



***Federal Railroad Administration  
Office of Safety  
Headquarters Assigned  
Accident Investigation Report  
HQ-2005-36***

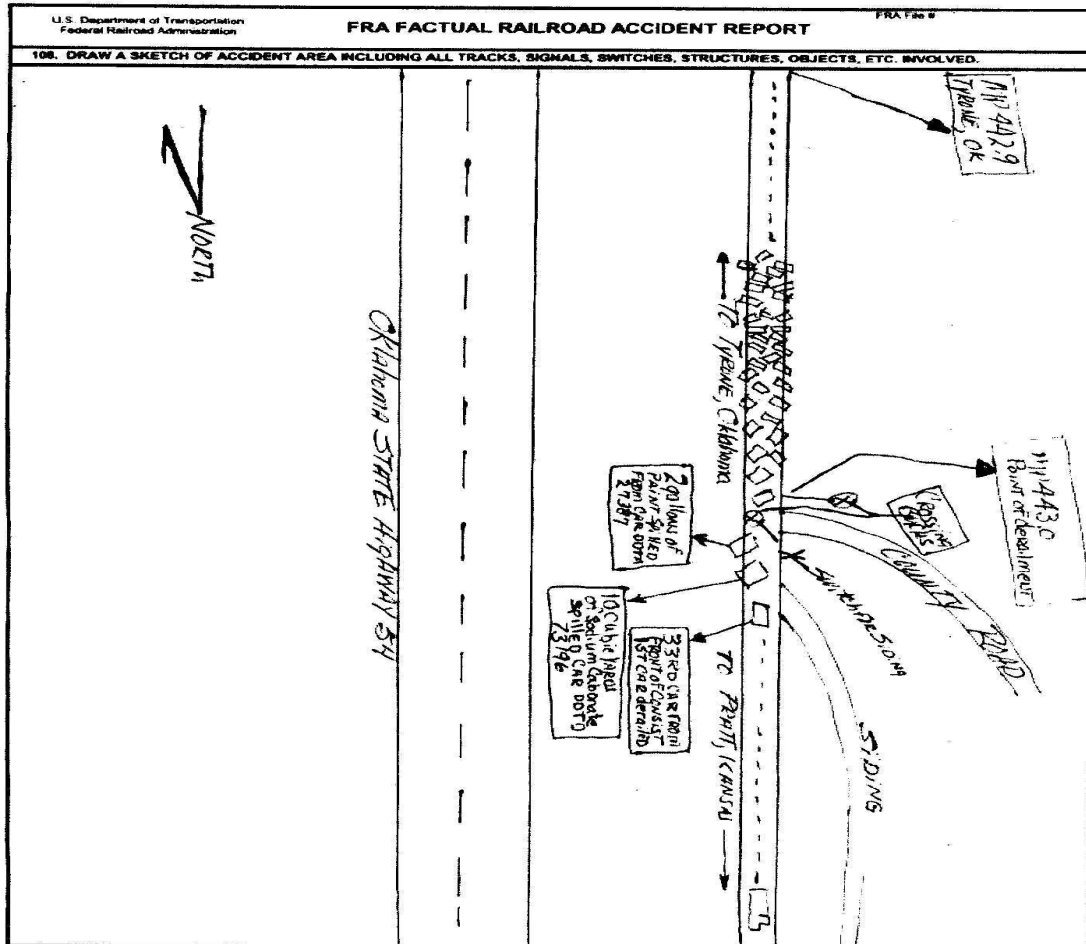
***Union Pacific (UP)  
Tyrone, Oklahoma  
April 21, 2005***

