Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2006-71

Paducah & Louisville Railway Company
Calvert City, KY
August 3, 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 # HQ-2006-71

1.Name of Railroad Operating Train #1 Paducah & Louisville Rwy Co. [PAL]	1a. Alphabetic Code PAL	1b. Railroad Accident/Incident No. 2006AUG1D
2.Name of Railroad Operating Train #2 Paducah & Louisville Rwy Co. [PAL]	2a. Alphabetic Code PAL	2b. Railroad Accident/Incident 2006AUG1D
3.Name of Railroad Responsible for Track Maintenance: Paducah & Louisville Rwy Co. [PAL]	3a. Alphabetic Code PAL	3b. Railroad Accident/Incident No. 2006AUG1D
4. U.S. DOT_AAR Grade Crossing Identification Number	5. Date of Accident/Incident Month 08 / Day 10 / Year 2006	6. Time of Accident/Incident 07:00: ☑ 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) — **03**

8. Cars Carrying HAZMAT	9. HAZMAT Cars Damaged/Derailed	10. Cars Releasing HAZMAT	11. People Evacuated	12. Division
0	N/A	N/A	0	N/A

13. Nearest City/Town	14. Milepost (to nearest tenth)	15. State Abbr	15. State Code	16. County
Calvert City	208.5	N/A	N/A	N/A

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
0 F		N/A		N/A		N/A

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
N/A		N/A	N/A		N/A

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	26. Was Equipment Attended? 1. Yes 2. No	Code	27. Train Number/Symbol
	1	1. Yes	1	LP-309

28. Speed (recorded speed, if available) R - Recorded E - Estimated	Code	30. Method(s) of Operation (enter code(s) that apply)	30a. Remotely Controlled Locomotive?
E - 22 MPH	R	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): g, j, l, N/A, N/A	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): 3375			

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	no
(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 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	3	0	0	0	0

35. Cars	Loaded a. Freight	Loaded b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Equipment Consist	14	0	0	0	0
(2) Total Derailed	47	0	0	0	0

36. Equipment Damage This Consist	37. Track, Signal, Way, & Structure Damage	38. Primary Cause Code	39. Contributing Cause Code
1030000	1000	H605	N/A

Number of Crew Members				Length of Time on Duty	
40. Engineer/ Operators	41. Firemen	42. Conductors	43. Brakemen	44. Engineer/Operator	45. Conductor
N/A	0	1	0	Hrs 10 Mi 0	Hrs 10 Mi 0

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	50. Was EOT Device Properly Armed? 1. Yes 2. No
1	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	53. Was Equipment Attended? 1. Yes 2. No	Code	54. Train Number/Symbol
	1	1. Yes	1	PNX-109

55. Speed (recorded speed, if available) R - Recorded E - Estimated	Code	57. Method(s) of Operation (enter code(s) that apply)	57a. Remotely Controlled Locomotive?
E - 0 MPH	N/A	a. ATCS; b. Auto train control; g. Automatic block; h. Current of traffic; m.Special instructions; n. Other than main track	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
3540			g j l N/A N/A	0

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)	GACX561	48	yes		N/A	N/A
(2) Causing (if mechanical cause reported)	0	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	Loaded a. Freight	Loaded b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Train	3	0	0	0	0	(1) Total in Equipment Consist	21	0	27	0	0
(2) Total Derailed	0	0	0	0	0	(2) Total Derailed	4	0	0	0	0

63. Equipment Damage This Consist	64. Track, Signal, Way, & Structure Damage	65. Primary Cause Code	66. Contributing Cause Code
30000	0	H605	N/A

Number of Crew Members				Length of Time on Duty	
67. Engineer/ Operators	68. Firemen	69. Conductors	70. Brakemen	71. Engineer/Operator	72. Conductor
1	0	1	0	Hrs 9 Mi 0	Hrs 9 Mi 0

Casualties to:	73. Railroad Employees	74. Train Passengers	75. Other
Fatal	0	0	0
Nonfatal	0	0	0

76. EOT Device? (1. Yes 2. No)	77. Was EOT Device Properly Armed? (1. Yes 2. No)	78. Caboose Occupied by Crew? (1. Yes 2. No)
1	1	N/A

