Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2008-14

Burling Northern Sante Fe (BNSF)
Foxboro, WI
January 26, 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-2008-14

1.Name of Railroad Operating Train #1: BNSF Rwy Co. [BNSF]	1a. Alphabetic Code: BNSF	1b. Railroad Accident/Incident No.: TC 0108130
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.: TC 0108130
5. U.S. DOT_AAR Grade Crossing Identification Number:	6. Date of Accident/Incident: Month 01 | Day 26 | Year 2008	7. Time of Accident/Incident: 05:01:00 ☐ 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
FOXBORO	18.8	N/A	WI	DOUGLAS

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
20 F	2	2	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	3	33.06	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	UKEEMAD014

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?
30 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)*: 21738

Code(s): j | N/A | N/A | N/A | N/A

31a. Remotely Controlled Locomotive?: 0

32. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded *(yes/no)*
(1) First involved *(derailed, struck, etc)*	BNSF600343	83	yes
(2) Causing *(if mechanical cause reported)*	BNSF600343	83	yes

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	160	0	0	0	0
(2) Total Derailed	36	0	0	0	0

37. Equipment Damage: This Consist	38. Track, Signal, Way, & Structure Damage	39. Primary Cause Code	40. Contributing Cause Code
$908,510.00	$220,000.00	E61C	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 1 Mi 2	Hrs 1 Mi 2

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 — 2

51. Was EOT Device Properly Armed? 1. Yes 2. No — N/A

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	58. Method(s) of Operation *(enter code(s) that apply)*	58a. Remotely Controlled Locomotive?
N/A 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)*	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? Code
1. Yes 2. No 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. Code N/A
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)*

