
# *Federal Railroad Administration*
# *Office of Safety*
# *Headquarters Assigned*
# *Accident Investigation Report*
# *HQ-2006-78*

## *Burlington Northern Santa Fe*
## *Sherman, MS*
## *October 6, 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-2006-78

| | | |
|---|---|---|
| 1.Name of Railroad Operating Train #1: BNSF Rwy Co. [BNSF] | 1a. Alphabetic Code: BNSF | 1b. Railroad Accident/Incident No.: SF1006100 |
| 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: BNSF Rwy Co. [BNSF] | 3a. Alphabetic Code: BNSF | 3b. Railroad Accident/Incident No.: SF1006100 |
| 4. U.S. DOT_AAR Grade Crossing Identification Number: | 5. Date of Accident/Incident: Month 10 / Day 03 / Year 2006 | 6. Time of Accident/Incident: 11:06: ☑ 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 |
|---|---|---|---|---|
| 0 | 0 | 0 | 0 | Springfield |

| 13. Nearest City/Town | 14. Milepost (to nearest tenth) | 15. State Abbr | 15. State Code | 16. County |
|---|---|---|---|---|
| Sherman | 575.9 | N/A | MS | PONTOTOC |

| 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 |
|---|---|---|---|---|---|---|
| 84 F | | 2 | | 1 | | 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 | | 4 | 39.66 | | 2 |

## 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: 1

26. Was Equipment Attended? 1. Yes 2. No: 1

27. Train Number/Symbol: CBTM PAM11

28. Speed (recorded speed, if available) Code: R - Recorded; E - Estimated 45 MPH: R

29. Trailing Tons (gross tonnage, excluding power units): 19094

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 | 35 | yes |
| (2) Causing (if mechanical cause reported) | JHMX97448 | 35 | yes |

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 | 2 | 0 | 0 | 0 | 3 |
| (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 | 135 | 0 | 0 | 0 | 0 |
| (2) Total Derailed | 45 | 0 | 0 | 0 | 0 |

36. Equipment Damage This Consist: 2798558

37. Track, Signal, Way, & Structure Damage: 281500

38. Primary Cause Code: E54C

39. Contributing Cause Code: N/A

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: Hrs 4 Mi 10

45. Conductor: Hrs 4 Mi 10

| 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: 2

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

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: N/A

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

54. Train Number/Symbol: N/A

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

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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 | a. Initial and Number | b. Position in Train | c. Loaded (yes/no) |
|---|---|---|---|
| (1) First involved (derailed, struck, etc) | N/A | N/A | N/A |
| (2) Causing (if mechanical cause reported) | N/A | N/A | 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 | N/A | N/A | N/A | N/A | N/A |
| (2) Total Derailed | N/A | N/A | N/A | N/A | N/A |

| 62. Cars | Loade a. Freight | Loade b. Pass. | Empty c. Freight | Empty d. Pass. | e. Caboose |
|---|---|---|---|---|---|
| (1) Total in Equipment Consist | N/A | N/A | N/A | N/A | N/A |
| (2) Total Derailed | N/A | N/A | N/A | N/A | N/A |

63. Equipment Damage This Consist: N/A
64. Track, Signal, Way, & Structure Damage: N/A
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 |
|---|---|---|---|
| N/A | N/A | N/A | N/A |

Length of Time on Duty

71. Engineer/Operator: Hrs N/A Mi N/A
72. Conductor: Hrs N/A Mi N/A

| Casualties to: | 73. Railroad Employees | 74. Train Passengers | 75. Other |
|---|---|---|---|
| Fatal | N/A | N/A | N/A |
| Nonfatal | N/A | N/A | N/A |

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): N/A

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: N/A

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 |

88. Signaled Crossing Warning (See instructions for codes) — Code: N/A

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: N/A

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 |
|---|---|---|
| | 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): N/A

