



***Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2006-33***

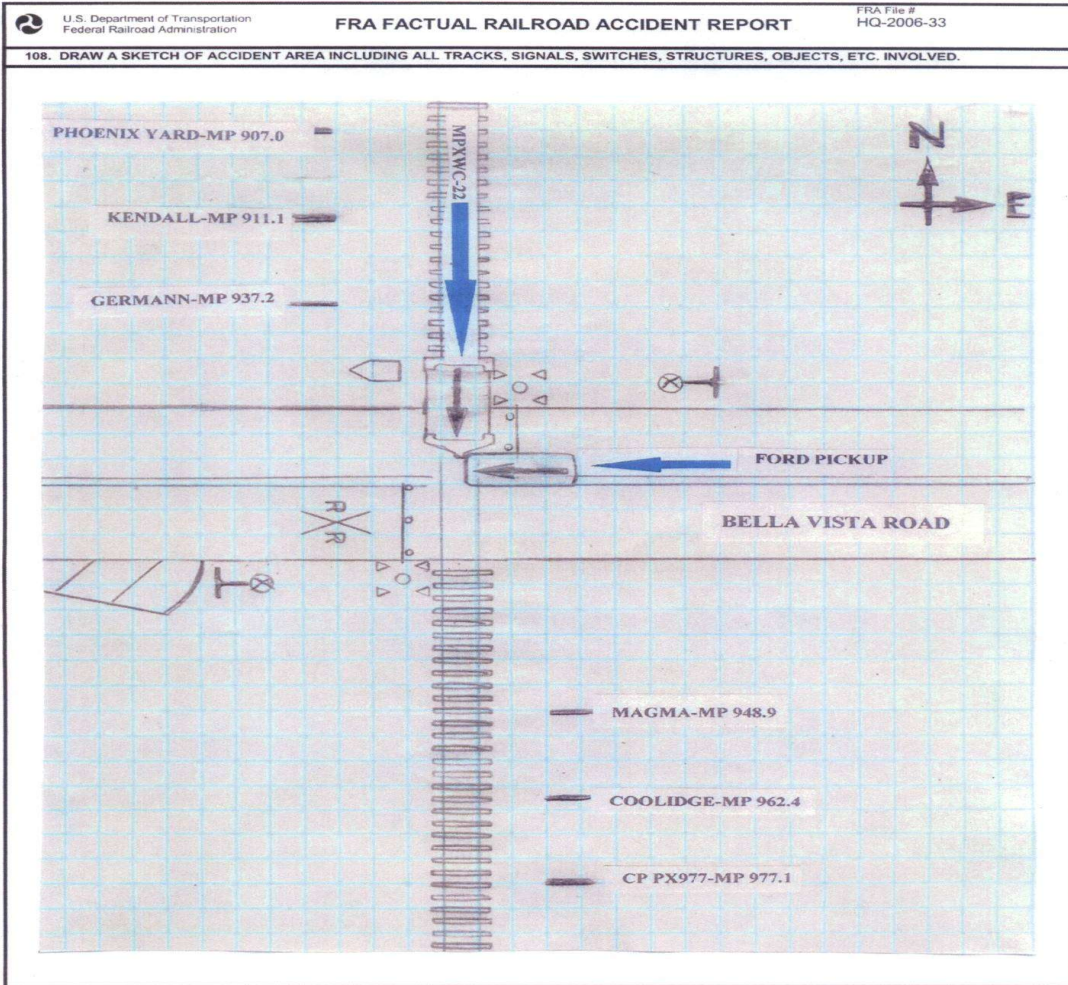
***Union Pacific (UP)
Queen Creek, Arizona
May 22, 2006***

