Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2008-85

Burlington Northern Santa Fe (BNSF)
Littleswan, MN
November 9, 2008

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-2008-85

1.Name of Railroad Operating Train #1: BNSF Rwy Co. [BNSF]	1a. Alphabetic Code: BNSF	1b. Railroad Accident/Incident No.: TC1108104
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: BNSF Rwy Co. [BNSF]	4a. Alphabetic Code: BNSF	4b. Railroad Accident/Incident No.: TC1108104
5. U.S. DOT_AAR Grade Crossing Identification Number:	6. Date of Accident/Incident: Month 11 Day 09 Year 2008	7. Time of Accident/Incident: 11:25:00 ☑ 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
0	N/A	N/A	0	TWIN CITIES

14. Nearest City/Town	15. Milepost *(to nearest tenth)*	16. State Abbr	16. State Code	17. County
HIBBING	91.3	N/A	MN	ST LOUIS

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
23 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	23.45	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	UBRMALL409

29. Speed *(recorded speed, if available)* R - Recorded E - Estimated — Code	30. Trailing Tons *(gross tonnage, excluding power units)*
48 MPH R	24510

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): e | N/A | 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: 0

32. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded *(yes/no)*
(1) First involved *(derailed, struck, etc)*	BNSF601305	91	yes
(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
00	00

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	1
(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	183	0	0	0	0
(2) Total Derailed	65	0	0	0	0

37. Equipment Damage This Consist	38. Track, Signal, Way, & Structure Damage	39. Primary Cause Code	40. Contributing Cause Code
$2,007,692.00	$200,000.00	M507	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 — 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	N/A	N/A

56. Speed *(recorded speed, if available)* R - Recorded E - Estimated — Code
N/A 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)* 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)*	N/A	N/A	N/A
(2) Causing *(if mechanical cause reported)*	N/A	N/A	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	N/A	N/A	N/A	N/A	N/A
(2) Total Derailed	N/A	N/A	N/A	N/A	N/A

63. Cars	Loaded a. Freight	Loaded 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

64. Equipment Damage This Consist N/A

65. Track, Signal, Way, & Structure Damage N/A

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

Length of Time on Duty

72. Engineer/Operator Hrs N/A Mi N/A

73. Conductor Hrs N/A Mi N/A

Casualties to:	74. Railroad Employees	75. Train Passengers	76. Other
Fatal	N/A	N/A	N/A
Nonfatal	N/A	N/A	N/A

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 N/A

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)*	N/A	N/A	N/A
(2) Causing *(if mechanical cause reported)*	N/A	N/A	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	N/A	N/A	N/A	N/A	N/A
(2) Total Derailed	N/A	N/A	N/A	N/A	N/A

90. Cars	Loaded a. Freight	Loaded 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

91. Equipment Damage This Consist N/A

92. Track, Signal, Way, & Structure Damage N/A

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

Length of Time on Duty

99. Engineer/Operator Hrs N/A Mi N/A

100. Conductor Hrs N/A Mi N/A

Casualties to:	101. Railroad Employees	102. Train	103. Other
Fatal	N/A	N/A	N/A
Nonfatal	N/A	N/A	N/A

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 1.Stalled on Crossing 2.Stopped on Crossing 3.Moving Over Crossing 4. Trapped	Code N/A	113. Circumstance 1. Rail Equipment Struck Highway User 2. Rail Equipment Struck by Highway User	Code 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	Code N/A	114b. Was there a hazardous materials release 1. Highway User 2. Rail Equipment 3. Both 4. Neither	Code 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	116. Signaled Crossing *(See instructions for codes)*	Code	117. 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	

