Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2010-05

Canadian Pacific (CP)
Courtney, ND
January 27, 2010

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-2010-5

1.Name of Railroad Operating Train #1	1a. Alphabetic Code	1b. Railroad Accident/Incident No.
Canadian Pacific Rwy Co. [CP]	CP	218026
2.Name of Railroad Operating Train #2	2a. Alphabetic Code	2b. Railroad Accident/Incident No.
N/A	N/A	N/A
3.Name of Railroad Operating Train #3	3a. Alphabetic Code	3b. Railroad Accident/Incident No.
N/A	N/A	N/A
4.Name of Railroad Responsible for Track Maintenance:	4a. Alphabetic Code	4b. Railroad Accident/Incident No.
Canadian Pacific Rwy Co. [CP]	CP	218026
5. U.S. DOT_AAR Grade Crossing Identification Number	6. Date of Accident/Incident: Month 01 Day 27 Year 2010	7. Time of Accident/Incident: 09:00: ☑ 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
30	0	0	0	St Paul Service Area

14. Nearest City/Town	15. Milepost *(to nearest tenth)*	16. State Abbr	16. State Code	17. County
Courtenay	323.05	N/A	ND	FOSTER

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
0 F	2	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. West — Code
Single Main Track	4	34	3

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	496-25

29. Speed *(recorded speed, if available)* R - Recorded E - Estimated — Code	31. Method(s) of Operation *(enter code(s) that apply)*	31a. Remotely Controlled Locomotive?
45 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)*	0 = Not a remotely controlled; 1 = Remote control portable; 2 = Remote control tower; 3 = Remote control transmitter - more than one remote control transmitter
30. Trailing Tons *(gross tonnage, excluding power units)*: 8651	Code(s): j N/A N/A N/A N/A	0

32. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded *(yes/no)*
(1) First involved *(derailed, struck, etc)*	CP337238	3	N/A
(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: 0 Drugs: 0

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	2	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	56	0	23	0	0
(2) Total Derailed	21	0	4	0	0

37. Equipment Damage This Consist	38. Track, Signal, Way, & Structure Damage	39. Primary Cause Code	40. Contributing Cause Code
$716,360.00	$14,960.00	T204	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 8 Mi 25	Hrs 8 Mi 25

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: N/A

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	N/A	N/A

56. Speed *(recorded speed, if available)* R - Recorded E - Estimated — Code	58. Method(s) of Operation *(enter code(s) that apply)*	58a. Remotely Controlled Locomotive?
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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57. 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

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: $0.00

65. Track, Signal, Way, & Structure Damage: $0.00

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)* Code: R - Recorded; E - Estimated N/A MPH 0

84. Trailing Tons *(gross tonnage, excluding power units)* N/A

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: $0.00

92. Track, Signal, Way, & Structure Damage: $0.00

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 0

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 Ban 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

