



***Federal Railroad Administration  
Office of Safety  
Headquarters Assigned  
Accident Investigation Report  
HQ-2005-07***

***Union Pacific (UP)  
Waller, Texas  
January 15, 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.***

1. Name of Railroad Operating Train #1 UNION PACIFIC RAILROAD COMPANY		1a. Alphabetic Code UP		1b. Railroad Accident/Incident No. 0105HO018	
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. 0105HO018	
4. U.S. DOT_AAR Grade Crossing Identification Number		5. Date of Accident/Incident Month Day Year 01 15 2005		6. Time of Accident/Incident 03:55: <input checked="" type="checkbox"/> AM <input type="checkbox"/> PM	
7. Type of Accident/Incident (single entry in code box)					
1. Derailment		4. Side collision		7. Hwy-rail crossing	
2. Head on collision		5. Raking collision		8. RR grade crossing	
3. Rear end collision		6. Broken Train collision		9. Obstruction	
				10. Explosion-detonation	
				11. Fire/violent rupture	
				12. Other impacts	
				13. Other (describe in narrative)	
01					
8. Cars Carrying HAZMAT 26		9. HAZMAT Cars Damaged/Derailed 3		10. Cars Releasing HAZMAT 1	
				11. People Evacuated 0	
				12. Division Houston	
13. Nearest City/Town Waller		14. Milepost (to nearest tenth) 36.1		15. State Abbr Code TX	
16. County WALLER					
17. Temperature (F) (specify if minus) 39 F		18. Visibility (single entry) Code 1. Dawn 3. Dusk 2. Day 4. Dark 4		19. Weather (single entry) Code 1. Clear 3. Rain 5. Sleet 2. Cloudy 4. Fog 6. Snow 1	
				20. Type of Track Code 1. Main 3. Siding 2. Yard 4. Industry 1	
21. Track Name/Number Main(Single)		22. FRA Track Code Class (1-9, X) 3		23. Annual Track Density (gross tons in millions) 7	
				24. Time Table Direction Code 1. North 3. East 1	

**OPERATING TRAIN #1**

25. Type of Equipment Consist (single entry)		1. Freight train		4. Work train		7. Yard/switching		A. Spec. MoW Equip. Code		26. Was Equipment Attended?		27. Train Number/Symbol	
		2. Passenger train		5. Single car		8. Light loco(s).		N/A		1. Yes 2. No 1		MHOF W-14	
		3. Commuter train		6. Cut of cars		9. Maint./inspect.car							
28. Speed (recorded speed, if available) Code R - Recorded E - Estimated 41 MPH R		30. Method(s) of Operation (enter code(s) that apply)		30a. Remotely Controlled Locomotive?									
		a. ATCS		g. Automatic block		m. Special instructions		0 = Not a remotely controlled					
		b. Auto train control		h. Current of traffic		n. Other than main track		1 = Remote control portable					
		c. Auto train stop		i. Time table/train orders		o. Positive train control		2 = Remote control tower					
		d. Cab		j. Track warrant control		p. Other (Specify in narrative) Code(s)		3 = Remote control transmitter - more than one remote control transmitter					
		e. Traffic		k. Direct traffic control									
		f. Interlocking		l. Yard limits									
29. Trailing Tons (gross tonnage, excluding power units) 9904												0	
31. Principal Car/Unit		a. Initial and Number		b. Position in Train		c. Loaded (yes/no)		32. 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		13		yes				0		0	
(2) Causing (if mechanical cause reported)		0		0		N/A		33. Was this consist transporting passengers? (Y/N)				N	

34. Locomotive Units		a. Head End		Mid Train		Rear End		35. Cars		a. Freight		b. Pass.		c. Freight		d. Pass.		e. Caboose	
				b. Manual		c. Remote													
(1) Total in Train		2		0		0		0		(1) Total in Equipment Consist		73		0		31		0	
(2) Total Derailed		0		0		0		0		(2) Total Derailed		23		0		3		0	