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

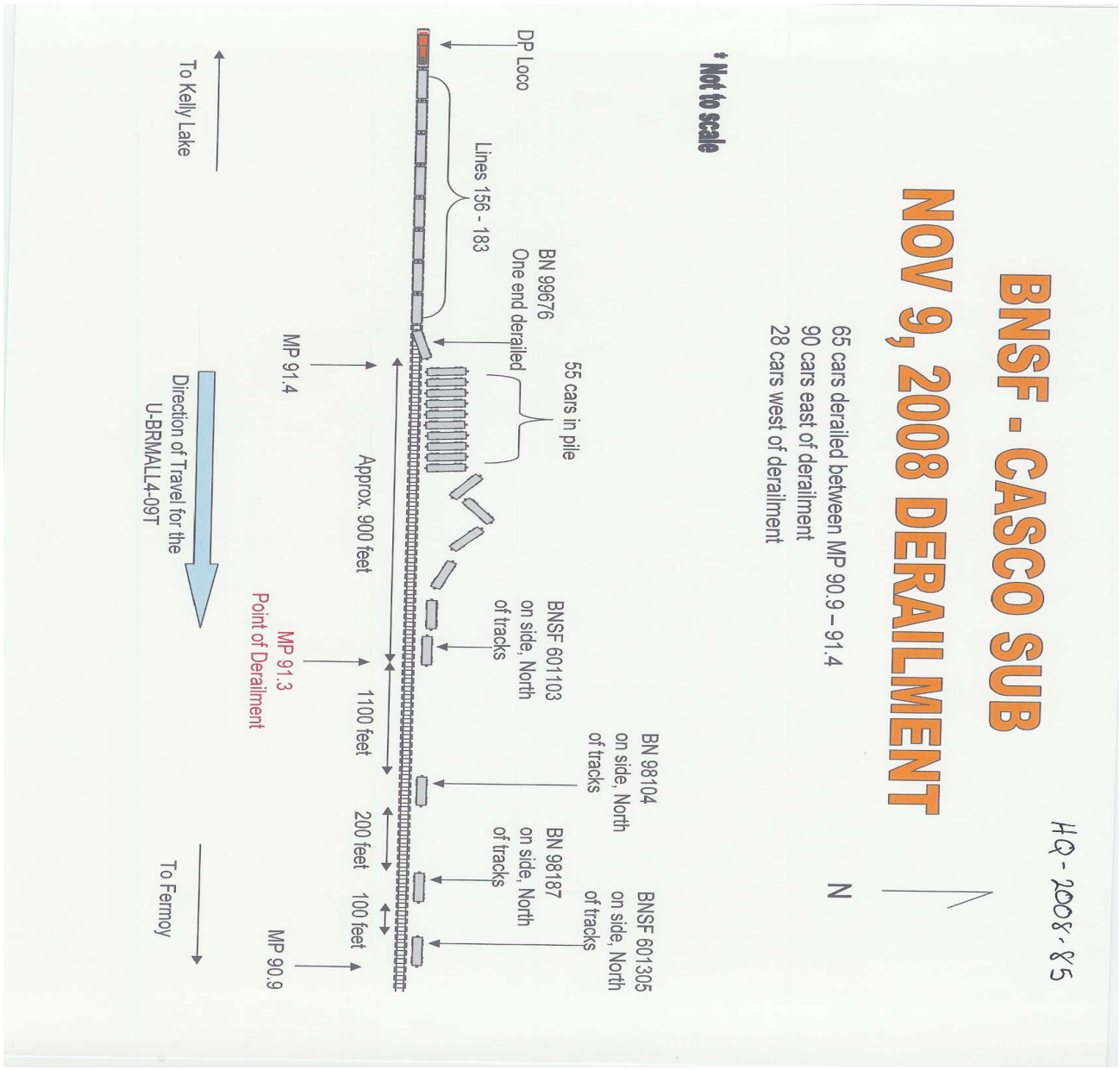
121. Age N/A	122. Driver's Gender 1. Male 2. Female	Code N/A	123. Driver Drove Behind or in Front of and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown	Code N/A	124. Driver 1. Drove around or thru the Gate 2. Stopped and then Proceeded 3. Did not Stop 4. Stopped on Crossing 5. Other *(specify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

125. Driver Passed Highway Vehicle 1. Yes 2. No 3. Unknown	Code N/A	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

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

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

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



137. SYNOPSIS OF THE ACCIDENT

On November 9, 2008 at 11:07 a.m. CST eastbound Burlington Northern Santa Fe (BNSF) Railway Unit 0re Train U-BRMALL4-09T (BNSF 09T) derailed 65 loaded taconite pellet hopper cars. The incident occurred approximately five miles west of BNSF Railroad Timetable Station Casco, Minnesota at BNSF Milepost 91.3 on the Casco Subdivision of the Twin Cities Division on the single Main Track.

Hopper Car BNSF 601305, the 91st car from the head end, was the first car to derail. There were no hazardous materials involved and there was no fire or evacuation. No injuries were reported.

The total estimated damage was $ 2,207,692. Estimated equipment damage was $ 2,007,692 and estimated track and structures damage was $ 200,000.

At the time of the incident it was cloudy and daylight. The temperature was 23 º F with a northwest wind at 14 mph.

The probable cause of the derailment could not be determined.