***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 # <u>HQ-2005-36</u>	
1. Name of Railroad Operating Train #1 Union Pacific RR Co. [UP ]				1a. Alphabetic Code UP		1b. Railroad Accident/Incident No. 0405WH007	
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. 0405WH007	
4. U.S. DOT_AAR Grade Crossing Identification Number				5. Date of Accident/Incident Month Day Year 04 21 2005		6. Time of Accident/Incident 08:20: <input type="checkbox"/> AM <input checked="" type="checkbox"/> PM	
7. Type of Accident/Incident (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 12		9. HAZMAT Cars Damaged/Derailed 4		10. Cars Releasing HAZMAT 2		11. People Evacuated 0	
						12. Division Wichita	
13. Nearest City/Town Tyrone				14. Milepost (to nearest tenth) 443.0		15. State Abbr Code N/A OK	
						16. County TEXAS	
17. Temperature (F) (specify if minus) 60 F		18. Visibility (single entry) Code 1. Dawn 3. Dusk 2. Day 4. Dark 3		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 Single Main				22. FRA Track Code Class (1-9, X) 5		23. Annual Track Density (gross tons in millions) 37.15	
						24. Time Table Direction Code 1. North 3. East 3	
OPERATING TRAIN #1							
25. 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 1	
						26. Was Equipment Attended? Code 1. Yes 2. No 1	
						27. Train Number/Symbol KTSKS 7-17	
28. Speed (recorded speed, if available) Code R - Recorded E - Estimated 70 MPH R		30. Method(s) of Operation (enter code(s) that apply) a. ATCS g. Automatic block m. Special instructions b. Auto train control h. Current of traffic n. Other than main track c. Auto train stop i. Time table/train orders o. Positive train control d. Cab j. Track warrant control p. Other (Specify in narrative) Code(s) e. Traffic k. Direct traffic control f. Interlocking l. Yard limits				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	
29. Trailing Tons (gross tonnage, excluding power units) 5673							
31. Principal Car/Unit		a. Initial and Number		b. Position in Train		c. Loaded (yes/no)	
(1) First involved (derailed, struck, etc)		N/A		33		yes	
(2) Causing (if mechanical cause reported)		0		0		N/A	
						32. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box. Alcohol Drugs 0 0	
						33. Was this consist transporting passengers? (Y/N) N	
34. Locomotive Units		a. Head End		Mid Train		Rear End	
				b. Manual c. Remote		d. Manual c. Remote	
(1) Total in Train		4		0 0		0 0	
(2) Total Derailed		0		0 0		0 0	
						35. Cars	
						a. Freight b. Pass. c. Freight d. Pass. e. Caboose	
						(1) Total in Equipment Consist 87 0 0 0 0	
						(2) Total Derailed 36 0 0 0 0	
36. Equipment Damage This Consist 1472701		37. Track, Signal, Way, & Structure Damage 654075		38. Primary Cause Code M202		39. Contributing Cause Code N/A	
Number of Crew Members				Length of Time on Duty			
40. Engineer/Operators N/A		41. Firemen 0		42. Conductors 1		43. Brakemen 0	
						44. Engineer/Operator Hrs 2 Mi 55	
						45. Conductor Hrs 2 Mi 55	
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 1	
						50. Was EOT Device Properly Armed? 1. Yes 2. No 1	
						51. Caboose Occupied by Crew? 1. Yes 2. No N/A	
OPERATING TRAIN #2							
52. 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	
						53. Was Equipment Attended? Code 1. Yes 2. No N/A	
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) a. ATCS g. Automatic block m. Special instructions b. Auto train control h. Current of traffic n. Other than main track				57a. 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 # <u>HQ-2005-36</u>			
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		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.	
(1) First involved (derailed, struck, etc)		0		0		N/A		Alcohol N/A	
(2) Causing (if mechanical cause reported)		0		0		N/A		Drugs N/A	
60. Was this consist transporting passengers? (Y/N)		N/A							
61. Locomotive Units		a. Head End		Mid Train b. Manual c. Remote		Rear End d. Manual c. Remote		62. Cars	
(1) Total in Train		0		0		0		(1) Total in Equipment Consist	
(2) Total Derailed		0		0		0		(2) Total Derailed	
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 0		68. Firemen 0		69. Conductors 0		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?	
Fatal		0		0		0		1. Yes 2. No N/A	
Nonfatal		0		0		0		77. Was EOT Device Properly Armed? 1. Yes 2. No N/A	
78. Caboose Occupied by Crew?		N/A							
1. Yes 2. No									
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)				Code N/A					
80. Vehicle Speed (est. MPH at impact) 0				81. Direction geographical 1. North 2. South 3. East 4. West					
82. Position 1. Stalled on Crossing 2. Stopped on Crossing 3. Moving Over Crossing 4. Trapped				Code N/A					
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				86b. Was there a hazardous materials release by 1. Highway User 2. Rail Equipment 3. Both 4. Neither					
87c. State here the name and quantity of the hazardous materials released, if any. N/A									
87. Type of Crossing 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				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 1. Both Sides 2. Side of Vehicle Approach 3. Opposite Side of Vehicle Approach				Code N/A				91. Crossing Warning Interconnected with Highway Signals 1. Yes 2. No 3. Unknown	
92. Crossing Illuminated by Street Lights or Special Lights 1. Yes 2. No 3. Unknown				Code N/A					
93. Driver's Age 0		94. Driver's Gender 1. Male 2. Female		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		Code N/A	
96. 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					
97. Driver Passed Standing Highway Vehicle 1. Yes 2. No 3. Unknown		Code N/A		98. 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					
101. Casualties to Highway-Rail Crossing Users		Killed 0		Injured 0		99. Driver Was 1. Killed 2. Injured 3. Uninjured		Code N/A	
102. Highway Vehicle Property Damage (est. dollar damage)		0		100. Was Driver in the Vehicle? 1. Yes 2. No					
103. Total Number of Highway-Rail Crossing Users (include driver)		0							
104. Locomotive Auxiliary Lights? 1. Yes 2. No				Code N/A					
105. Locomotive Auxiliary Lights Operational? 1. Yes 2. No				Code N/A					
106. Locomotive Headlight Illuminated? 1. Yes 2. No				Code N/A					
107. Locomotive Audible Warning Sounded? 1. Yes 2. No				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

