Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2005-19

Union Pacific (UP)
Meachum, Oregon
March 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-2005-19

1.Name of Railroad Operating Train #1: UNION PACIFIC RAILROAD COMPANY	1a. Alphabetic Code: UP	1b. Railroad Accident/Incident No.: 0305PD009
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: N/A	3a. Alphabetic Code: N/A	3b. Railroad Accident/Incident No.: N/A
4. U.S. DOT_AAR Grade Crossing Identification Number	5. Date of Accident/Incident: Month 03 / Day 05 / Year 2005	6. Time of Accident/Incident: 11:20: ☐ 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
13	5	0	0	Portland

13. Nearest City/Town	14. Milepost (to nearest tenth)	15. State Abbr	15. State Code	16. County
Meacham	272.10	N/A	OR	UNION

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
28 F		4		2		1

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
Main Track No. 1		2	27.25		3

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	1	MHKP C-05

28. Speed (recorded speed, if available) R - Recorded E - Estimated: 50 MPH; Code: R

29. Trailing Tons (gross tonnage, excluding power units): 5003

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	34	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 b. Manual	Mid Train c. Remote	Rear End d. Manual	Rear End c. Remote
(1) Total in Train	3	0	0	0	0
(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	26	0	51	0	0
(2) Total Derailed	11	0	18	0	0

36. Equipment Damage This Consist	37. Track, Signal, Way, & Structure Damage	38. Primary Cause Code	39. Contributing Cause Code
1206085	107546	H104	H604

Number of Crew Members: 40. Engineer/ Operators	41. Firemen	42. Conductors	43. Brakemen
N/A	0	1	0

Length of Time on Duty: 44. Engineer/Operator	45. Conductor
Hrs 7 Mi 20	Hrs 7 Mi 20

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)	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	N/A

55. Speed (recorded speed, if available) R - Recorded E - Estimated: 0 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

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

FRA FACTUAL RAILROAD ACCIDENT REPORT

FRA File # HQ-2005-19

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)
(1) First involved (derailed, struck, etc)	0	0	N/A
(2) Causing (if mechanical cause reported)	0	0	N/A

59. 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

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

62. Cars	Loade a. Freight	Loade b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Equipment Consist	0	0	0	0	0
(2) Total Derailed	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

67. Engineer/ Operators	68. Firemen	69. Conductors	70. Brakemen
0	0	0	0

Length of Time on Duty

71. Engineer/Operator: Hrs 0 Mi 0

72. Conductor: Hrs 0 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: 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: 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). Code: N/A

80. Vehicle Speed (est. MPH at impact): 0

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

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? 1. Highway User 2. Rail Equipment 3. Both 4. Neither. Code: N/A

Rail Equipment Involved

83. Equipment: 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). Code: N/A

84. Position of Car Unit in Train: 0

85. Circumstance: 1. Rail Equipment Struck Highway User; 2. Rail Equipment Struck by Highway User. Code: 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