138. NARRATIVE

CIRCUMSTANCES PRIOR TO THE ACCIDENT

The crew of BNSF Unit Taconite Ore Train 09T consisted of a locomotive engineer and conductor. They went on duty at 3:00 a.m. on November 9, 2008 at Allouez Yard in Superior, Wisconsin where they received their train orders and instructions. Superior is the home terminal for both crew members. Before they went on duty both crew members received more than the required statutory off duty rest period. The engineer and conductor each had 37 hours 15 minutes off duty rest.

BNSF Train 09T was a dedicated taconite unit ore train for the movement of taconite ore pellets. It was scheduled to operate empty from Allouez Yard to Hibbing Taconite Company (Hibbing, Minnesota) over the BNSF Lakes Subdivision from Superior to Brookston, Minnesota. Next it would operate over the BNSF Casco Subdivision from Brookston to Kelly Lake, Minnesota, then from Kelly Lake to Hibbing Taconite over the BNSF Hib Tac Subdivision. BNSF Train 09T was to be loaded with iron ore pellets at Hibbing Taconite Mining Facility and operate back to Allouez Yard.

When BNSF 09T departed Allouez Yard, it consisted of 183 empty taconite hopper cars with 5,673 trailing tons, and 6,580 feet in length. There were three operating locomotives, BNSF 9876 leading, followed by BNSF 8885. BNSF 8253 was a distributed power locomotive unit (DPU) on the rear end of the train. A Class 1 terminal air brake test was completed by a mechanical employee at Allouez Yard at 9:00 a.m., November 9, 2008. The End-of-Train Device (EOTD) was also tested at the Allouez Yard. It functioned as intended. The engineer acknowledged that the air brake slip was current before departure.

The last daily inspection of the lead locomotive, BNSF 9876, was performed at 7:00 p.m. November 8, 2008 in Allouez Yard. The engineer inspected all three locomotives prior to departure and took no exceptions. The daily inspection cards were signed and placed on the locomotive. A mechanical employee performed a roll-by inspection of the train and took no exceptions. BNSF Train 09T departed Allouez Yard at 3:30 a.m. The crew said the train handled normally during the 106 mile trip to Hibbing Taconite.

At Hibbing Taconite Mining Company, BNSF empty Train 09T was loaded with iron pellets. The train was loaded at about 10:15 a.m. The crew re-attached the DPU locomotives at the rear of the train and performed a Class 3 train air brake test. The crew took no exceptions to the test.

Loaded BNSF Ore Train 09T departed Hibbing Taconite at 10:25 a.m. with 183 load iron ore hopper cars. BNSF Train 09T now weighed 24,510 tons and had 129 tons per operative brake which required a maximum authorized operating speed of 45 mph, per System Special Instructions # 14. The crew operated the train from Hibbing Taconite to Kelly Lake where the train entered a Centralized Traffic Control (CTC) area and received a clear signal indication onto the Casco Subdivision at Kelly Lake. The engineer operated the train at approximately 45 mph until slowing for a 40 mph curve speed restriction at milepost 102. The engineer then increased the speed back to maximum and operated in throttle position 8 for several minutes.

The timetable and geographic direction of BNSF Train 09T was east. Timetable directions are used throughout this report.

Approaching the accident area the track is tangent for approximately five miles leading to the derailment site. At milepost 93.0 there is a 0 percent grade which changes at milepost 92.2 to a 0.30 percent descending grade and then levels off again at milepost 91.8 to a 0 percent grade to mile post 90.5. The track is constructed of 115 lb Bethlehem Steel standard carbon Continuous Welded Rail (CWR) and hardwood crossties.

THE ACCIDENT

As BNSF Train 09T approached the point of derailment (POD) the engineer was operating the train at a recorded speed of 48 mph when the train experienced an undesired emergency train air brake application and coasted to a stop. The engineer released the independent (locomotive) brake and placed the throttle in the idle position. The crew did not feel or hear anything unusual prior to the accident. After the train was stopped the conductor de-trained and walked towards the rear of the train. The conductor confirmed the derailment and reported at least 50 cars derailed. The engineer paged the dispatcher using 911 on the company radio key pad and the dispatcher responded immediately.

ANALYSIS AND CONCLUSIONS

ANALYSIS - TOXICOLOGICAL TESTING:

The accident met the criteria prescribed in Title 49 CFR Part 219 Subpart C, Post Accident Toxicological Testing. A BNSF Trainmaster was the first company officer to arrive at the scene. He transported the train crew to the University Medical Center in Hibbing for testing under FRA authority. The test results for the two employees were negative.

