the Baldwin Park branch had been run over causing $15,000 in damage for the replacement of seven conductors, 14 cables and a U-5 circuit controller. This amount is a total for materials and labor.

From the post accident investigation, there is no indication observed and described above that were contributing factors in this accident.

Track Investigation

FRA's post accident field measurements revealed that the primary probable cause of the derailment is a geometry warp condition identified at North Slover switch, milepost 490.0. Track geometry measurements were taken at 15-foot 6-inch incremental stations. Measurements were recorded at 15 stations. Station zero begins at the point of derailment and ends at 232.5 feet south of the point of derailment. The track measurements were field verified by the UP Director of Track Maintenance and Manager of Track Projects, a UP Track Supervisor/ Trainer and the FRA Track Inspector assigned to the accident. Other data inspected were track geometry car data, ultrasonic rail tests, and track inspection records.

The estimated damage to Union Pacific track was $203,918.00.

Probable Cause: The primary cause of the derailment was the warp condition identified at milepost 490.07. Excessive warp contributes to a wheel climb derailment as in this case.

The warp defect should have been identified at the prior or previous track inspections. Track conditions clearly showed, raised spikes, buried ties, fouled ballast and battered joints. The conditions were obvious and visible. A contributory cause was poor or improper track inspections and track maintenance.

List of Attachments

FRA Form 6180.41 Railroad Notification Report
FRA form 6180.39a Five Day Report
FRA form 6180.54 Equipment Accident/Incident Report (Copy - Union Pacific Railroad)
Crew Composition
Locomotive Verification
Crew Interviews
Mechanical Report by MP&E Inspector J. H. Conteras
Event Recorder Printout
Signal Inspection Report (4-5-05) by S&TC Inspector T. Loya
Track Inspection Report (4-29-05) by Track Inspector M. Lang
UP Hazardous Materials Incident Report
UP Train Consist MWCRV-03
Hazardous Materials Inspection report (4-5-05) by HM Inspector J. Vail
UP HM Waybill Information on Derailed Cars
Shipper Bill of Lading on Derailed Cars
Derailment Photographs