



***Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2011-34***

***BNSF Railway Company (BNSF)
Great Falls, MT
July 19, 2011***

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.

1. Name of Railroad Operating Train #1 BNSF Rwy Co. [BNSF]		1a. Alphabetic Code BNSF		1b. Railroad Accident/Incident No. MT0711104		
2. Name of Railroad Operating Train #2 BNSF Rwy Co. [BNSF]		2a. Alphabetic Code BNSF		2b. Railroad Accident/Incident No. MT0711104		
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. MT0711104		
5. U.S. DOT_AAR Grade Crossing Identification Number		6. Date of Accident/Incident Month 07 Day 19 Year 2011		7. Time of Accident/Incident 09:20: <input type="checkbox"/> AM <input checked="" type="checkbox"/> PM		
8. Type of Accident/Incident (single entry in code box)						
1. Derailment		4. Side collision		7. Hwy-rail crossing		
2. Head on collision		5. Raking collision		10. Explosion-detonation		
3. Rear end collision		6. Broken Train collision		11. Fire/violent rupture		
		9. Obstruction		12. Other impacts		
				13. Other (describe in narrative) Code 03		
9. Cars Carrying HAZMAT 0		10. HAZMAT Cars Damaged/Derailed 0		11. Cars Releasing HAZMAT 0		
				12. People Evacuated 0		
				13. Division Laurel		
14. Nearest City/Town Great Falls		15. Milepost (to nearest tenth) 213.3		16. State Abbr Code MT 30		
				17. County CASCADE		
18. Temperature (F) (specify if minus) 90 F		19. Visibility (single entry) Code 1. Dawn 3. Dusk 2. Day 4. Dark 3		20. Weather (single entry) Code 1. Clear 3. Rain 5. Sleet 2. Cloudy 4. Fog 6. Snow 2		
				21. Type of Track Code 1. Main 3. Siding 2. Yard 4. Industry 4		
22. Track Name/Number Gerber Industrial		23. FRA Track Code Class (1-9, X) x		24. Annual Track Density (gross tons in millions) N/A		
				25. Time Table Direction Code 1. North 3. East 2. South 4. West 1		
OPERATING TRAIN #1						
26. Type of Equipment Consist (single entry)		1. Freight train 4. Work train 7. Yard/switching 2. Passenger train 5. Single car 8. Light loco(s). 3. Commuter train 6. Cut of cars 9. Maint./inspect.car		27. Was Equipment Attended? Code 1. Yes 2. No A 2		
				28. Train Number/Symbol JREX600320		
29. Speed (recorded speed, if available) Code R - Recorded E - Estimated 0 MPH R		30. Trailing Tons (gross tonnage, excluding power units) 120			31. Method(s) of Operation (enter code(s) that apply) a. ATCS g. Automatic block m. Special instructions b. Auto train control h. Current of traffic n. Other than main track c. Auto train stop i. Time table/train orders o. Positive train control d. Cab j. Track warrant control p. Other (Specify in narrative) Code(s) e. Traffic k. Direct traffic control f. Interlocking l. Yard limits n 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 (1) First involved (derailed, struck, etc) GREX60480 (2) Causing (if mechanical cause reported) 0		b. Position in Train 2 0		
		c. Loaded (yes/no) no 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		c. Remote		
		Rear End		d. Manual		
		c. Remote		36. Cars		
(1) Total in Train 0		0		0		
(2) Total Derailed 0		0		0		
				36. Cars a. Freight b. Pass. c. Freight d. Pass. e. Caboose 0 0 1 0 0		
				(2) Total Derailed 0 0 1 0 0		
37. Equipment Damage This Consist \$44,979.00		38. Track, Signal, Way, & Structure Damage \$0.00		39. Primary Cause Code H702		
				40. Contributing Cause Code H405		
Number of Crew Members				Length of Time on Duty		
41. Engineer/Operators 0		42. Firemen 0		43. Conductors 0		
		44. Brakemen 0		45. Engineer/Operator Hrs 0 Mi 0		
				46. Conductor Hrs 0 Mi 0		
Casualties to:		47. Railroad Employees		48. Train Passengers		
Fatal 0		0		49. Other 0		
Nonfatal 0		0		0		
				50. EOT Device? 1. Yes 2. No N/A		
				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 4. Work train 7. Yard/switching 2. Passenger train 5. Single car 8. Light loco(s). 3. Commuter train 6. Cut of cars 9. Maint./inspect.car		A. Spec. MoW Equip. Code 1		
				54. Was Equipment Attended? Code 1. Yes 2. No 1		
				55. Train Number/Symbol MLAUSHM118		
56. Speed (recorded speed, if available) Code R - Recorded E - Estimated 32 MPH R		57. Method(s) of Operation (enter code(s) that apply) a. ATCS g. Automatic block m. Special instructions b. Auto train control h. Current of traffic n. Other than main track			58a. Remotely Controlled Locomotive? 0 = Not a remotely controlled 1 = Remote control portable	