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

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

Rail Equipment Involved

111. Equipment Code N/A
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)*

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

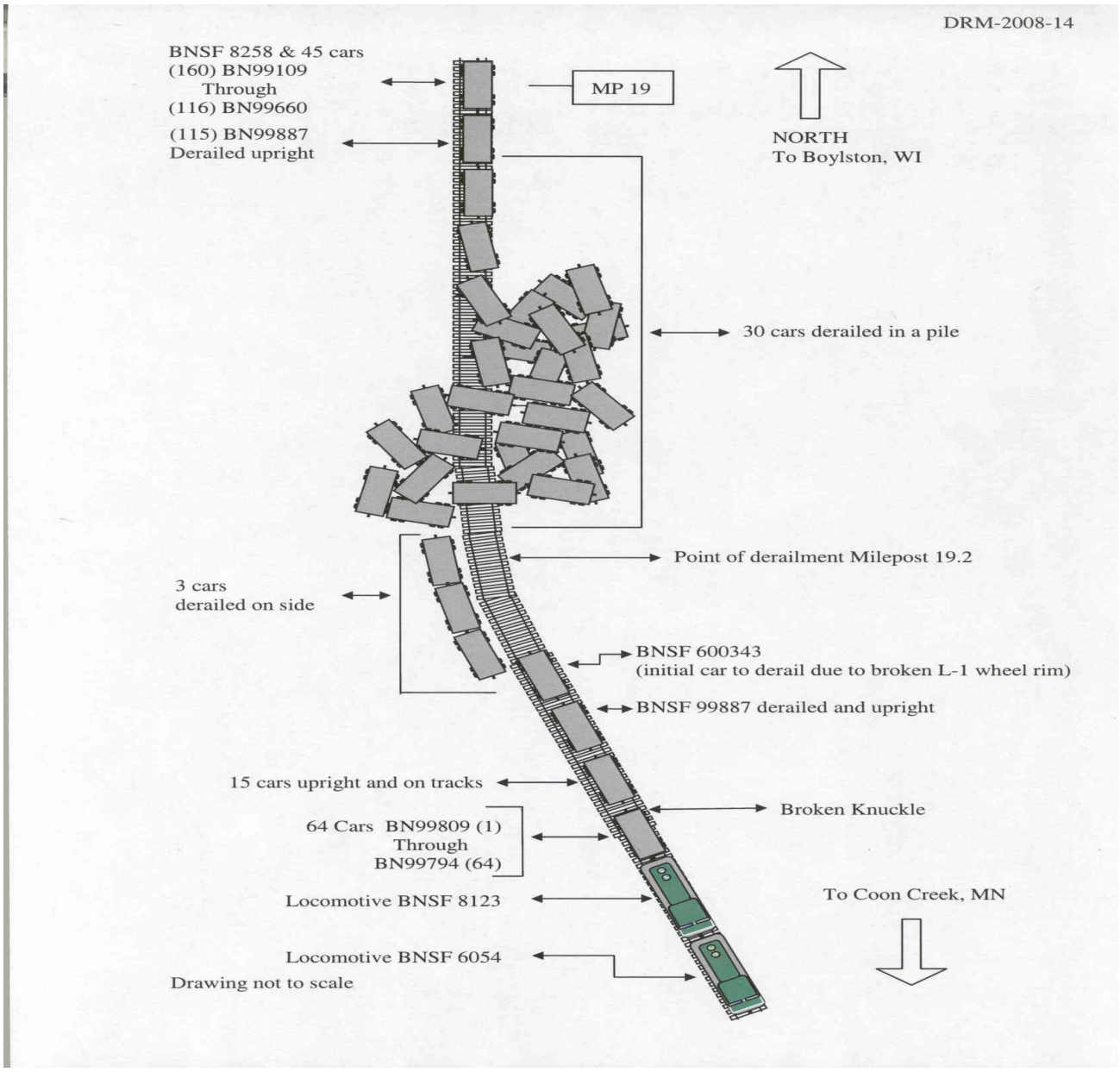
121. Age N/A	122. Driver's Gender 1. Male 2. Female	Code N/A	123. Driver Drove Behind or in Front of and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown	Code N/A	124. Driver 1. Drove around or thru the Gate 2. Stopped and then Proceeded 3. Did not Stop 4. Stopped on Crossing 5. Other *(specify 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 January 26, 2008, at 5:01 p.m. CST a southbound Burlington Northern Santa Fe (BNSF) Railway Taconite Train U-KEEMAD0-14T derailed. The accident occurred at milepost (MP) 19.2 on the BNSF Twin Cities Division, Hinckley Subdivision, on the single Main Track near Foxboro, Wisconsin. Hopper car BNSF 600343, the 81st car from the head end, was the initial car to derail. This caused the 80th through 115th car to derail in a general pile up with cars on both the east and west side of roadbed. A total of 36 loads of taconite were derailed. There was no release of hazardous materials, no fire, no evacuation and no injuries reported to the train crew.

The total estimated damages were $1,128,510. Estimated equipment damage was $908,510 and estimated track damage was $220,000.

At the time of the accident it was daylight, the weather was cloudy, the wind was from the southwest, and the temperature was 20°F.

PROBABLE CAUSE:

The probable cause was a broken wheel rim on hopper car BNSF 600343.

138. NARRATIVE

CIRCUMSTANCES PRIOR TO THE ACCIDENT

The crew of BNSF Taconite Train U-KEEMAD0-14T consisted of a locomotive engineer and a conductor. They reported for duty at 3:59 p.m. on January 26, 2008, at the BNSF Superior Yard, in Superior, Wisconsin. Superior is the home terminal for both crew members. Prior to reporting for duty they had received the required statutory off duty rest period. Both crew members had over 10 hours off duty. BNSF Train U-KEEMAD0-14T was scheduled to travel from Boylston, Wisconsin, to Coon Creek, Minnesota, over the Hinckley Subdivision. BNSF Train U- KEEMAD0-14T then would travel over the Staples Subdivision from Coon Creek to the BNSF Northtown Rail Yard in Minneapolis, Minnesota. This territory was their regular assignment. The train crew worked this assignment 20 to 25 times in the last 60 days. The train crew received their track bulletins, train list, and train profile at Superior. After a self job briefing they were transported by a BNSF company van to Boylston where they would take control of the train.