Code(s)							
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

88. Signaled Crossing Warning (See instructions for codes) Code:

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. Code: N/A

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. Code: N/A

101. Casulties to Highway-Rail Crossing Users	Killed	Injured
	0	0

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): 0

103. Total Number of Highway-Rail Crossing Users (include driver): 0

104. Locomotive Auxiliary Lights? 1. Yes 2. No. Code: N/A

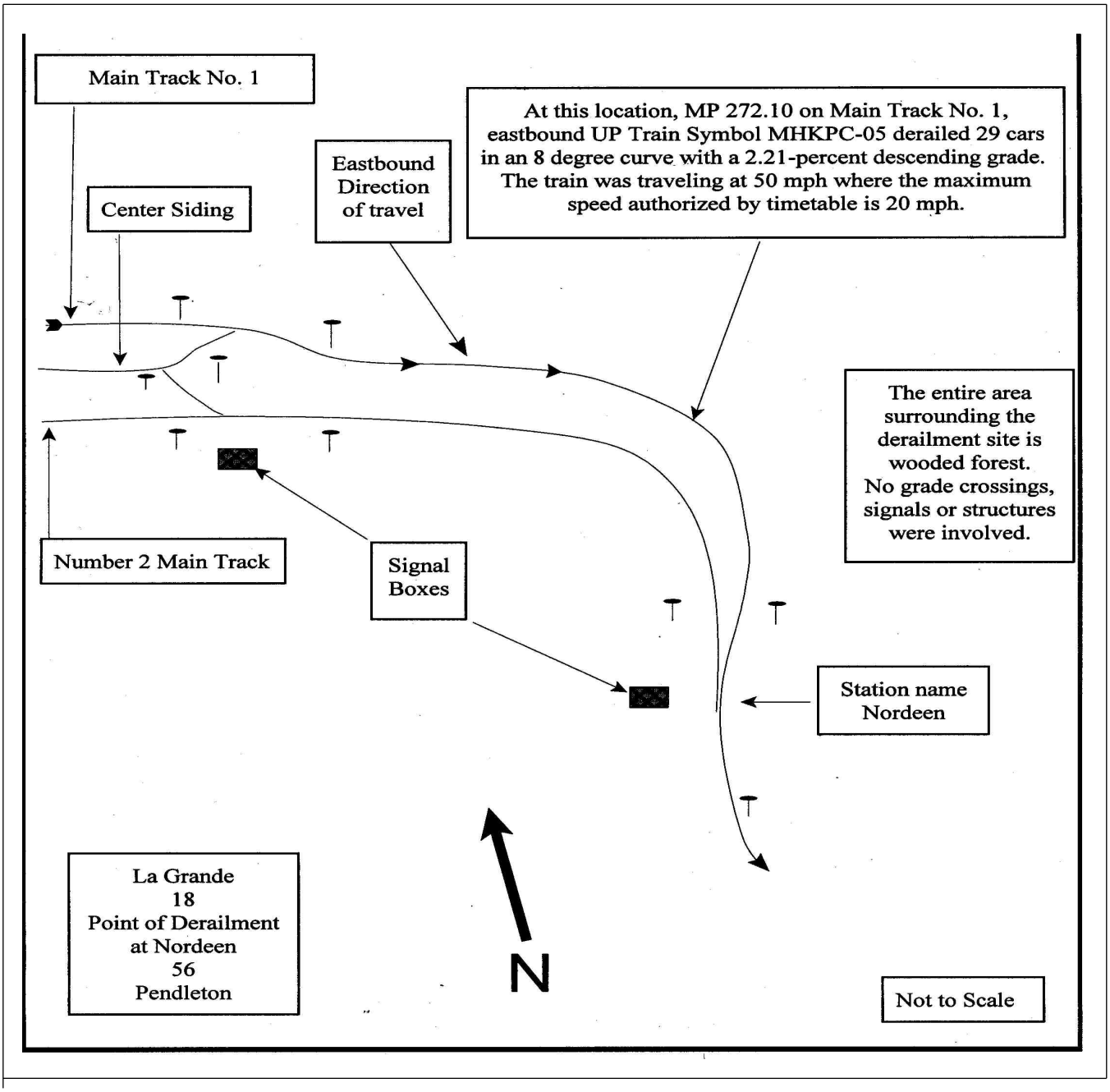
105. Locomotive Auxiliary Lights Operational? 1. Yes 2. No. Code: N/A

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.

HQ-19-2005 Sketch.jpg



109. SYNOPSIS OF THE ACCIDENT

An eastbound Union Pacific Railroad Company (UP) freight train derailed on March 5, 2005, at 11:20 p.m., PST. The derailment occurred approximately nine miles southeast of Meacham, Oregon, at Nordeen, UP Milepost 272.1, on the La Grande Subdivision of the Portland Area Service Unit.

The train consisted of 3 locomotives, 26 loaded cars and 51 empty cars. The 34th car in the consist derailed as it traversed a curve and a general derailment of the following 28 cars ensued. There were no injuries. Approximately 300 gallons of diesel fuel was released from the fuel tank of a refrigerated car. There was no evacuation.

The railroad estimated there was track damage of $107,546 and equipment damage of $1,206,085, with no damage to signal systems or structures.

At the time of the accident it was dark and cloudy with a temperature of 28° F.

The probable cause of the derailment was an employee who fell asleep and allowed his train to travel at excessive speed.

110. NARRATIVE

Circumstances Prior to the Accident

The crew of Train Symbol MHKPC-05 included a locomotive engineer and a conductor. They first went on duty at 4 p.m., PST, March 5, 2005, at the UP Hinkle Yard, near Hermiston, Oregon. This was the away from home terminal for both crew members. Prior to reporting for duty, both received an off duty period of 13 hours 5 minutes, which exceeded the statutory requirement.

Their assigned freight train consisted of 3 locomotives, 26 loaded cars, 51 empty cars, 5,003 trailing tons, 4,737 feet in length. It was a mixed freight train scheduled to travel from Hinkle to La Grande, Oregon, a distance of 104.8 miles. The initial terminal train air brake test and the daily locomotive inspection were conducted on March 5, 2005, both by UP mechanical personnel at Hinkle. The train departed Hinkle Yard at 5:30 p.m.

At milepost 226.2 the crew traded the rear locomotive with a westbound train because it had failed en route. The crew then began to ascend an approximately 40-mile grade that extends from milepost 230.9 to 270.9. At milepost 244, the engineer placed the locomotive throttle in the No. 8 Run position, where it remained until just before the derailment. Due to the increasingly steep grade, the train slowed to an average speed of 17 mph to milepost 270.9.