36. Equipment Damage This Consist		955862		37. Track, Signal, Way, & Structure Damage		170896		38. Primary Cause Code		T207		39. Contributing Cause Code		N/A	
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**OPERATING TRAIN #2**

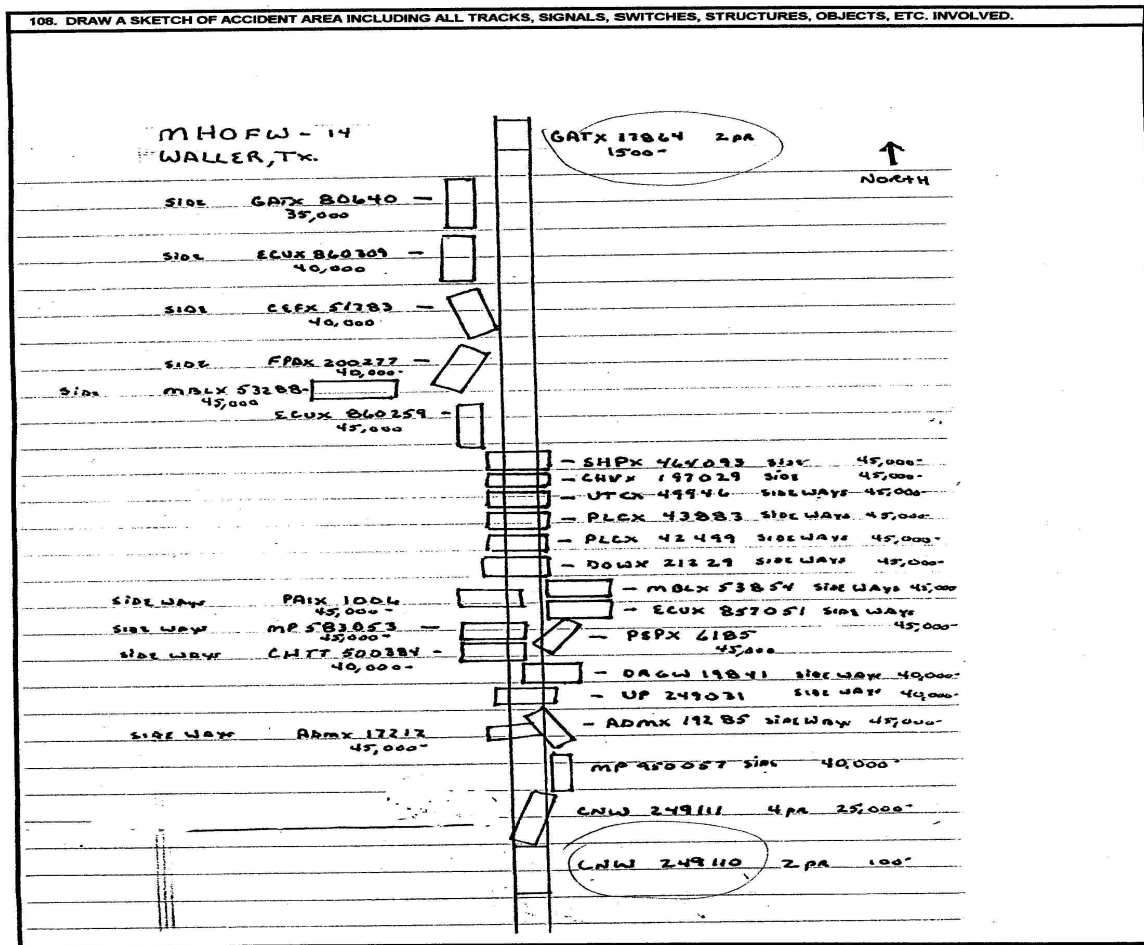
40. Engineer/Operators		41. Firemen		42. Conductors		43. Brakemen		44. Engineer/Operator		45. Conductor	
N/A		0		1		0		Hrs 5 Mi 25		Hrs 5 Mi 25	
Casualties to:		46. Railroad Employees		47. Train Passengers		48. Other		49. EOT Device?		50. Was EOT Device Properly Armed?	
Fatal		0		0		0		1. Yes 2. No 1		1. Yes 2. No 1	
Nonfatal		N/A		0		0		51. Caboose Occupied by Crew?			
								1. Yes 2. No		2	