Highway User Involved

79. Type	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

80. Vehicle Speed (est. MPH at impact)	81. Direction geographical) 1.North 2.South 3.East 4.West	Code
N/A		N/A

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

Rail Equipment Involved

83. 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

84. Position of Car Unit in Train
N/A

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

86b. Was there a hazardous materials release by (1. Highway User 2. Rail Equipment 3. Both 4. Neither)	Code
	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)	88. Signaled Crossing Warning (See instructions for codes) Code	89. 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

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

93. Driver's Age	94. Driver's Gender (1. Male 2. Female)	Code	95. Driver Drove Behind or in Front of Train and Struck or was Struck by Second Train (1. Yes 2. No 3. Unknown)	Code	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		N/A		N/A		N/A

97. Driver Passed Standing Highway Vehicle (1. Yes 2. No 3. Unknown)	Code	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)	Code
	N/A		N/A

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

99. Driver Was (1. Killed 2.Injured 3. Uninjured)	Code
	N/A

100. Was Driver in the Vehicle? (1. Yes 2. No)	Code
	N/A

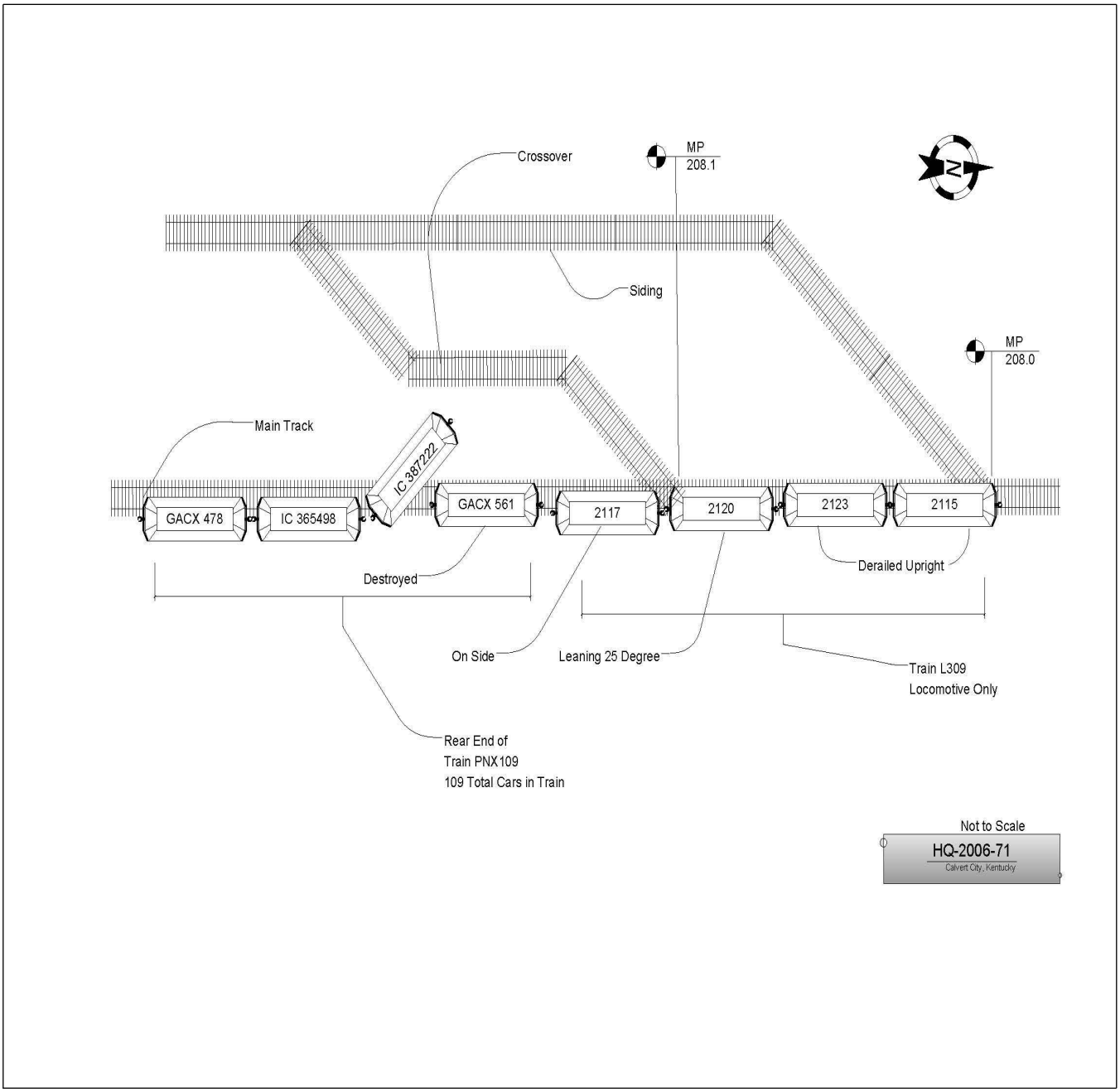
102. Highway Vehicle Property Damage (est. dollar damage)	103. Total Number of Highway-Rail Crossing Users (include driver)
N/A	N/A