103. Total Number of Highway-Rail Crossing Users (include driver): N/A

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

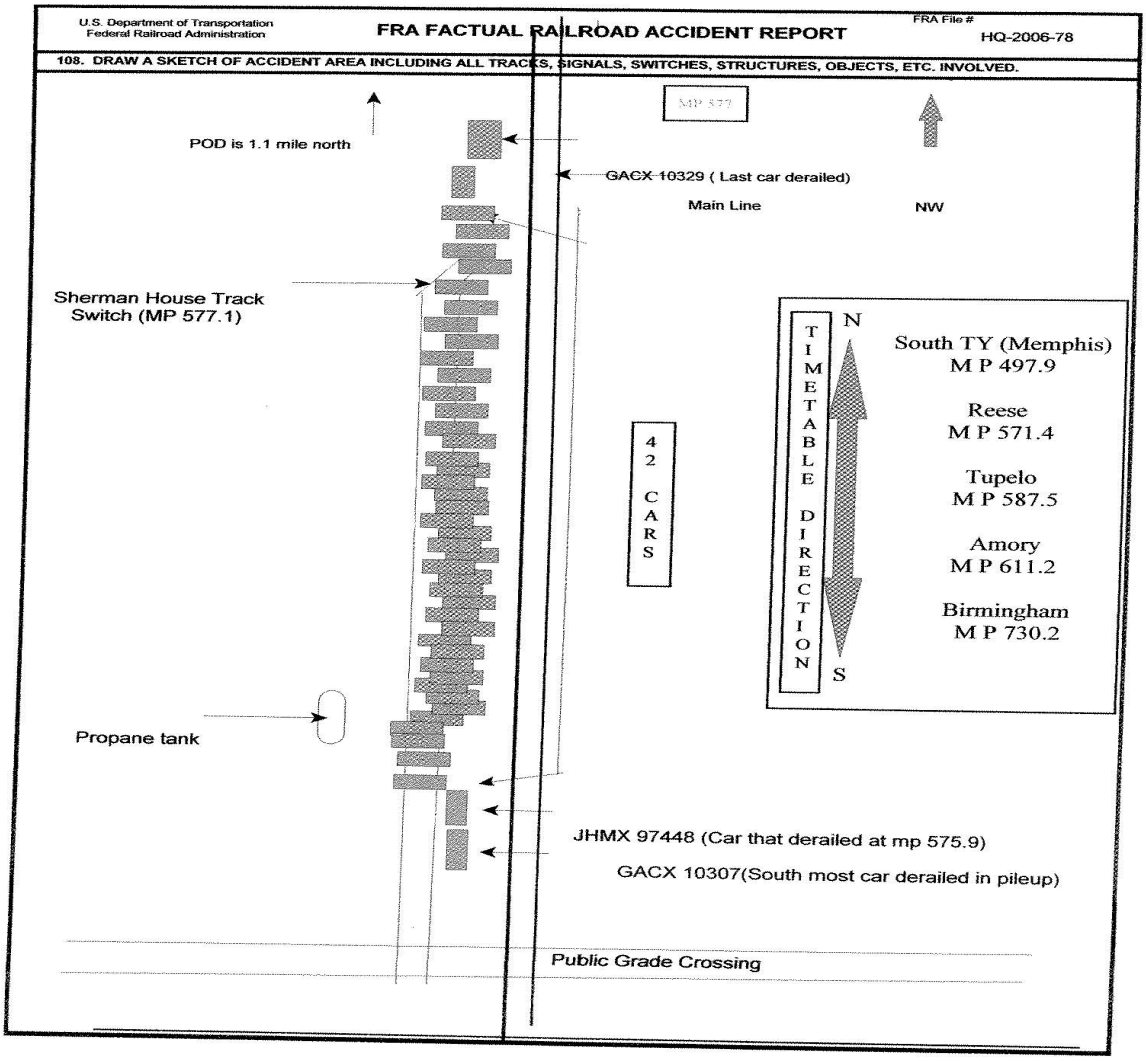
105. Locomotive Auxiliary Lights Operational? 1. Yes 2. No — Code: N/A

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-2006-
78
sketch.jpg



109. SYNOPSIS OF THE ACCIDENT

On October 3, 2006, at 11:06 a.m., Central Daylight Time (CDT), a southbound BNSF Railway Company (BNSF) freight Train C-BTMPAM1-19A derailed. The accident occurred in Sherman, Mississippi (MS) on a single main line track at milepost (MP) 575.9 on the Springfield Division, Birmingham Subdivision.

The train consisted of five locomotives and 135 loaded coal hoppers. Two locomotives were on the head-end of the train, and three locomotives were on the north or rear end of the train. The 35th car behind the locomotives, JHMX 97448, derailed the lead set of wheels of the front trucks at MP 575.9 while traveling on tangent track. Train C-BTMPAM1-19A continued southward for about one mile, then derailed causing the 34th through the 73rd cars behind the lead locomotives to derail at the main line switch MP 577.0. Forty three of the forty five derailed cars ended in a general pileup and two remained upright.