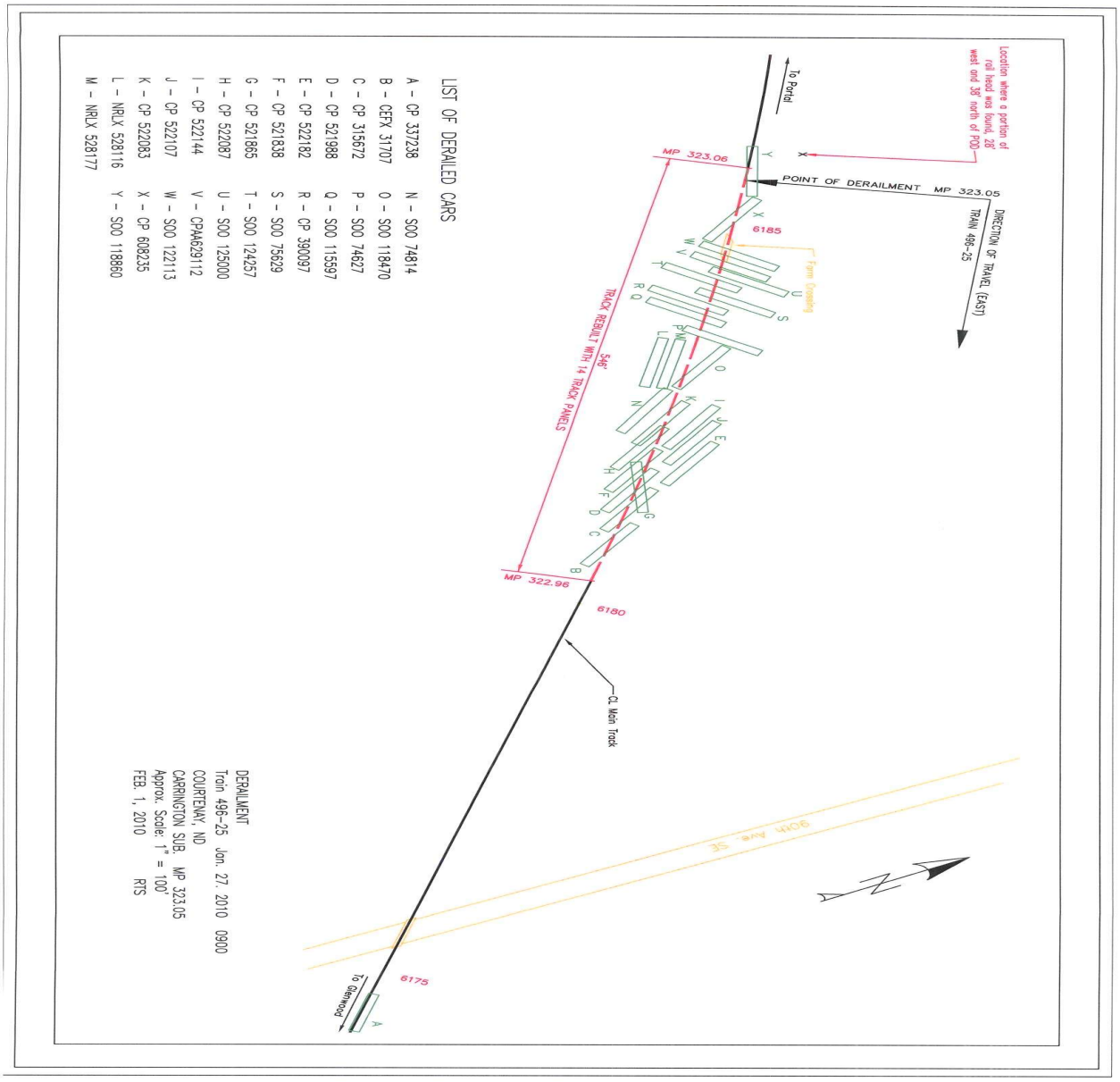
121. Age	122. Driver's Gender 1. Male 2. Female	Code	123. Driver Drove Behind or in Front of and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown	Code	124. Driver 1. Drove around or thru the Gate 2. Stopped and then Proceeded 3. Did not Stop 4. Stopped on Crossing 5. Other *(specify in narrative)*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

An eastbound Canadian Pacific Railway Company (CP) freight train derailed on January 27, 2010 at 9:00 a.m. CST. The accident occurred on a single main track at CP milepost (MP) 323.05 on the Carrington Subdivision near the town of Courtenay, North Dakota.

The train consisted of two locomotives and 84 cars. The 1st through 25th cars behind the locomotives derailed as it was traveling eastward on a 0.05 ascending grade in a left-hand 2-degree curve.

The Railroad Officials stated that there was track damages of $14,960 and equipment damages totaling $716,360.25. Total railroad damage was figured at $731,320.25. There were no injuries to the train crew and no release of any hazardous materials.

At the time of the derailment it was clear with a temperature of 0 degrees F.

The probable cause of the accident was a broken rail which was the result of a sudden rupture of a field weld occurring in the high-side rail on the spiral of a left-hand 2-degree curve (FRA code T204).

138. NARRATIVE

CIRCUMSTANCES PRIOR TO THE ACCIDENT:

The crew of Train CP 496-25 consisted of a locomotive engineer and a conductor. They reported for duty at 12:35 a.m. CST on January 27, 2010 at the CP Yard Office in Harvey, North Dakota. This is the away from home terminal for both the conductor and engineer and both had received more than the required statutory off -duty rest period prior to reporting for duty.

The assigned freight train consisted of two locomotives, 61 loads, and 23 empty rail cars (84 total cars). The train had 8,651 trailing tons and was 5,559 feet in length. This freight train was scheduled to travel from Harvey en route to Enderlin, North Dakota. After having received a FRA Class I (Initial Terminal) Train Air Brake Test the train departed Harvey at 5:50 a.m.

The crew had a work order to place five of the cars in the train at Carrington, North Dakota. They arrived at Carrington at 7:00 a.m. where they placed the five loads in the rail siding and met another train. Upon completion of a Class III train air brake test (train line continuity test) they departed Carrington at 8:10 a.m.