104. Locomotive Auxiliary Lights? (1. Yes 2. No)	Code	105. Locomotive Auxiliary Lights Operational? (1. Yes 2. No)	Code
	N/A		N/A

106. Locomotive Headlight Illuminated? (1. Yes 2. No)	Code	107. Locomotive Audible Warning Sounded? (1. Yes 2. No)	Code
	N/A		N/A

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

HQ-2006-71 sketch.jpg



109. SYNOPSIS OF THE ACCIDENT

On August 10, 2006, about 7 a.m. Central Standard Time (CST), a Paducah and Louisville Railway Company (PAL) through freight Train LP-309 struck the rear of PAL Train PNX-109 at milepost (MP) 208.5 near Calvert City, Kentucky (KY). The accident occurred on the Paducah District of the PAL at MP 208.5. The Paducah District extends from MP 226.0 to North Central City, KY, MP 124.5. Yard limits are established between MP 205.8 and MP 213.0. Track warrant control is in effect between MP 124.5 and MP 221.0, and automatic block signals are in effect between MP 205.8 and MP 224.1.

As a result of the collision, the lead locomotive of Train LP-309 derailed on its side. The second locomotive derailed, leaning; and the third locomotive derailed, upright. The rear four loaded coal hoppers of Train PNX-109 were damaged during the collision. Three crew members received medical attention.

As a result of the collision, damage to the equipment is $1,060,000. Track and structures are $1,000.
Several hundred gallons of diesel spilled from PAL Locomotive 2117 because of a ruptured fuel tank.

At the time of the accident, the weather was clear with a temperature of 80°F.

The accident occurred because the crew of Train LP-309 failed to comply with restricted speed in connection with the restrictive indication of a block signal.

110. NARRATIVE

Circumstances Prior to the Accident

Train PNX-109

The crew members of Train PNX-109 reported for duty on August 9, 2006, at 10 p.m. at Paducah, KY after a statutory rest period. They accumulated the necessary train documentation, boarded their train, and departed Paducah at 10:30 p.m. They proceeded northbound behind Train PL-409 performing switching service and short haul service to MP 148.3, West Yard, at 2:15 a.m. They departed southbound from West Yard at 3:15 a.m. servicing companies at Princeton and Grand Rivers. On August 10, Train PNX-109 arrived at Calvert City Yard about 6:30 a.m.

At Calvert City Yard the conductor was walking on the ground to make a train separation when he heard, via his radio, the engineer of Train LP-309 call an approach signal at MP 205.8. A few minutes later he heard the detector at MP 206.5 activate, indicating Train LP-309 had no defects, and their speed was 17 miles per hour (mph). He then heard a tremendous crash and could see a cloud of dust from the rear of his train. He called the engineer and informed him that he thought something had struck their train. He and the engineer called Train LP-309, via radio, but did not get a response. He re-coupled the railcars they were moving back to their train, but when he reconnected the air hose, the pressure could not be maintained. A signal maintainer hi-railing on the northbound main stopped near the conductor. The conductor rode the vehicle to the accident site and immediately notified the dispatcher of the collision.

Train LP-309

The crew members of Train LP-309 reported for duty in Louisville at 9:30 p.m. on August 9, 2006, after a statutory rest period. They held a job briefing at the Louisville Yard Office, received their train documentation and departed the yard for Paducah. They proceeded toward their meeting point with Train PL-409 at Beaver Dam without incident. They arrived at Beaver Dam and job briefed with the crew members of Train PL-409. They swapped train documentation and received Track Warrant No. 10041 from the dispatcher. This authority was from MP 108.6, the south end of Beaver Dam, to MP 221.0, the north end of Paducah Yard. Their train would be following Train PNX-109 back into Paducah.

