Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2007-35

Union Pacific (UP)
Groesbeck, Texas
June 10, 2007

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-2007-35

1.Name of Railroad Operating Train #1: Union Pacific RR Co. [UP]	1a. Alphabetic Code: UP	1b. Railroad Accident/Incident No.: 0607FW012
2.Name of Railroad Operating Train #2: N/A	2a. Alphabetic Code: N/A	2b. Railroad Accident/Incident No.: N/A
3.Name of Railroad Operating Train #3: N/A	3a. Alphabetic Code: N/A	3b. Railroad Accident/Incident No.: N/A
4.Name of Railroad Responsible for Track Maintenance: Union Pacific RR Co. [UP]	4a. Alphabetic Code: UP	4b. Railroad Accident/Incident No.: 0607FW012
5. U.S. DOT_AAR Grade Crossing Identification Number:	6. Date of Accident/Incident: Month 06 | Day 10 | Year 2007	7. Time of Accident/Incident: 04:14: ☑ AM ☐ PM

8. 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)	Code: 01

9. Cars Carrying HAZMAT	10. HAZMAT Cars Damaged/Derailed	11. Cars Releasing HAZMAT	12. People Evacuated	13. Division
1	N/A	N/A	0	Fort Worth

14. Nearest City/Town	15. Milepost (to nearest tenth)	16. State Abbr	16. State Code	17. County
Groesbeck	174.6	N/A	TX	LIMESTONE

18. Temperature (F) (specify if minus)	19. Visibility (single entry) 1. Dawn 2. Day 3.Dusk 4.Dark	Code	20. Weather (single entry) 1. Clear 2. Cloudy 3. Rain 4. Fog 5.Sleet 6.Snow	Code	21. Type of Track 1. Main 2. Yard 3. Siding 4. Industry	Code
71 F		4		1		1

22. Track Name/Number	23. FRA Track Class (1-9, X)	Code	24. Annual Track Density (gross tons in millions)	25. Time Table Direction 1. North 2. South 3. East 4.	Code
Single Main		4	43.95		2

OPERATING TRAIN #1

26. 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	27. Was Equipment Attended? 1. Yes 2. No	Code	28. Train Number/Symbol
	1	1. Yes	1	MFWMX09

29. Speed (recorded speed, if available) R - Recorded E - Estimated	Code
40 MPH	R

30. Trailing Tons (gross tonnage, excluding power units): 7601

31. 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)				
g	j	N/A	N/A	N/A

31a. 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
Code: 0

32. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded (yes/no)
(1) First involved (derailed, struck, etc)	UP354634	29	no
(2) Causing (if mechanical cause reported)	0	0	N/A

33. 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

34. Was this consist transporting passengers? (Y/N): N

35. 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

36. Cars	Loaded a. Freight	Loaded b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Equipment Consist	47	0	58	0	0
(2) Total Derailed	0	0	32	0	0

37. Equipment Damage This Consist	38. Track, Signal, Way, & Structure Damage	39. Primary Cause Code	40. Contributing Cause Code
796783	134343	H504	N/A

Number of Crew Members

41. Engineer/ Operators	42. Firemen	43. Conductors	44. Brakemen
1	0	1	0

Length of Time on Duty

45. Engineer/Operator	46. Conductor
Hrs 3 Mi 54	Hrs 3 Mi 54

Casualties to:	47. Railroad Employees	48. Train Passengers	49. Other
Fatal	0	0	0
Nonfatal	0	0	0

50. EOT Device? 1. Yes 2. No: 1

51. Was EOT Device Properly Armed? 1. Yes 2. No: 1

52. Caboose Occupied by Crew? 1. Yes 2. No: 2

OPERATING TRAIN #2

53. 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	54. Was Equipment Attended? 1. Yes 2. No	Code	55. Train Number/Symbol
	N/A	1. Yes	N/A	N/A