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-2006-33</u>	
1. Name of Railroad Operating Train #1 Union Pacific RR Co. [UP]				1a. Alphabetic Code UP		1b. Railroad Accident/Incident No. 0506TS004	
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. N/A	
4. U.S. DOT_AAR Grade Crossing Identification Number 741411B				5. Date of Accident/Incident Month Day Year 05 22 2006		6. Time of Accident/Incident 01:52: <input type="checkbox"/> AM <input checked="" type="checkbox"/> PM	
7. Type of Accident/Incident (single entry in code box)							
1. Derailment		4. Side collision		7. Hwy-rail crossing		10. Explosion-detonation	
2. Head on collision		5. Raking collision		8. RR grade crossing		11. Fire/violent rupture	
3. Rear end collision		6. Broken Train collision		9. Obstruction		12. Other impacts	
						13. Other (describe in narrative) 07	
8. Cars Carrying HAZMAT 0		9. HAZMAT Cars Damaged/Derailed 0		10. Cars Releasing HAZMAT 0		11. People Evacuated 0	
						12. Division Sunset Area	
13. Nearest City/Town Queen Creek				14. Milepost (to nearest tenth) 947.20		15. State Abbr Code N/A AZ	
16. County PINAL							
17. Temperature (F) (specify if minus) 92 F		18. Visibility (single entry) Code 1. Dawn 3. Dusk 2. Day 4. Dark 2		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 Track				22. FRA Track Class (1-9, X) Code 4		23. Annual Track Density (gross tons in millions) 6.0	
						24. Time Table Direction Code 1. North 3. East 3	
OPERATING TRAIN #1							
25. Type of Equipment Consist (single entry)		1. Freight train 4. Work train 7. Yard/switching		A. Spec. MoW Equip. Code 1		26. Was Equipment Attended? Code 1. Yes 2. No 1	
2. Passenger train 5. Single car 8. Light loco(s).		3. Commuter train 6. Cut of cars 9. Maint./inspect.car				27. Train Number/Symbol MPXW C-22	
28. Speed (recorded speed, if available) Code R - Recorded 46 MPH R E - Estimated		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) 529							
31. Principal Car/Unit		a. Initial and Number		b. Position in Train		c. Loaded (yes/no)	
(1) First involved (derailed, struck, etc)		N/A		1		N/A	
(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/A	
34. Locomotive Units		a. Head End		Mid Train		Rear End	
		b. Manual		c. Remote		d. Manual c. Remote	
(1) Total in Train 3		0		0		0	
(2) Total Derailed 0		0		0		0	
35. Cars		a. Freight		b. Pass.		c. Freight d. Pass. e. Caboose	
(1) Total in Equipment Consist 0		0		0		17 0 0	
(2) Total Derailed 0		0		0		0 0 0	
36. Equipment Damage This Consist 7000		37. Track, Signal, Way, & Structure Damage 500		38. Primary Cause Code M308		39. Contributing Cause Code M301	
Number of Crew Members				Length of Time on Duty			
40. Engineer/Operators N/A		41. Firemen N/A		42. Conductors 1		43. Brakemen N/A	
				44. Engineer/Operator Hrs 1 Mi 22		45. Conductor Hrs 1 Mi 22	
Casualties to:		46. Railroad Employees		47. Train Passengers		48. Other	
Fatal 0		0		0		0	
Nonfatal N/A		0		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 4. Work train 7. Yard/switching		A. Spec. MoW Equip. Code N/A		53. Was Equipment Attended? Code 1. Yes 2. No N/A	
2. Passenger train 5. Single car 8. Light loco(s).		3. Commuter train 6. Cut of cars 9. Maint./inspect.car				54. Train Number/Symbol N/A	
55. Speed (recorded speed, if available) Code R - Recorded 0 MPH N/A E - Estimated		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-2006-33</u>					
56. Trailing Tons (gross tonnage, excluding power units) N/A		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 N/A		b. Position in Train N/A		c. Loaded(yes/no) N/A					
(2) Causing (if mechanical cause reported) 0		N/A		N/A		59. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box. <table border="1" style="width:100%; border-collapse: collapse;"><tr><td style="width:50%;">Alcohol</td><td style="width:50%;">Drugs</td></tr><tr><td style="text-align: center;">N/A</td><td style="text-align: center;">N/A</td></tr></table>		Alcohol	Drugs	N/A	N/A
Alcohol	Drugs										
N/A	N/A										
						60. Was this consist transporting passengers? (Y/N) N/A					
61. Locomotive Units (1) Total in Train 0 (2) Total Derailed 0		a. Head End 0		Mid Train b. Manual c. Remote 0 0		Rear End d. Manual e. Remote 0 0					
						62. Cars (1) Total in Equipment Consist 0 (2) Total Derailed 0					
						Loade a. Freight b. Pass. c. Freight d. Pass. e. Caboose 0 0 0 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 N/A		68. Firemen N/A		69. Conductors N/A		70. Brakemen N/A					
71. Engineer/Operator Hrs 0 Mi 0		72. Conductor Hrs 0 Mi 0		73. Railroad Employees 0		74. Train Passengers 0					
Casualties to: Fatal Nonfatal		75. Other 0		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				Rail Equipment Involved							
79. Type C. Truck-Trailer F. Bus J. Other Motor Vehicle Code A. Auto D. Pick-Up Truck G. School Bus K. Pedestrian B. Truck E. Van H. Motorcycle M. Other (spec. in narrative) D				83. Equipment 3. Train (standing) 6. Light Loco(s) (moving) Code 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) 1							
80. Vehicle Speed (est. MPH at impact) 45				81. Direction (geographical) 1. North 2. South 3. East 4. West 4							
82. Position 1. Stalled on Crossing 2. Stopped on Crossing 3. Moving Over Crossing 4. Trapped 3				84. Position of Car Unit in Train 1							
85. Circumstance 1. Rail Equipment Struck Highway User 2. Rail Equipment Struck by Highway User 2				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							
				86b. Was there a hazardous materials release by 1. Highway User 2. Rail Equipment 3. Both 4. Neither N/A							
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) 01 03 06 07 N/A N/A N/A		88. Signaled Crossing Warning (See instructions for codes) 01		89. Whistle Ban 1. Yes 2. No 3. Unknown 2					
90. Location of Warning 1. Both Sides 2. Side of Vehicle Approach 3. Opposite Side of Vehicle Approach 1		Code 1		91. Crossing Warning Interconnected with Highway Signals 1. Yes 2. No 3. Unknown 2		92. Crossing Illuminated by Street Lights or Special Lights 1. Yes 2. No 3. Unknown 2					
93. Driver's Age 36		94. Driver's Gender 1. Male 2. Female 1		95. Driver Drove Behind or in Front of Train and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown 2		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) 1					
97. Driver Passed Standing Highway Vehicle 1. Yes 2. No 3. Unknown 2		Code 2		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		Code 8					
101. Casualties to Highway-Rail Crossing Users Killed 3 Injured 0		99. Driver Was 1. Killed 2. Injured 3. Uninjured 1		Code 1		100. Was Driver in the Vehicle? 1. Yes 2. No 1					
						102. Highway Vehicle Property Damage (est. dollar damage) 7000					
						103. Total Number of Highway-Rail Crossing Users (include driver) 3					
104. Locomotive Auxiliary Lights? 1. Yes 2. No 1				105. Locomotive Auxiliary Lights Operational? 1. Yes 2. No 1							
106. Locomotive Headlight Illuminated? 1. Yes 2. No 1				107. Locomotive Audible Warning Sounded? 1. Yes 2. No 1							