BNSF Train U- KEEMAD0-14T was scheduled to depart from Boylston en route to BNSF Northtown Rail Yard with 160 loaded hopper cars of taconite. There were two locomotives in the lead position of the train and one distributed power (DP) locomotive unit on the rear of the train. The inbound train crew arrived at Boylston and informed the outbound train crew that the required air brake test and air brake certification slip were current and that they did not have any operating problems with BNSF Train U-KEEMAD0-14T. The outbound train crew engineer was seated on the right, west side and the conductor was seated on the left, east side of the leading locomotive as they took control of BNSF Train U-KEEMAD0-14T. They proceeded through the Wye track at Boylston while the inbound crew inspected the train from the ground. The crew on the ground took no exceptions as the train passed by them.

The method of operation is Track Warrant Control (TWC) -supplemented by an Automatic Block Signal system (ABS). The maximum authorized speed for loaded taconite trains is 40 mph. There were no slow orders in effect on the Hinckley Subdivision on the day of the incident. The Twin Cities Timetable No.3, effective 0800 Wednesday, October 24, 2007, was in effect. The timetable and geographic direction of the train was south. BNSF Train U-KEEMAD0-14T traveled uneventful for approximately seven miles.

THE ACCIDENT

As BNSF Train U-KEEMAD0-14T approached the Point of Derailment (POD), the engineer was operating under track warrant authority on a clear ABS signal indication at a recorded speed of 30 mph. The POD was at milepost 19.2. Approaching the POD is a 2 degree curve to the left and an average uphill grade of one percent. The locomotive was operating in throttle position # 8 for approximately 5 miles during the uphill climb and experienced no problems. As BNSF Train U-KEEMAD0-14T passed over the defect detector at mile post 18.8, the train experienced an undesired emergency application of the train air brake system. No defects were reported by the defect detector at milepost 18.8, as the train came to a smooth stop with no unexpected slack action.

The engineer notified the train dispatcher over the radio of the unintended emergency air brake application. The conductor walked back and inspected the train. The conductor observed no fire, smoke, or any unusual odors. At the 64th car the conductor reported he discovered a broken knuckle and there was a gap of about 10 to 15 cars lengths behind that. He walked back further and reported about 16 cars on the rail and behind that another gap with many other cars derailed. A total of 36 loads of taconite were derailed on both the east and west side of the roadbed.

ANALYSIS AND CONCLUSION:

This accident met the criteria prescribed in Title 49 CFR, Part 219 Subpart C Post Accident Toxicological Testing. A BNSF official transported the train crew to St. Mary's Hospital in Superior for mandatory FRA drug and alcohol screening. The test results were negative.

The first two cars and the last car, 80th and 81st and 115th of the 36 loads to derail were upright with the remainder, 82nd thru 114th, in a general pile up. An inspection of the data print out from BNSF locomotive 6054 event recorder indicated no unusual events related to train handling.

The rear 45 cars and 15 cars ahead of the derailment were inspected by an FRA Motive Power and Equipment Inspector at Allouez Yard in Superior, with one safety appliance exception. The lead two locomotives and 79 loads of taconite were inspected by train crew members and allowed to continue to their destination. The DP locomotive unit was detached from the train and inspected by mechanical employees and placed on another train.

The initial car to derail was BNSF hopper car 600343 which had the left number one wheel broken from the rim in towards the tread in a radius of 57 inches. The wheel was manufactured by Southern on 10/1995. The heat treated curve plate wheel (CH 36) was a one wear wheel with a rim thickness of one inch. The rail was 132 lb. 1982 continuous welded rail (CWR). The BNSF last required FRA track inspection was performed on January 25, 2008, with no defects noted. The last mechanized geometry inspection was on September 21, 2007, and the last ultrasonic rail test was on January 19, 2007. There were no defects noted in the vicinity of the POD. Prior to the POD there was evidence of wheel marks on the ball of the east rail indicating a broken wheel had struck the rail.

PROBABLE CAUSE:

The first car to derail, BNSF 600343, had the left number one wheel rim broken in towards the tread within a 57 inch radius. Prior to the POD the ball of the east rail had evidence of broken wheel marks consistent with the location of the broken wheel on hopper car BNSF 600343.

The probable cause was a broken wheel rim on rail car BNSF 600343 at the left number one location.