56. Speed (recorded speed, if available) R - Recorded E - Estimated	Code
0 MPH	N/A

58. 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

58a. Remotely Controlled Locomotive?
0 = Not a remotely controlled
1 = Remote control portable

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57. 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

59. 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

60. 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

61. Was this consist transporting passengers? (Y/N): N/A

62. 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

63. Cars	Loaded a. Freight	Loaded 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

64. Equipment Damage This Consist: 0

65. Track, Signal, Way, & Structure Damage: 0

66. Primary Cause Code: N/A

67. Contributing Cause Code: N/A

Number of Crew Members

68. Engineer/ Operators	69. Firemen	70. Conductors	71. Brakemen
0	0	0	0

Length of Time on Duty

72. Engineer/Operator: Hrs 0 Mi 0

73. Conductor: Hrs 0 Mi 0

Casualties to:	74. Railroad Employees	75. Train Passengers	76. Other
Fatal	0	0	0
Nonfatal	0	0	0

77. EOT Device? 1. Yes 2. No: N/A

78. Was EOT Device Properly Armed? 1. Yes 2. No: N/A

79. Caboose Occupied by Crew? 1. Yes 2. No: N/A

OPERATING TRAIN #3

80. 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

81. Was Equipment Attended? 1. Yes 2. No
Code: N/A

82. Train Number/Symbol: N/A

83. Speed (recorded speed, if available)
R - Recorded
E - Estimated
N/A MPH: 0
Code:

84. Trailing Tons (gross tonnage, excluding power units): 0

85. 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): N/A | N/A | N/A | N/A | N/A

85a. 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: N/A

86. 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

87. 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

88. Was this consist transporting passengers? (Y/N): N/A

89. 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

90. Cars	Loaded a. Freight	Loaded 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

91. Equipment Damage This Consist: 0

92. Track, Signal, Way, & Structure Damage: 0

93. Primary Cause Code: N/A

94. Contributing Cause Code: N/A

Number of Crew Members

95. Engineer/ Operators	96. Firemen	97. Conductors	98. Brakemen
0	0	0	0

Length of Time on Duty

99. Engineer/Operator: Hrs 0 Mi 0

100. Conductor: Hrs 0 Mi 0

Casualties to:	101. Railroad Employees	102. Train	103. Other
Fatal	0	0	0
Nonfatal	0	0	0

104. EOT 1. Yes 2. No: N/A

105. Was EOT Device Properly 1. Yes 2. No: N/A

106. Caboose Occupied by Crew? 1. Yes 2. No: N/A

Highway User Involved

107. 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

108. Vehicle Speed (est. MPH at impact): N/A

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

Rail Equipment Involved

111. 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

112. Position of Car Unit in: N/A

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110. Position	Code	113. Circumstance	Code
1.Stalled on Crossing 2.Stopped on Crossing 3.Moving Over Crossing 4. Trapped	N/A	1. Rail Equipment Struck Highway User 2. Rail Equipment Struck by Highway User	N/A
114a. 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	114b. Was there a hazardous materials release 1. Highway User 2. Rail Equipment 3. Both 4. Neither	N/A

114c. State here the name and quantity of the hazardous materials released, if any.
N/A

115. Type 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					

116. Signaled Crossing (See instructions for codes)	Code	117. Whistle 1. Yes 2. No 3. Unknown	Code
	N/A		N/A

118. Location of Warning 1. Both Sides 2. Side of Vehicle Approach 3. Opposite Side of Vehicle Approach	Code	119. Crossing Warning with Highway Signals 1. Yes 2. No 3. Unknown	Code	120. Crossing Illuminated by Street Lights or Special Lights 1. Yes 2. No 3. Unknown	Code
	N/A		N/A		N/A