**OPERATING TRAIN #2**

52. Type of Equipment Consist (single entry)		1. Freight train		4. Work train		7. Yard/switching		A. Spec. MoW Equip. Code		53. Was Equipment Attended?		54. Train Number/Symbol	
		2. Passenger train		5. Single car		8. Light loco(s).		N/A		1. Yes 2. No N/A		N/A	
		3. Commuter train		6. Cut of cars		9. Maint./inspect.car							
55. Speed (recorded speed, if available) Code R - Recorded E - Estimated 0 MPH N/A		57. Method(s) of Operation (enter code(s) that apply)		57a. Remotely Controlled Locomotive?									
		a. ATCS		g. Automatic block		m. Special instructions		0 = Not a remotely controlled					
		b. Auto train control		h. Current of traffic		n. Other than main track		1 = Remote control portable					

56. 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			
58. Principal Car/Unit (1) First involved (derailed, struck, etc) 0		a. Initial and Number 0		b. Position in Train 0		c. Loaded(yes/no) N/A		59. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box. Alcohol N/A Drugs N/A			
(2) Causing (if mechanical cause reported) 0		0		N/A		60. Was this consist transporting passengers? (Y/N) N					
61. Locomotive Units		a. Head End		Mid Train b. Manual c. Remote		Rear End d. Manual c. Remote		62. Cars		Loade a. Freight b. Pass. c. Freight d. Pass. e. Caboose	
(1) Total in Train 0		0		0		0		(1) Total in Equipment Consist 0		0	
(2) Total Derailed 0		0		0		0		(2) Total Derailed 0		0	
63. Equipment Damage This Consist 0		64. Track, Signal, Way, & Structure Damage 0		65. Primary Cause Code N/A		66. Contributing Cause Code N/A					
Number of Crew Members				Length of Time on Duty							
67. Engineer/Operators 1		68. Firemen 0		69. Conductors 1		70. Brakemen 0		71. Engineer/Operator Hrs 0 Mi 0		72. Conductor Hrs 0 Mi 0	
Casualties to:		73. Railroad Employees		74. Train Passengers		75. Other		76. EOT Device? 1. Yes 2. No   1		77. Was EOT Device Properly Armed? 1. Yes 2. No   1	
Fatal 0		0		0		0		78. Caboose Occupied by Crew? 1. Yes 2. No		2	
Nonfatal 0		0		0		0					
Highway User Involved						Rail Equipment Involved					
79. Type 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)   N/A		Code N/A		83. Equipment 3. Train (standing) 6. Light Loco(s) (moving) 1. Train(units pulling) 4. Car(s) (moving) 7. Light(s) (standing) 2. Train(units pushing) 5. Car(s) (standing) 8. Other (specify in narrative)   N/A		Code N/A					
80. Vehicle Speed (est. MPH at impact) 0		81. Direction geographical 1. North 2. South 3. East 4. West   N/A		Code N/A		84. Position of Car Unit in Train 0					
82. Position 1. Stalled on Crossing 2. Stopped on Crossing 3. Moving Over Crossing 4. Trapped   N/A		Code N/A		85. Circumstance 1. Rail Equipment Struck Highway User 2. Rail Equipment Struck by Highway User   N/A		Code N/A					
86a. Was the highway user and/or rail equipment involved in the impact transporting hazardous materials? 1. Highway User 2. Rail Equipment 3. Both 4. Neither   N/A		Code N/A		86b. Was there a hazardous materials release by 1. Highway User 2. Rail Equipment 3. Both 4. Neither   N/A		Code N/A					
86c. State here the name and quantity of the hazardous materials released, if any. N/A											
87. Type of Crossing 1. Gates 4. Wig Wags 7. Crossbucks 10. Flagged by crew 2. Cantilever FLS 5. Hwy. traffic signals 8. Stop signs 11. Other (spec. in narr.) Warning 3. Standard FLS 6. Audible 9. Watchman 12. None		Code N/A		88. Signaled Crossing Warning (See instructions for codes)		Code N/A		89. Whistle Ban 1. Yes 2. No 3. Unknown   N/A		Code N/A	
90. Location of Warning 1. Both Sides 2. Side of Vehicle Approach 3. Opposite Side of Vehicle Approach   N/A		Code N/A		91. Crossing Warning Interconnected with Highway Signals 1. Yes 2. No 3. Unknown   N/A		Code N/A		92. Crossing Illuminated by Street Lights or Special Lights 1. Yes 2. No 3. Unknown   N/A		Code N/A	
93. Driver's Age 0		94. Driver's Gender 1. Male 2. Female   N/A		Code N/A		95. Driver Drove Behind or in Front of Train and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown   N/A		Code N/A		96. Driver 1. Drove around or thru the Gate 4. Stopped on Crossing 2. Stopped and then Proceeded 5. Other (specify in narrative)   N/A 3. Did not Stop	
97. Driver Passed Standing Highway Vehicle 1. Yes 2. No 3. Unknown   N/A		Code N/A		98. View of Track Obscured by (primary obstruction) 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		Code N/A					
101. Casualties to Highway-Rail Crossing Users Killed 0 Injured 0		99. Driver Was 1. Killed 2. Injured 3. Uninjured   N/A		Code N/A		100. Was Driver in the Vehicle? 1. Yes 2. No   N/A		Code N/A			
102. Highway Vehicle Property Damage (est. dollar damage) 0		103. Total Number of Highway-Rail Crossing Users (include driver) 0									
104. Locomotive Auxiliary Lights? 1. Yes 2. No   N/A		Code N/A		105. Locomotive Auxiliary Lights Operational? 1. Yes 2. No   N/A		Code N/A					
106. Locomotive Headlight Illuminated? 1. Yes 2. No   N/A		Code N/A		107. Locomotive Audible Warning Sounded? 1. Yes 2. No   N/A		Code N/A					