The time table direction of track is East to west and the geographic direction is North to South. The railroad timetable directions of the train was East. Time table direction will be used unless otherwise specified.

Union Pacific (UP) train KTSKS7-17 East originated in Long Beach, California, with a destination of Kansas City, Kansas. Train KTSK7-17 was a priority Intermodal, extended haul train, comprised of articulated platform /well cars. The UP train KTSKS7-17 changed crews at Dalhart, Texas continuing East to Pratt, Kansas. Traveling East on Main Track of Panhandle Sub Division of the Wichita Service Unit at recorded speed of 70mph, at approximately 8:20 pm (CST) April 21,2005 the train derailed at mile post 443.0, five miles North (geographic) of Tyrone, Oklahoma mile post 442.9 (Texas County). The train consisted of 4 locomotives 87 loaded cars and no empties. The derailment started at the 33rd car from the front in the consist, and a total of 36 cars were derailed. Included in the derailment were 4 Haz-Mat cars,2 cars containing 3 containers of hazardous material were damaged. These containers lost a total of 10 cubic yards of sodium carbonate peroxyhydrate. A third container lost 2 gallons of paint before temporary repairs and cleanup were made.

There were no injuries and there were no evacuations ordered. State highway 54 was closed to traffic while restoration and clean up operations were being performed. At time of derailment it was Dusk and the weather was clear, the temperature was 60+ degrees.

The cause of the derailment was a broken floor joist in container, TRUL 273341 loaded in car DTTD 73196. The weakened floor joist allowed the container floor bottom to sag, and bump and drag along the tracks, and eventually to break. The contents dropped out of container to the track and caused the subsequent derailment. There was no contributing cause, the total damage was estimated to be \$ 2,126,776.00.

## 110. NARRATIVE

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

## Circumstances Prior to the Accident

The train crew members of the Union Pacific (UP) train, KTSKS7-17 East consisted of an engineer and a conductor. They reported for duty at 3:15 pm, CST. April 21, 2005 at, UP Dalhart yard, Dalhart, Texas. Both crew members had their required off duty time prior to their reporting for duty.