At Calvert City Yard, MP 205.76, Train LP-309 passed from Centralized Traffic Control Territory to Automatic Block Territory. The first ABS signal was at MP 205.8 and displayed an approach indication, which the engineer called via radio. The engineer sounded the horn at the Golf Course Crossing highway-rail crossing, MP 207.86. The conductor said he had no recollection of the engineer calling the ABS signal at MP208.1, and was making preparation for switching at Calvert City Yard. The next thing he does remember is the engineer yelling “train”. When he looked ahead he saw the rear of Train PNX-109 stopped on the southbound main track. At this time, he exited the door in front of the conductor’s seat, dismounted the steps, and jumped from the train. All of this took no more than a few seconds. To the best of his recollection, the distance involved could have been no more than 300-400 feet.

Beginning at MP 205.0 the track is mostly tangent and level approaching the site of the collision. A southbound train would encounter a 3-degree right hand curve beginning at MP 206.0 and extending to the MP 206.2. There is another 3-degree left hand curve beginning at MP 207.6 and extending to MP 208.0 through the site of the accident. There are no significant elevation features during the previous five mile approaching the site of the collision.

Timetable and geographic direction is north/south. Timetable direction is used throughout this report.

The Accident

The conductor of Train LP-309 exited the left front door and jumped from the train. The conductor said after jumping from the train, he saw the lead locomotive of his train explode through the rear railcar of Train PNX-109. He immediately took refuge under the railcars on the adjacent storage track. When the equipment came to rest, he immediately started looking for the engineer. He climbed on top of the locomotive and was aided by the conductor of Train PNX-109 and the signal maintainer. The engineer of Train LP-309 was located in the operating compartment of the locomotive, trapped within the wreckage.

Marshall County Emergency Medical Response Teams arrived along with the Calvert City Police and Emergency Services and the fire department. After being extricated, the engineer from the wreckage was life flighted by Air Flight helicopter to Deaconess in Evansville, Indiana. The conductor of Train LP-309 was taken by ambulance to Baptist East Hospital in Paducah, and the conductor of Train PNX-109 was taken to Lourdes Hospital in Paducah.

State environmental response teams responded to assess the impact of the collision and the resulting spills. RJ Corman re-railing services responded to the railroad's request for assistance in clearing the wreckage and restoring rail service. There was less than 200 feet of track disrupted during the course of the collision.

Analysis and Conclusion

Signal inspections were performed jointly by Federal Railroad Administration (FRA) inspectors and railroad representatives and the signal system was found to be operating as intended with no defects noted.

Joint mechanical inspections were performed by FRA inspectors and railroad representatives with no defects noted. The event recording data from Train LP-309 indicated it was being operated at a speed of 21.6 mph approaching the ABS signal at MP 208.1, which was displaying a restricted proceed signal. Event recording data indicates that the engineer of Train LP-309 initiated an emergency brake application between 8 and 10 seconds prior to impact. The train traveled less than 270 feet in this time period leading up to the impact. The speed at the initiation of the emergency brake application was 21.6 mph.

Train LP-309 had received an approach signal at the ABS signal at MP 205.8. PAL operating rules (285) require that a train must be operated at a speed which will permit stopping at the next signal when operating on an approach signal. The PAL operating rule book also requires that a train operating past a restricted proceed signal (291) must operate at restricted speed. This is a speed which will permit stopping within one-half the range of vision, short of a train, obstruction, or switch not properly lined, and looking out for a broken rail, but not exceeding 10 mph.

FRA post-accident drug and alcohol testing was performed on the crew members of Train LP-309. In the aftermath of the collision the particulars of the events leading up to the accident were not readily available, and the crew members of Train PNX-109 were also tested along with the dispatchers from the third shift of August 9, 2006, and first shift of August 10, 2006. The results of all tests were negative.

FRA obtained fatigue related information, including a 10-day work history, for all of the employees involved in this incident. Upon analysis of that data it is possible the conductor and engineer of train LP-309 were fatigued.

Probable Cause

FRA concluded that faitgue for both crew members was a possible contributing factor.

The accident occurred because the crew of Train LP-309 failed to comply with restricted speed in connection with the restrictive indication of a block signal.

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