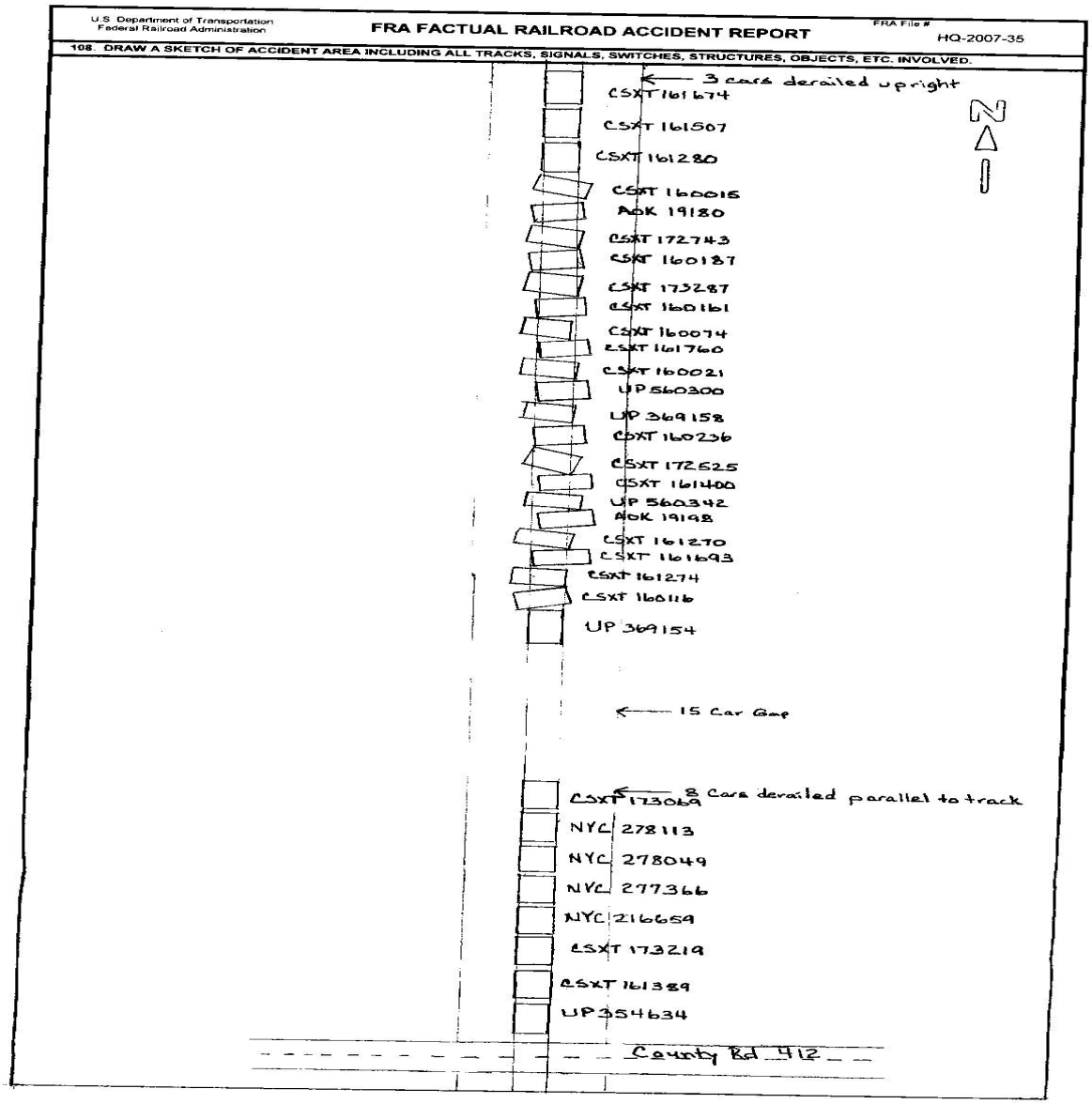
121. Age	122. Driver's Gender 1. Male 2. Female	Code	123. Driver Drove Behind or in Front of and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown	Code	124. Driver 1. Drove around or thru the Gate 2. Stopped and then Proceeded 3. Did not Stop 4. Stopped on Crossing 5. Other (specify in narrative)	Code
0		N/A		N/A		N/A