CONCLUSION:

Impairment of the crew was not a causal factor in the accident.

ANALYSIS - LOCOMOTIVE ENGINEER OPERATING PERFORMANCE:

The engineer of BNSF Train 09T was a certified locomotive engineer. He was in possession of a valid certification card at the time of the accident. He had been working as a locomotive engineer since 1977, and had operated over the territory where the accident occurred on numerous occasions. The locomotive engineer said he was alert and not distracted from his duties.

BNSF Officials downloaded the data from the event recorder from lead locomotive BNSF 9876. Analysis of the data by FRA disclosed that the crew was operating at a recorded speed of 48 mph when the train experienced an undesired emergency train air brake application. The download demonstrated the locomotive engineer did not initiate the emergency application of the air brakes prior to the derailment and that the emergency air brake application was induced from the train line. No exception was taken by FRA to the train handling procedures utilized by the locomotive engineer.

CONCLUSION:

The engineer's performance was not a causal factor.

ANALYSIS - LOCOMOTIVE SAFETY DEVICES:

Locomotive records show that the three locomotives were in compliance with Federal Regulations and the last daily inspections of all three locomotives were completed at 7:00 p.m. on November 8, 2008. All three locomotives were equipped with a headlight, auxiliary lights, and an audible warning device as required by Federal Regulation. The event recorder data indicated these devices were functioning as intended prior to the accident. BNSF locomotive 9876 was equipped with an operating speed indicator and event recorder as required.

CONCLUSION:

Locomotive safety devices were in compliance with Federal regulations.

ANALYSIS - MECHANICAL SSFETY DEVICES:

FRA reviewed the train inspection records for the cars and locomotives and found no defects. BNSF Train 09T was given a Class I air brake test and pre-departure roll by on November 8, 2008 at the BNSF Allouez Yard. No exceptions were reported at that time. FRA reviewed the history records of the first five derailed cars and noted no mechanical defects.

No FRA exceptions were taken during the on-site mechanical inspection of the BNSF Train 09T.

A BNSF accident investigation team sent two fractured wheels found at the derailment site to a lab for metallurgical analysis. The findings concluded that the wheels fractured as a result of the derailment and not the probable cause.

CONCLUSION:

Mechanical equipment and safety devices were in compliance with railroad rules and Federal Regulations.

ANALYSIS - TRACK STRUCTURES:

The last required FRA track inspection was performed by a qualified BNSF track inspector on November 7, 2008 and no defects were noted in the area of the derailment. The last track geometry survey was performed on October 6, 2008 by BNSF Geometry Car 087 and no defects were noted in the area of the derailment. Post-accident track geometry measurements were taken under simulated dynamic load on the damaged track leading to the POD. No FRA track geometry deviations were noted.

The rail through the derailment area is 115 lb CWR laid on both sides in 1993. A cross tie re-newel program was completed in 2001. The last ultrasonic rail test was conducted by Herzog Services, Inc. on November 5, 2008 utilizing a 76 day inspection cycle. No defective rails were found in the area of the derailment. There were no CWR joints or rail integrity issues identified during the post-accident investigation. On November 9, 2008 BNSF personnel inspected the derailment site. BNSF Staff took track measurements and FRA reviewed the measurements for compliance with FRA's Track Safety Standards. It should be noted that the derailed equipment had been removed and the site had been disturbed by heavy construction equipment involved in the clearing process. FRA observed nothing definitive at the site to assist in determining the cause. FRA inspected the BNSF FRA required track inspection records for thirty days prior to the derailment and took no exceptions.

BNSF Officials sent three pieces of fractured rail discovered at the derailment site to their lab for metallurgical testing. Their findings could not conclusively determine that any of the rail fractures caused the accident or were the result of the derailment.

CONCLUSION:

The track was in compliance with all Federal Regulations and requirements. The investigating team

concluded that the track structure conditions did not cause the derailment

ANALYSIS - FATIGUE:

FRA uses an overall effectiveness rate of 77.5 percent as the baseline for fatigue analysis, which is considered to 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 the default software settings.

FRA obtained fatigue related information including a 10-day work history for the two employees involved in this accident, the locomotive engineer and conductor of BNSF Train 09T.

FATIGUE ANALYSIS CONCLUSIONS:

FRA concluded that fatigue was not probable for the locomotive engineer.
FRA concluded fatigue was probable for the conductor, however not practicable as a cause for the derailment.

PROBABLE CAUSE & CONTRIBUTING FACTORS

After a thorough investigation and analysis of the data the probable cause of the derailment could not be determined.