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

On May 22, 2006, at 1:52 p.m., a southbound (timetable east) Union Pacific Railroad (UP) freight train symbol MPXWC-22 collided with a pickup truck at a highway-rail grade crossing. The accident occurred at Bella Vista Road, milepost 947.2, located near Queen Creek, Arizona, on UP's Sunset Area, Phoenix Subdivision.

All three occupants of the vehicle were killed and the pickup truck completely destroyed. There were no injuries to the train crew, no derailment, and no hazardous materials involved. The lead locomotive sustained minor front end damage.

For the purposes of this report, geographical directions will be used.

At the time of the accident it was daylight and clear. The temperature was 92 degrees F.

The cause of this accident was the failure of the motor vehicle operator to yield the right of way to the approaching train.

110. NARRATIVE

Circumstances Prior to the Accident

The train crew of MPXWC-22 consisted of a locomotive engineer and conductor. After receiving their statutory off-duty period, the crew reported for duty at the UP Phoenix Yard, Phoenix, Arizona. They went on duty at 12:30 p.m., MST, May 22, 2006. The train received an initial terminal train air brake test and departed Phoenix Yard at 1:15 p.m. Their assigned freight train consisted of three locomotives and 17 empty cars. It weighed 529 tons and was 916 feet long. The train was scheduled to travel to Picacho, Arizona.

According to the engineer, the train was traveling south (timetable east) at approximately 50 mph as it approached Bella Vista Road highway-rail grade crossing. The locomotive engineer was seated at the controls and the conductor was seated in the conductor's chair of the lead locomotive. Approaching Bella Vista Road from the north, the track is straight and practically level. The maximum authorized timetable speed for train movement is 60 mph. Track Warrant Control governs train movements across the roadway in both directions. This section of the railroad operates in a timetable east-west direction. For the purposes of this report, geographical directions are used to coincide with police reports.

The Accident

A 1996 Ford F-350 pickup truck collided with the lead locomotive as the vehicle was moving across the highway-rail grade crossing in a westward direction. The passenger side of the pickup truck struck the front of the locomotive and the impact propelled the vehicle along the track in a southward direction. The vehicle came to rest approximately 100 feet south of the highway-rail grade crossing. Just before the pickup truck struck the locomotive, the engineer applied the emergency air brakes. The freight train came to a stop 1436 feet south of the point of impact.