57. Trailing Tons (gross tonnage, excluding power units) 10906	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 N/A N/A N/A N/A	2 = Remote control tower 3 = Remote control transmitter - more than one remote control transmitter 0
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59. Principal Car/Unit (1) First involved (derailed, struck, etc) BNSF4519	a. Initial and Number 1	b. Position in Train 1	c. Loaded(yes/no) N/A	60. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box. Alcohol 0 Drugs 0
(2) Causing (if mechanical cause reported) 0	0	0	N/A	61. Was this consist transporting passengers? (Y/N) N

62. Locomotive Units	a. Head End	Mid Train b. Manual c. Remote	Rear End d. Manual c. Remote	63. Cars	Loaded a. Freight b. Pass.	Empty c. Freight d. Pass.	e. Caboose
(1) Total in Train 3	0	0	0	(1) Total in Equipment Consist 81	0	29	0
(2) Total Derailed 3	0	0	0	(2) Total Derailed 14	0	0	0

64. Equipment Damage This Consist \$1,212,572.00	65. Track, Signal, Way, & Structure Damage \$216,662.00	66. Primary Cause Code H702	67. Contributing Cause Code H405
Number of Crew Members		Length of Time on Duty	

68. Engineer/Operators 1	69. Firemen 0	70. Conductors 1	71. Brakemen 0	72. Engineer/Operator Hrs 7 Mi 50	73. Conductor Hrs 7 Mi 50
Casualties to:	74. Railroad Employees	75. Train Passengers	76. Other	77. EOT Device? 1. Yes 2. No 1	78. Was EOT Device Properly Armed? 1. Yes 2. No 1
Fatal	0	0	0	79. Caboose Occupied by Crew? 1. Yes 2. No 2	
Nonfatal	2	0	0		

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 N/A	82. Train Number/Symbol N/A
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83. Speed (recorded speed, if available) R - Recorded E - Estimated N/A MPH 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
84. Trailing Tons (gross tonnage, excluding power units) N/A				

86. Principal Car/Unit (1) First involved (derailed, struck, etc) 0	a. Initial and Number 0	b. Position in Train 0	c. Loaded(yes/no) N/A	87. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box. Alcohol N/A Drugs N/A
(2) Causing (if mechanical cause reported) 0	0	0	N/A	88. Was this consist transporting passengers? (Y/N) N/A

89. Locomotive Units	a. Head End	Mid Train b. Manual c. Remote	Rear End d. Manual c. Remote	90. Cars	Loaded a. Freight b. Pass.	Empty c. Freight d. Pass.	e. Caboose
(1) Total in Train 0	0	0	0	(1) Total in Equipment Consist 0	0	0	0
(2) Total Derailed 0	0	0	0	(2) Total Derailed 0	0	0	0