108. DRAW A SKETCH OF ACCIDENT AREA INCLUDING ALL TRACKS, SIGNALS, SWITCHES, STRUCTURES, OBJECTS, ETC., INVOLVED.  
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 2005.jpg



## 109. SYNOPSIS OF THE ACCIDENT

UP Freight Train # MHOFW-14 (Manifest Train, Houston, TX. to Ft. Worth, TX.), traveling north on the main track of the Eureka Subdivision, of the Houston Service Unit, at a recorded speed of 41-mph, derailed at milepost 36.1 in Waller, TX. (Waller County), at approximately 3:55 a.m., on January 15, 2005. The train consisted of 2 locomotives and 104 cars (73-Loads, and 31-Empty). The derailment started at the 13th car in the train consist, and a total of 26 cars were derailed. Included in the derailed cars were 3 Haz-Mat cars, one of which lost approximately 20 gallons of it's product (Methanol) before temporary repairs were made.

There were no injuries, and there was no evacuation ordered. At the time of the derailment the sky was dark and the weather was clear. The temperature was 39° F.

Total damages reported were \$1,126,758. There was no contributing cause, to this accident. The probable cause, of this derailment, was a broken rail (Detailed Fracture).

## 110. NARRATIVE

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

## Circumstances Prior to the Accident

The crew of UP Train # MHOFW-14 consisted of an engineer and a conductor. They reported for duty at 10:20 p.m., (CST), January 14, 2005, at Settegast Yard in Houston, TX. Both crew members had received more than the required off-duty period, prior to their reporting for duty.