Post-Accident Investigation

The driver of the pickup truck and its two occupants were fatally injured and pronounced dead at the scene of the accident. The Pinal County Coroner listed massive head injuries, internal injuries, and multiple lacerations and contusions as the causes of death.

Post-accident inspections and tests performed on lead locomotive UP 5791 revealed minor damage to the snow plow and air line. The locomotive bell, horn, sanders, air brake apparatus, and operating lights were in working condition. The information from the locomotive's event recorder were removed and analyzed. The information retrieved indicated that the freight train was traveling at 46 mph at the time of impact.

Shortly after the accident, employees of the UP signal department arrived on the scene and conducted operational tests to determine if the highway-rail grade crossing warning system functioned as intended. Post-accident testing indicated that the system was detecting the presence of trains and providing adequate warning time for motorists. Signal employees observed the gate on the northeast side on the highway-rail grade crossing was broken. Pieces of the broken gate were found attached to the snow plow of the lead locomotive.

Analysis and Conclusions

Analysis

The driver was a 36-year old male. The other two occupants of the vehicle were also males, one approximately 20-24 years old, and a 5-year old. The Pinal County Coroner performed a post-mortem toxicological test on the driver and adult occupant. The results were positive for alcohol.

Bella Vista Road is an east/west paved 24-foot wide road that crosses the UP single main line track at a 90 degree angle. It has one traffic lane for each direction of vehicle traffic with a posted speed limit of 45 mph. The warning system consists of two standard five-inch diameter signal masts located near the edge of the roadway on each side of the main track. Attached to each mast is a crossbuck, a 12-inch back-to-back flashing light unit, an audible bell, and gate arm. A Safetran Grade Crossing Predictor (GCP 3000) provides train detection on an approach circuit sufficient to allow at least thirty seconds warning time during train movements. Bella Vista Road's DOT/AAR Inventory Number is 741411B.

The railroad has a whistle sign in place about 1,000 feet north of the crossing. The engineer began sounding the whistle when the train neared this sign. This was later validated by analyses of the event recorder.

The active warning devices were tested by the UP signal department at approximately 5:00 p.m. on the day of the accident and were found to function as intended. Tests were again performed the following day in the presence of a FRA Signal & Train Control inspector. The devices were in full compliance with Federal regulations.

The lead locomotive was equipped with a headlight, auxiliary lights, and the audible warning device. The locomotive engineer tested these devices at the accident scene in the presence of the trainmaster and they functioned as intended. The required devices were in full compliance with Federal requirements.

The locomotive was also equipped with a speed indicator and an event recorder as required. The relevant event recorder data was downloaded by the trainmaster at the accident site. The analysis disclosed that the locomotive engineer was in compliance with all railroad operating and train handling requirements. FRA reviewed the results of this analysis and concurred with the conclusions.

The third locomotive in the consist, UP locomotive 5752, was equipped with a video camera. The information from the camera was removed and analyzed. The information retrieved shows the warning devices activated with the gates down prior to the locomotive arriving at the highway-rail grade crossing. The video shows the motor vehicle traveling at a high rate of speed, breaking the westbound traffic gate, and striking the front of the locomotive. It cannot be determined with certainty whether the motor vehicle struck the train or vice versa as it appears the events occurred simultaneously.

Police reports indicated the driver slammed on his brakes approximately 45 feet east of the crossing, broke through the gate and was struck by the train. Its analysis determined the pick-up truck was traveling at a minimum of 31.81 mph before entering the crossing.

Event information retrieved from the GCP 3000 was downloaded and analyzed. The download reveals a warning time of 30 seconds.

Conclusions

The railroad was in full compliance with their own and applicable Federal standards. The train crew members were the only witnesses to the accident. They had no information that could be used to determine why the automobile failed to stop at the crossing.

Post-mortem toxicological testing performed on the driver and adult passenger showed the presence of alcohol. Regarding the driver, the amount of alcohol present in his system would indicate his blood alcohol level was significantly above the legal driving limit in Arizona. The warning devices functioned as intended and provided adequate advance warning to motorists. Post-mortem tests revealed the presence of alcohol in both the driver of the motor vehicle and an adult passenger and that the driver's blood alcohol level exceeds the legal driving limit in Arizona.

Probable Cause and Contributing Factors

The FRA determined that the cause of this accident was the failure of the motor vehicle operator to yield the right of way to the approaching train. Therefore, it is likely that the alcohol impairment was a significant contributing factor to this accident.