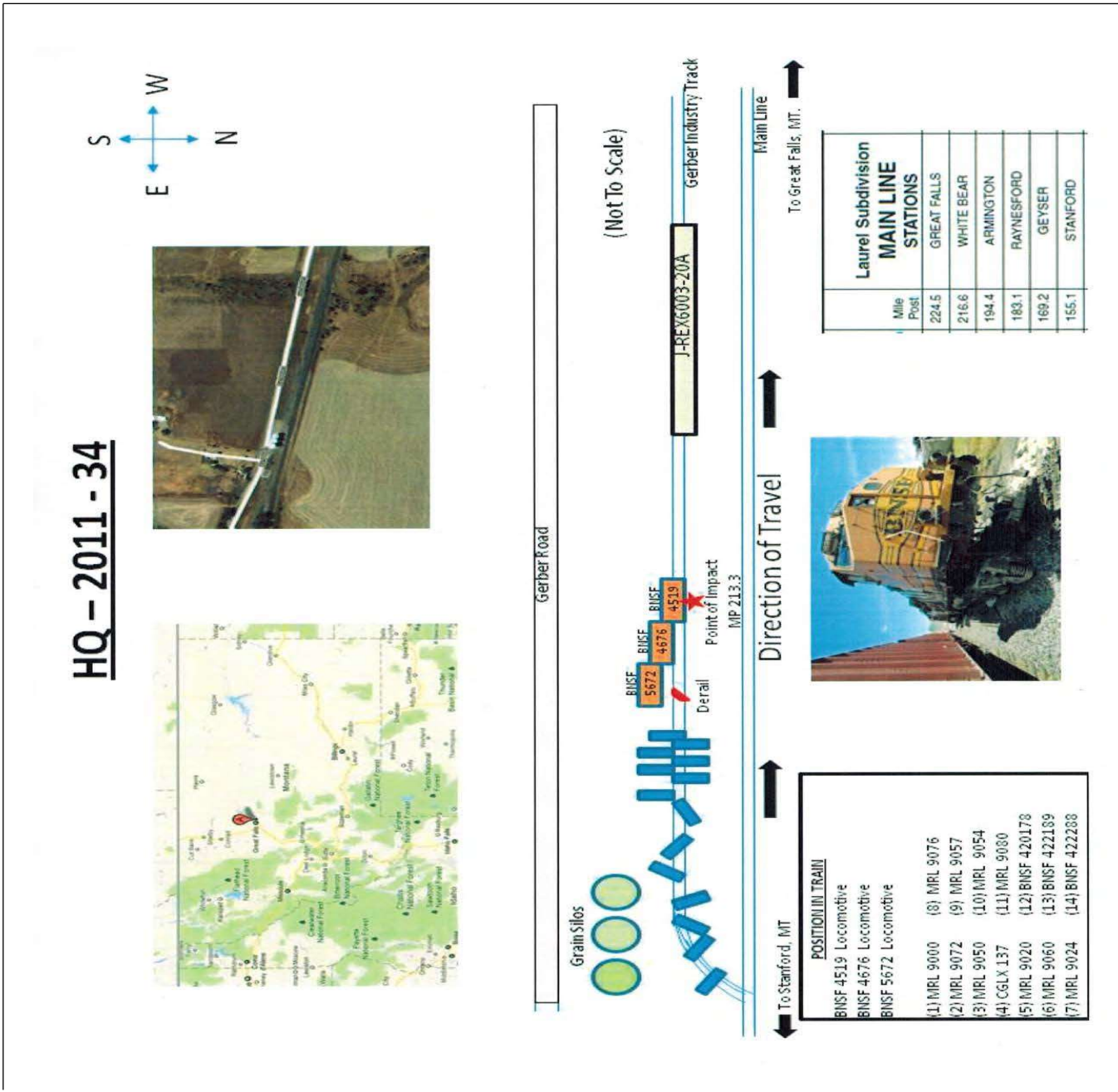
91. Equipment Damage This Consist \$0.00	92. Track, Signal, Way, & Structure Damage \$0.00	93. Primary Cause Code N/A	94. Contributing Cause Code N/A
Number of Crew Members		Length of Time on Duty	

95. Engineer/Operators 0	96. Firemen 0	97. Conductors 0	98. Brakemen 0	99. Engineer/Operator Hrs 0 Mi 0	100. Conductor Hrs 0 Mi 0
Casualties to:	101. Railroad Employees	102. Train	103. Other	104. EOT 1. Yes 2. No N/A	105. Was EOT Device Properly 1. Yes 2. No N/A
Fatal	0	0	0	106. Caboose Occupied by Crew? 1. Yes 2. No N/A	
Nonfatal	0	0	0		