125. Driver Passed Highway Vehicle 1. Yes 2. No 3. Unknown	Code	126. 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

Casualties to:	Killed	Injured	127. Driver 1. Killed 2.Injured 3. Uninjured	Code	128. Was Driver in the Vehicle? 1. Yes 2. No	Code
				N/A		N/A
129. Highway-Rail Crossing Users	0	0	130. Highway Vehicle Property Damage (est. dollar damage)	0	131. Total Number of Highway-Rail Crossing Users (include driver)	0

132. Locomotive Auxiliary Lights? 1. Yes 2. No	Code	133. Locomotive Auxiliary Lights Operational? 1. Yes 2. No	Code
	N/A		N/A
134. Locomotive Headlight Illuminated? 1. Yes 2. No	Code	135. Locomotive Audible Warning Sounded? 1. Yes 2. No	Code
	N/A		N/A

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



137. SYNOPSIS OF THE ACCIDENT

On June 10, 2007, at 4:14 a.m. (CST), a southbound Union Pacific freight train, MFWMX 09, derailed at UP Milepost 174.65 on the Ennis Subdivision of the Fort Worth Service Unit. This is a rural area located 5.1 miles north of Groesbeck, TX. Thirty-two cars of the 105 car train derailed, no hazardous cars were involved, nor were there any injuries. The twenty-ninth thru the sixtieth cars behind the three locomotives derailed, all were empty.

At the time of the accident it was dark and clear. The temperature was 71 degrees F.

The cost of the derailment is listed at $931,126 ($796,783 to equipment, $134,343 to track)

The cause of the derailment was due to buffing or slack action excessive, train make-up, FRA cause code H504.

138. NARRATIVE

Circumstances Prior to the Accident:

The initial crew of train MFWMX 09 included a locomotive engineer and a conductor, who went on duty at 9:30 a.m. CST, June 9, 2007 at Fort Worth, TX. Fort Worth is a home terminal for both crew members. Both crew members had received more than the statutory off duty rest period prior to reporting for duty.

The train, which consisted of three locomotives and 106 freight cars, was scheduled to travel from Fort Worth, TX. to Laredo, TX.. The train received a Train Air Brake test at Fort Worth, TX. at 8:54 a.m. June 9, 2007 by qualified mechanical inspectors and no exceptions were taken. The train's EOT (UPRQ29534) was also inspected at Fort Worth at 8:54 a.m. June 9, 2007.

After departing Fort Worth the train proceeded south on the Midlothian Subdivision. A bad order car was set out at Bisbee Siding UP Milepost 40.10. Local train 45, which was following train MFWMX 09, observed the track out of alignment at UP Milepost 29.95, the crew on MFWMX 09 did not see any alignment irregularity prior to their passing over this location. Between UP Milepost 31 and UP Milepost 30, MFWMX had ascended a .98 percent grade and was descending a 1.07 percent grade. The track in this location is tangent. Local transportation officials conducted a download of Engine UP 4631, at the request of the Manager of Track Maintenance, and there was evidence of a run in of the rear of the train. The train was stopped by the Hot Box Detector at UP Milepost 6.5 on the Midlothian Subdivision for hot axles on the six rear cars. There was no exception taken when these cars were inspected by the conductor. The train then entered the Ennis Subdivision at Garrett Jct.UP Milepost 233.55. The train went into emergency at UP Milepost 229, and a bad order air hose was found and repaired by a local transportation official. The train then proceeded to UP Milepost 177.8, where the train was stopped because the crew had reached the maximum hours they could be on duty.