At Dalhart yard, Dalhart, TX., (a crew change point) the crew was assigned to UP Train KTSKS7-17 an Intermodal, extended haul freight train of mixed freight, with 4 locomotives and 87 loaded cars and comprised of Articulated well cars. The train was 6011 feet in length and weighted 5673 tons. At Longbeach, CA. the originating point for train KTSK7-17, the train was been given a predeparture inspection and received a "Class 1" air brake inspection/ test by mechanical forces assigned to Long Beach Yards, Long Beach, CA. The End-of-Train (E.O.T.) device had been armed and tested prior to departure. Train KTSK7-17 departed Dalhart Yard, Dalhart, TX.,at 3:15 pm CST on April 21, 2005, destined for Pratt, KS., 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 Tyrone, OK, the engineer was seated at the control console of the lead and controlling locomotive, on the East side. The conductor was seated in the cab of lead and controlling locomotive, on its West side. ( Geographic Direction). The time table direction of track is East to West and the geographic direction is North to South.

The track is level in the area of the derailment, the track is tangent 6 miles West and 1.7 miles East of point of derailment.

## The Accident

Train UP KTSKS7-17 East

Authorized track speed for this train was 70 mph at the derailment site. The engineer stated that the train was traveling at 70 mph (recorded speed), prior to the derailment, the engineer stated he felt a slight tug and then another slight tug. The engineer stated he asked the conductor if he had felt anything and about that time the engineer and conductor both realized the train had gone into undesired emergency brake application. The engineer stated that they looked back toward the rear of the train and saw a large cloud of dust. The engineer was able to bring the remainder of the train to a safe stop. The engineer notified the dispatcher that the train was in emergency, and 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 informed the dispatcher. The dispatcher called the local emergency responders to the scene. The first emergency responder was the local Tyrone, OK. Police Department and the Oklahoma Highway Patrol. Hulcher re-railing contractor arrived at approximately 5:00 am (CST), UP Managers of train Operations (MTO), Manager of Train Movement (MTM) arrived at approximately 9:30 PM (CST).

Subsequent inspection of the train revealed that the 33rd car had derailed at M. P. 443.0. The derailment started at the 33rd car from the head - end through the 52nd car in the train consist. Of the 36 cars derailed, 4 of these contained hazardous materials. Car DDTD 73196 with containers KKTU 728110, 703324, 70732 spilled 10 cubic yards of Sodium Carbonate peroxyhydrate, car # DTTA 27387, container KKFU 140485 spilled 2 Gallons of paint. There was no damage to the hauling locomotives and no fuel loss occurred.

## Analysis

Subsequent investigation by the UP & Federal Railroad Administration (FRA) revealed the probable cause to be that the floor of container # TRLU 273341 broke out allowing contents to drop onto the tracks. At the scene, the 33rd Car # DTTD 73196 and container # TRLU 273341 were inspected and the floor of the container was found to have a large portion of the floor missing from being drug along the tracks, as indicated by the scuff marks on the ties and roadbed. These marks and the

debris from the floor and pallet which the contents were secured on, were found along the right of away, 5 miles West up to the point of derailment. The investigation and inspection of the container revealed that the welds securing the floor joists had been broken for an extended period of time. Upon closer inspection it was discovered that there was an accumulation of rust at the breaks in the weld joints, indicating an old break.

Damage estimates are: Track: \$ 645,075.00, Equipment: \$ 1,472,701.00

Track was open for revenue traffic at 4:00 pm CST April 21,2005

The train crew was tested after the derailment. (Post Accident)      The results were: Negative.

Conclusion

The railroad was in full compliance with their own operating rules and federal standards at time of the derailment. Based on the investigation at the accident site and the inspection of the floor of the container it was determined that the cause of the derailment was the broken floor joist weld allowing the floor to drop down and break, depositing contents onto track. ( 75% of the floor was missing). The FRA concurs with the findings.