Highway User Involved				Rail Equipment Involved			
107. C. Truck-Trailer A. Auto B. Truck 108. Vehicle Speed (est. MPH at impact) N/A	F. Bus G. School Bus H. Motorcycle	J. Other Motor Vehicle K. Pedestrian M. Other (spec. in narrative) N/A	Code N/A	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) N/A	Code N/A
109. geographical Code 1. North 2. South 3. East 4. West N/A				112. Position of Car Unit in 0			

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 1. Gates 2. Cantilever FLS 3. Standard FLS Warning 4. Wig Wags 5. Hwy. traffic signals 6. Audible				Code N/A	116. Signaled Crossing (See instructions for codes)				Code N/A	117. Whistle Ban 1. Yes 2. No 3. Unknown	
Code(s)				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	
121. Age 0		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	
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 0	Injured 0	127. Driver 1. Killed 2. Injured 3. Uninjured				Code N/A	128. Was Driver in the Vehicle? 1. Yes 2. No		
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)		
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 July 19, 2011, at approximately 9:20 p.m. (MDT) northbound BNSF Railway Company freight train M-LAUSHM1-18 collided with the rear end of standing, unoccupied, contract Maintenance Of Way (MOW) train J-REX6003-20A. The collision occurred, at milepost 213.3, on the BNSF's Montana Division, Laurel Subdivision, at Gerber, Montana (MT). Gerber is located, in Cascade County, approximately 10 miles geographically southeast of Great Falls, MT. The MOW train had been tied-up, by its crew, earlier that day on the Gerber Industrial Run-Around Track, and the crew had failed to restore the south switch to its normal position. The switch was lined for movement into the run-around track; rather than for movement on the main track.

The collision derailed the rear truck of the MOW train and the three locomotives and leading fourteen cars on train M-LAUSHM1-18. The BNSF reported total damages of \$1,474,213 dollars, for this incident, with equipment damages of \$1,257,551 dollars and track damages of \$216,662 dollars. There was no release of hazardous materials and this is not an Amtrak route.

The crew members, of M-LAUSHM1-18, suffered minor injuries, and were taken to a local hospital where they were treated and released.

At the time of the accident it was dusk and overcast, with a west wind of 16 mph, and a temperature of 90 degrees Fahrenheit.

Contributing factors to this accident/incident were the failure of the MOW Employee-In-Charge (EIC) to properly void a Track Warrant Form (FRA Accident/Incident Cause Code H405) and the failure of the EIC to maintain proper radio communications (FRA Accident/Incident Cause Code H212).

The probable cause of this accident/incident was the failure of the EIC to restore the south switch, of the Gerber Industrial Run-Around Track, to its normal position for movement on the main track rather than for movement into the siding (FRA Accident/Incident Cause Code H702).

138. NARRATIVE

CIRCUMSTANCES PRIOR TO THE ACCIDENT:

J-REX6003-20A (MOW Train)

The crew of the J-REX6003-20A MOW train included a BNSF welder as the Employee-In-Charge (EIC) and a contractor that operated the train and equipment. The EIC went on duty at the Great Falls yard and was assigned as the EIC at 7:30 a.m., on July 19, 2011. This was his home terminal. The contract operator (contractor) had gone on duty at 7:00 a.m., also at Great Falls. Neither employee was subject to a statutory off-duty period.

Their assigned MOW train consisted of a car mover and a single slot car with an excavator, used to clear mud from right-of-way ditches. The MOW train was 290 feet in length and weighed approximately 300 tons.

The EIC and contractor departed Great Falls in different vehicles placing the contractor's motor vehicle at the Gerber Industrial Run-Around Track, milepost 213, which was their pre-planned stopping place at the end of the day. They then proceeded in the EIC's vehicle to the Coors Industrial Track, at milepost 223, where the their train was tied up (parked). They arrived at approximately 10:30 a.m. at which time the EIC obtained a Track Warrant (TW) granting authority for operation of their train on the main track between milepost 213 and milepost 223. After receiving permission from the BNSF dispatcher work immediately commenced cleaning ditches between milepost 213 and milepost 223. At approximately 5:30 p.m., the MOW train pulled up to the south switch of the Gerber run-around track. The EIC lined the main track switch and derail for movement into the run-around track, whereas he then attempted to direct the operator to move their train into the track by using arm and hand signals. The operator would not accept the arm and hand signals since all previous directions for movements had been performed using radio communications. The EIC then moved to the rear of the train and used the radio in the cab at the rear of the train to direct their movement off of the single main track and into the Gerber run-around track. After securing their train the EIC and operator then departed the area in the contractor's vehicle without lining the south switch back to its normal position for main track

movement at which point the EIC also failed to restore the derail to the "On" position. Additionally, the EIC also failed to release and void his Track Warrant with the BNSF dispatcher before departing the area.