At Settegast Yard, they were assigned to UP Train # MHOFW-14, a manifest train consisting of 2 locomotives and 104 cars (73-loads and 31-empty), destined for Fort Worth, TX. The train was 6,125 feet in length, with 9,904 trailing tons. This train had previously been given a predeparture inspection and received a "Class 1" air brake inspection / test by the mechanical forces assigned to Settegast Yard. The E.O.T. device had ben armed and tested prior to departure. Train MHOFW-14 departed Settegast Yard at 11:55 p.m., on January 14, 2005. No pick-up's were made en route and no changes were made to the train consist prior to the derailment.

As the train approached the derailment site in Waller, TX, the engineer was seated at the control console of the lead and controlling locomotive, on its east side. The conductor was also seated in the cab of the lead and controlling locomotive, on its west side. Timetable and geographical direction are both "north".

The track is tangent on both sides of the derailment site, in excess of 1 mile. The gradient at the derailment site is 0.46, ascending northward.

## The Accident

## Train UP MHOFW-14

The engineer stated that as the train approached the derailment site the train had just cleared "slow orders" which had required reducing train speed to 10-mph, and was regaining speed, approximately 40-mph. Authorized track speed for a "Manifest Train" at the derailment site is 40-mph. Prior to the derailment the engineer stated that he felt unusual slack action in the train. The throttle was in "Run-8" and he felt the slack "run in". He thought this was unusual and throttled off, anticipating the slack to "run out". As he throttled off the slack "ran out" violently, and the air brakes went into emergency. Speed at the time was 41-mph (recorded). The engineer stated that the time was 3:55 a.m. When he could not recover his train line air the engineer notified the dispatcher that he was in emergency, and that the conductor was going back to inspect the train. The conductor's inspection revealed that several cars had derailed and he notified the engineer, who then informed the dispatcher. The dispatcher called local emergency responders to the scene.

Subsequent inspection of the train revealed that 26 cars had derailed, at milepost 36.1. The derailment started at the 13th car from the head-end in the train consist. Of the 26 cars derailed, 3 of these cars contained hazardous materials. Car # GATX 80640, the 14th car in the train consist sustained damage to it's "vapor line" on the top of the car during the derailment and lost approximately 20 gallons of it's product (Methanol), before temporary repairs were made. There was no damage to the locomotives and no fuel loss occurred.

## Analysis

Subsequent investigation by the UP RR & FRA revealed the probable cause to be a broken rail. At the derailment scene a 30" piece of 115# CWR (Continuous Welded Rail) was found and it displayed indications of a 75% detailed fracture. This piece of track came from the west rail. The detailed fracture originated from the "field side" of the ball of the rail. Further, batter marks on the piece of broken rail coincide with batter marks found on the tread of the wheel on the 11th car in the train consist. The marks found on the wheel tread are indicative of a wheel striking a broken rail.

This section of track was last inspected by a UP track inspector, at approximately 2 p.m., on January 13, 2005. No exceptions were taken.

The piece of broken rail was submitted to "Rail Sciences Inc." for analysis. They concluded that the rail failed due to detailed fractures from shelling and contained wheel batter, and this was the cause of the derailment.

Damage estimates are: Track: \$170,896.00, Equipment : \$955,862.00

Track was open for revenue traffic at 11a.m., 1/16/2005.

The train crew was tested after the derailment, under FRA's authority (Post Accident). The results were negative.

**Conclusion**

The railroad was in full compliance with their own and all Federal standards at the time of the derailment. Neither train crew member observed any hazard, with derailment causing potential, or any rail abnormality prior to the derailment. Based on the lab testing results of the broken rail and lack of any other evidence it was determined that the cause of the derailment was a broken rail (75% detailed fracture). The FRA concurs with the findings.