As the train approached the accident area, the locomotive engineer was seated at the controls on the right (south) side of the leading locomotive. The conductor was seated on the left (north) side.

Approaching the accident site from the west there are, in succession, a tangent approximately 2,100 feet in length, followed by a 2-degree 35-minute curve to the right approximately 300 feet in length, a 2-degree 28-minute curve to the left approximately 300 feet in length, and a tangent approximately 700 feet in length, followed by an 8-degree 36-minute curve to the right approximately 1,250 feet in length to the point of the derailment and 300 feet beyond. A 2.21 percent descending grade begins at milepost 270.9 and continues to the point of the derailment.

After cresting the grade at milepost 270.9, the speed of the train steadily increased from approximately 17 mph to 50 mph, as recorded by the event recorder on the controlling locomotive. UP Portland Area Timetable #2, effective at 00:01 a.m. on October 29, 2000, authorizes a maximum speed of 20 mph for freight trains between mileposts 257.2 and 282.

The Accident

The locomotive engineer stated that he had fallen asleep, but was awakened by movement of the locomotive cab as it traveled through the successive right and left curves at milepost 271.85. He said that as he moved the locomotive throttle into idle, applied the train air brakes and tried to initiate dynamic braking, a train line induced emergency brake application occurred.

After coming to a stop, the engineer notified the train dispatcher of the emergency brake application and the conductor walked back to inspect the train. The conductor found the derailment site but for safety reasons did not enter it. Further examination by local UP managers responding to the accident disclosed that 29 cars had derailed, fouling both main tracks. The initial point of derailment was at milepost 272.1 in the body of an 8-degree 36-minute curve with a 2.21 percent descending grade. The derailment occurred approximately, 300 feet west of the switch at Nordeen, where the two main tracks converge into single main track.

Union County fire and police departments as well as an Oregon State hazardous materials response team responded to the accident. Five of the 29 cars that derailed contained hazardous materials but none were compromised. There was, however, approximately 300 gallons of diesel fuel spilled from the fuel tank of a refrigerator car. The spill was contained by the emergency response personnel, and there was no injury or evacuation. The Railroad estimated there was track

damage of $107,546 and equipment damage of $1,206,085.

Analysis and Conclusion

The event recorder indicated the engineer began sounding the locomotive horn at milepost 247.25 for a private crossing located at milepost 247.4. It also indicated that sounding of the horn at milepost 247.43 was the last action taken by the engineer until just prior to the derailment at milepost 272.1. So the train traveled 24.67 miles without any recorded action by the train crew. In that 24.67 miles between milepost 247.43 and 272.1, the train crossed twelve private crossings and 3 public crossings. According to the recorder the crew may have been asleep for about an hour prior to the derailment. During interviews with FRA, each of the crew members admitted they had been asleep. The engineer stated that he woke up due to lateral movement in the locomotive as it traveled through a short 2 degree "S" curve located at milepost 271.85, one-quarter mile from the location of the derailment. He said he woke up, placed the locomotive throttle into idle, set air brakes, and started dynamic braking just seconds before the train line induced emergency braking occurred.

The train derailed on Main Track No. 1 while traveling at 50 mph through an 8-degree curve with a 2.21-percent descending grade where the maximum authorized speed was 20 mph. The event recorder confirmed the speed at the derailment location to be 50 mph, which is 30 mph above the maximum authorized speed.

The investigation disclosed that the lead locomotive, UP 9102, was not equipped with a crew alerter, although both the other locomotives in the power consist did have alerters. The UP 9102 was a Model Number GE C40-8 locomotive that was manufactured in 1989 without a crew alerter and is therefore not required by regulation to have one.

Prior to the work shift in which the accident occurred, both crew members were released from duty at 2:55 a.m. on March 05, 2005, and returned to duty at 4 p.m. on March 05, 2005, for an off duty period of 13 hours 5 minutes, which is more than the required statutory off duty period.

The track in the area of the derailment was constructed of concrete ties, with 136 lb. continuous welded rail (CWR), which exceeded FRA Track Safety Standard requirements for Class 2 track as outlined in CFR 49 Part 213.

The train was running under clear signal indication and the signal system was functioning properly. There were no other trains in the vicinity.

This accident met the criteria for 49 CFR Part 219 Subpart C Post-Accident Toxicological Testing. The crew was tested and the results were negative.

The Union Pacific held an investigation of both crew members on Thursday, March 10, 2005, in La Grande. Both crew members received level 5 disciplinary actions dismissing them from employment with Union Pacific Railroad.

Probable Cause

The probable cause of the accident was the fact that the engineer fell asleep while operating the train. While he was asleep, and thus not attentive, the train developed excessive speed and derailed in a curve.