Later that afternoon, while performing welding duties in the Great Falls yard, the EIC was contacted by the BNSF dispatcher, who requested that he release his TW. The EIC voided his TW failing to state to the dispatcher that the south switch at Gerber was not in its normal position.

Freight Train M-LAUSHM1-18

The crew of train M-LAUSHM1-18 included a locomotive engineer and a conductor. The crew went on duty at Laurel, Montana at 1:30 p.m., on July 19, 2011. Laurel is the away-from-home terminal for both crew members and both had received more than the statutory off-duty period prior to reporting for duty. The crew was taken by contract van, from Laurel to Stanford, MT. where they boarded their train, at approximately 4:30 p.m. Approximately fifteen minutes later, at 4:45 p.m., they departed Stanford.

Train M-LAUSHM1-18 consisted of three locomotives, 81 loaded and 29 empty cars of several varieties; it was 6,626 feet in length and consisted of 10,906 trailing tons. The crew was assigned to take the train from Stanford to Great Falls with no scheduled work in between. The train had received an FRA Class I (initial terminal) brake test at 8:45 a.m., that morning, at Laurel Montana.

As the northbound train approached the accident area, the locomotive engineer was seated at the controls on the east side of the leading locomotive. The conductor was seated on the west side in the conductor's seat.

In this area of the railroad, on the single main track, there is a 0.43 degree right curve for about 10,000 feet followed by tangent track that begins at mile post 212.9 (south siding switch at Gerber); track grade is 0.40 percent descending. The method of operations in the area of the accident/incident is Track Warrant Control, in non-signaled territory on a single main track, and the maximum authorized timetable speed per BNSF Timetable No. 8, dated December 2, 2009, is 49 mph. However, train M-LAUSHM1-18 was restricted to a maximum authorized speed of 45 mph; per the instructions of its train consist list. The method of operations, at the accident/incident site (Gerber Industrial Track) is by other-than-main-track authority, on an industry track and the maximum authorized speed, per BNSF Timetable No. 8, is 10 mph.

The railroad timetable direction of the train M-LAUSHM1-18 was north. The geographic direction was west. Timetable directions are used throughout this report.

THE ACCIDENT/INCIDENT:

At approximately 9:20 p.m., northbound train M-LAUSHM1-18 approached the south switch at Gerber; under the authority of a Track Warrant, which did not convey any information that the south switch at Gerber was not in the normal position. Traveling at 39 mph and at approximately 700 feet before entering the south switch, the crew realized that their train was going to enter the Gerber run-around track. The engineer initiated an emergency train air brake application; then he and the conductor laid on the floor, of the locomotive. The train collided with the rear of the MOW train at a recorded speed of 32 mph. Upon impact the three locomotives and leading 14 cars of train M-LAUSHM1-18 derailed in a general pile. The impact ruptured the leading locomotive's fuel tank and released approximately 4,000 gallons of diesel fuel. The rear truck of the unoccupied MOW train derailed; and the train was shoved approximately 183 feet northward.

The engineer made an emergency radio call to the BNSF dispatcher and then the crew assisted each other in departing the locomotive.

At approximately 9:45 p.m., a BNSF trainmaster was dispatched to the scene from Great Falls. Upon arrival at the scene he discovered that the conductor, after getting clear of the wreckage, had collapsed. An ambulance was called and the conductor was taken via ambulance to Benefis Hospital in Great Falls. He was treated for minor injuries, kept overnight for observation, and released early the next morning, on July 20, 2011. The engineer was taken by the trainmaster's company vehicle to the Great Falls Yard Office, and then to Benefis Hospital, for possible post-accident toxicological testing. Upon determination by BNSF officials that post-accident testing was not necessary for the crew of BNSF Train M-LAUSHM1-18, the engineer was released. However, the next morning, on July 20, the engineer returned to the hospital, via his personal vehicle, received treatment for his minor injuries and was released.