The relief crew for MFWMX 09 included an engineer and conductor. The crew went on duty at 12:20 a.m. CST at Hearne, TX. Hearne is a home terminal for both crew members. Both crew members had received more than the statutory off duty rest period, prior to reporting for duty. The train crew's assigned freight train consisted of three locomotives, 47 loaded and 58 empty cars of mixed types. The train was 6737 feet long and weighed 7601 tons.

According to the conductors report, the crew showed being on the train, located at milepost 177.8, at 4 a.m. CST.

As the Southward train approached the accident area, the locomotive engineer was seated at the controls on the West side of the leading locomotive. The conductor was seated on the East side of the leading locomotive.

The grade of the railroad at the point of derailment is level with a 0.36 percent descending grade as you approach this area from the north and a 1.14 percent ascending grade as you continue south from the point of derailment. The track in this area is tangent.

The railroad time table direction of the train was south. The geographic direction of the train was southwest. The Timetable

directions will be used throughout the report.

As indicated by Union Pacific RR Co. Dallas/Ft. Worth Area Timetable No. 2, the method of operation at milepost 174.6 of the Ennis Subdivision was TWC/ABS, Track Warrant Control and Automatic Block Signal.

The weather was reported as dark and clear. The temperature was 71 degrees F.

The Accident:

The crew proceeded southward from milepost 177.8 and gradually increased the speed of the train to 45 mph. The maximum authorized speed for this segment of track is 60 mph per Ennis Subdivision General Order No. 28.

The engineer was approaching a slow order at milepost 173.25, traveling about 45 mph, and placed the train in full dynamic brake. The speed of the train was reduced to 40 mph, but went into emergency application. Both speeds were recorded by the event recorder of the lead engine. The train then came to a smooth abrupt stop. When the air would not build up on the rear of the train, the conductor began to walk back and discovered the derailed cars. He continued to walk back toward the rear of the train and found 32 cars derailed, lines forty-six through seventy-seven on their consist.

Analysis:

The train was equipped with a speed indicator and an event recorder as required. The relevant event recorder data was downloaded by the Manager Train Operations at the accident site, and analyzed by the Manager Operating Practices. The train crew was administered a Post Accident Toxicology Test. Track geometry measurements were taken by the Director Track Maintenance and the Manager Track Maintenance. Investigating the cause of the derailment, it was determined that as the train proceeded southward, the head end was ascending a 1.14 percent grade and the rear of the train was still on a 0.36 percent descending grade. Upon examining the train consist it was noted that 37 of the rear 44 cars were loads, 51.5 percent of the trains tonnage, was behind 47 empty cars. 32 of the 47 empty cars derailed. The force of the loaded cars against the middle of the train caused excessive lateral forces, causing the rail to tip out and allowed the wheels of the UP 354634 to derail.

FRA uses an overall effectiveness rate of 77.5 as the baseline for fatigue analysis, which is equivalent to a blood alcohol content (BAC) of 0.05. At or above this baseline, we do not consider fatigue as probable for any employee. Software sleep settings vary according to information obtained from each employee. If an employee does not provide sleep information, FRA uses default software settings.

FRA obtained fatigue related information, including a 10-day work history, for 1 employee involved in this accident, the engineer of MFWMX 09. While the fatigue analysis indicated that this employee was operating at a fatigue rating of 67%, FRA does not believe fatigue was a contributing factor in this accident.

Conclusions:

Toxicology Tests for both crew members had negative test results. Track geometry measurements were within FRA Standards. The locomotive engineer was in compliance with all applicable railroad operating and train handling requirements. The relevant event recorder data showed identical train speed indications when the train was put into dynamic brake, both on the track alignment problem on the Midlothian Sub and the derailment on the Ennis Subdivision..When the train went into full dynamic brake, the rear of the train, which consisted of the majority of the loads, ran in on the middle of the train, which were all empty cars.

Probable Cause and Contributing Factors

Based on the information from the derailment investigation by the FRA and the previous incident that occurred with MFWMX