As the train approached the derailment site the locomotive engineer was seated at the controls on the right (south) side of the leading locomotive and the conductor was seated in the conductor's seat on the left (north) side of the cab.

Interviews conducted by the Federal Railroad Administration (FRA) revealed that the trip was uneventful prior to the derailment.

Approaching the derailment site from the west and traversing eastward the track is tangent between MP 323.7 and MP 323.1 followed by a 2-degree left-hand curve that extends to approximately MP 322.9. The derailment occurred in a 2-degree left-hand curve at MP 323.05 on a 0.05 ascending grade.

The method of operation on this single main track is Track Warrant Control (TWC). The maximum authorized

speed is 50 mph as designated by the current Canadian Pacific Timetable # 6 identified as 0001 edition and dated Monday October 1, 2007.

THE ACCIDENT

As train CP 496-25 was traveling eastward it experienced an undesired emergency train air brake application and came to a stop. The locomotives and cars traveled 2,408 feet after the emergency brake application.

After coming to a stop the conductor notified the train dispatcher. The conductor walked back to inspect the train and discovered that the 1st through the 25th cars behind the locomotives had derailed. A total of 25 cars derailed.

Further investigation of the derailment revealed that the initial point-of-derailment (POD) was at MP 323.05 on an 0.05 ascending grade. Train CP 496-25 was traveling timetable and geographical direction east on the single main track at a recorded speed of 45 mph while approaching the POD. The speed was recorded by the event recorder of the controlling locomotive.

The train crew did not report any injuries and no hazardous materials were involved.

POST-ACCIDENT INVESTIGATIONl:

On January 27, 2010, the Federal Railroad Administration (FRA) began an investigation of the derailment. FRA's Region 8 management assigned an Operating Practices Inspector as Inspector-in-Charge (IIC) of the investigation. The IIC was assisted by another Operating Practices Inspector and a Track Inspector. FRA has completed its investigation. The following analysis and conclusions as well as any possible contributing factors and the probable cause in this report represent the findings of the FRA's investigation.

ANALYSIS AND CONCLUSIONS:

ANAL;YSIS-CP TRAIN 496-25 LOCOMOTIVE EVENT RECORDER:

CONCLUSION:

An inspection of the data printout from the lead locomotive event recorder indicated that the train was being operated at 45 mph at the location of the POD. The event recorder also indicated no unusual events related to train handling.

ANALYSIS-POST ACCIDENT TOXICOLOGICAL TESTING:

CONCLUSION:

The accident met the criteria for FRA Post-Accident Toxicology Testing as required under Title 49 CFR, Part 219, Subpart C. The crew provided blood and urine samples at an Occupational Health Services Collection Facility. Test results were negative for the engineer and conductor.

ANALYSIS-WAYSIDE DETECTORS (Hot Journal):

CONCLUSION:

There was one hot journal detector located at MP 333.9 approximately 10.85 miles prior to the POD. Records indicate that no defects were noted by this detector concerning train CP 496-25 on January 27, 2010.

ANALYSIS-TRACK (Broken Rail Section):

CONCLUSION:

The field weld which broke and caused the derailment had been welded on May 16, 2007. At the time of the weld the rail temperature was 87 degrees F and the ambient temperature was 70 degrees F. The section of rail which contained the broken weld was sent to Winnipeg, Canada for laboratory analysis. The CP’s

laboratory analysis revealed no prior defects present which would have caused the rail to break. CP officials determined that it appeared to have been a sudden rupture of the field weld.

ANALYSIS-EMPLOYEE FATIGUE:

FRA obtained fatigue related information for the 10-day period preceding this accident/incident including the 10-day work history (on-duty/off-duty cycles) for both train crew members involved in this incident.

CONCLUSION:

Upon analysis of that information FRA concluded that fatigue was probable for both crew members and that they may have been working at a diminished level of safety (effectiveness) due to mental and/or physical attributes associated with fatigue. However, the cause of this incident was determined to be a sudden rupture of a field weld which occurred under the train not prior to its arrival. Therefore, FRA concluded that fatigue was not a contributing factor in this incident.

POSSIBLE CONTRIBUTING FACTORS:

FRA's investigation was unable to determine any possible contributing factors.

PROBABLE CAUSE:

FRA’s investigation determined that the probable cause of the accident was a broken rail which was the result of a sudden rupture of a field weld occurring in the high-side rail on the spiral of a left-hand 2-degree curve (FRA code T204).