There were no injuries to the train crew and no hazardous materials were released. There were no evacuations and this is not an Amtrak route.

The railroad reported track damages of $240,700, signal damage of $40,800, and equipment damages of $2,798,558. Total estimated damages are $3,080,058.

The temperature at the time of the derailment was 84 °F and clear.

The probable cause of the accident was the journal fractured due to a new cold break.

110. NARRATIVE

Circumstances Prior to the Accident

The crew of Train C-BTMPAM1-19A included a locomotive engineer and a conductor. They first went on duty at 7 a.m., on October 3, 2006, at the BNSF Tennessee Yard in Memphis, Tennessee (TN). This was the home terminal for this crew and they received more than the statutory off duty period prior to reporting for duty. There was also a road foreman of engines and a signal supervisor riding the lead locomotive.

Train C-BTMPAM1-19A consisted of five locomotives, two on the head end and three on the rear of the train, and 145 loaded coal cars. The total length of this train was 7,206 ft with 19,094 trailing tons. It was operating from Memphis to Birmingham, Alabama (AL). The train received an initial terminal brake test in Memphis at Tennessee Yard and departed at 8:30 a.m.

About 11:05 a.m., the southbound train approached the accident area with the locomotive engineer seated at the controls on the left (east) side of the lead locomotive. The conductor was seated on the right (west) side of the locomotive. This locomotive was running with the short hood forward. The trip was uneventful prior to this point.

Approaching the accident site, MP 575.9 from the north, there is a 1,500 ft, 3-degree 8-minute right hand curve, then 1,000 ft of tangent track. The grade at the point of derailment (POD) is virtually flat. There is a .58-per cent descending grade where the additional 44 cars derailed.

Train C-BTMPAM1-19A was traveling southeast, railroad timetable direction is south. Timetable direction is used for this report.

The Accident

Train C-BTMPAM1-19A was operating at a recorded speed of 45 miles per hour (mph) approaching the POD as recorded by the event recorder of the lead (controlling) locomotive. The engineer said they passed the main crossing in Sherman with no indication of problems. About 11:06 a.m., the train went into an emergency brake application. The train stopped 2,000 ft after the emergency brake application occurred. The maximum authorized speed for this train was 45 mph, as designated by system special instructions No. 12.

After the train came to a stop, the engineer notified the train dispatcher. The conductor and the road foreman of engines walked back to inspect the train. They found the 34th through the 78th cars behind the locomotives derailed in a general pile near a main line switch. They also found the Sherman Fire Department already on the scene.

There were no explosions or fires, no hazardous material releases. There were no injuries to the train crew or any other BNSF employees.

Analysis and Conclusions

Analysis

The train traversed two hotbox and dragging equipment detectors on the Birmingham Subdivision located at MP 545.1 and MP 557.4. There were no defects recorded at either location. The 35th car in the train derailed the lead set of wheels of the front trucks at MP 575.9. The car was dragged for about 1.2 miles where it struck a switch at MP 577.1 causing it to completely derail along with the additional 44 cars. About a 1/4-mile north of the POD, MP 575.6, a section of the journal with a complete bearing assembly was found about 20 ft outside of the west rail. The journal broke off the 35th car (JHMX 97448). It was in the L1 location on the

car and the break occurred between the bearing assembly and wheel seat of the 6-½ by 12 inch journal. The Timken Class F roller bearing was inspected and no exceptions taken.

The axle of car JHMX 97448 was sent by BNSF to an independent lab for analysis. The mate bearing and journal did not reveal any defects or show any signs of distress.

The crew was tested under Federal Railroad Administration (FRA) post accident requirements with negative results. FRA reviewed the locomotive event recorder data and no exceptions were noted for train handling.

Conclusion

Train C-BTMPAM1-19A was operating in full compliance with BNSF rules and standards and met all Federal requirements. It was determined that the fractured journal grew rapidly and developed from a new cold break that could not be detected by hot box detectors. It was determined the L1 journal of JHMX 97448 failed directly behind the bearing assembly at the wheel seat at MP 575.6.

Probable Cause

The Federal Railroad Administration found that the probable cause of the derailment was the journal fractured due to a new cold break.