POST ACCIDENT INVESTIGATION:

On July 20, 2011 the Federal Railroad Administration (FRA) began an investigation of this accident/incident. FRA Region 8 assigned two inspectors to investigate this collision, with one acting as Investigator in Charge and the second assisting. The following analysis and conclusions as well as any possible contributing factors and the probable cause in this report represent the findings of FRA's investigation.

ANALYSIS AND CONCLUSIONS:**Analysis-FRA Post-Accident Toxicological Testing-**

This accident/incident met the criteria for FRA Post Accident Toxicology Testing, as required under Title 49 CFR, Part 219, Subpart C.

Conclusion-

BNSF officials, upon determination of specific information, elected to not test the crew of BNSF Train M-LAUSHM1-18 under the Federal Authority of Part 219, Subpart C; however the BNSF did test the EIC, who had left the switch misaligned and who failed to report the position of the switch when he cleared his TW, under the railroads' testing for reasonable cause authority (§219.301). The BNSF informed the FRA's IIC that the test was negative.

Upon analysis of the circumstance FRA determined that even though this accident/incident met the monetary threshold limits of \$150,000 of damages to railroad property in an impact accident/incident, the BNSF was correct in electing to not test the crew of BNSF Train M-LAUSHM1-18. The investigation revealed that the train crew had been issued a TW that conveyed no warning or acknowledgement of the misaligned south switch at Gerber. Therefore, FRA determined that BNSF correctly applied the guidance contained in the requirements of 49 CFR Part 219.203, which reads in part; "An employee must be excluded from testing under the following circumstances: In any case of an accident/incident for which testing is mandated only under §219.201 (a) (2) (an impact accident). If the railroad representative can immediately determine, on the basis of specific information, that the employee had no role in the causes or severity of the accident/incident."

Analysis- Fatigue analysis-

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 all of the employees involved.

Conclusion-

Upon analysis of that information FRA concluded fatigue was not probable for any of the employees.

Analysis- Track Image Recorder (TIR)-

The Track Image Recorder (TIR) from the leading locomotive of train M-LAUSHM1-18 was viewed and analyzed by FRA.

Conclusion-

FRA was able to determine from the TIR recording that the engineer started to throttle-down his train's speed 22 seconds before impacting with the MOW train; and three seconds later the train came to a complete stop (25 seconds from throttling down). At 16 seconds prior to impact, the engineer initiated an emergency air brake application. The distance was approximately 757 feet prior to impact.

Analysis- Locomotive Event Recorder-

Downloads of the Locomotive Event Recorder from the leading locomotive of train M-LAUSHM1-18 was obtained and analyzed, by FRA.

Conclusion-

FRA's analysis of the locomotive event recorder download concurred with the BNSF analysis. The speed of the train when an engineer induced emergency was initiated was 39 mph and that the collision occurred at 32 mph, and that there were no exceptions taken in respect to the crews train handling, prior to or at the time of the accident/incident.

Analysis- Rules compliance-

FRA conducted an analysis of all applicable BNSF's MOW Operating Rules.

Conclusion-

FRA's analysis of all applicable BNSF MOW Operating rules revealed the MOW EIC failed to comply with the following rules:

-MOW Rule 2.21 Requirement for Roadway Workers-

"Maintenance of way equipment operating without locomotive assistance between work locations shall have a working radio on at least one unit in each multiple piece of maintenance of way equipment traveling together under the same movement authority. The operators of each additional piece of maintenance of way equipment shall have communications capability with each other, which can include the ability to pass and receive hand and other signals. Each maintenance of way work group shall have intra-group communications capability upon arriving at the work site, which can include the ability to pass and receive hand and other signals. Each employee providing protection for a work group, and each lone worker, will maintain immediate access to a working radio, which can be a portable radio, "capable of monitoring transmissions from train movements in the vicinity."

-MOW rule 14.12 Voiding Track Warrants-

"An employee must inform the train dispatcher when people and equipment have cleared the limits. An employee releasing a track warrant must state the following:

- The employee's name.
- The track warrant number being released.
- The track limits being released.
- The time that track warrant limits were cleared

In addition, before reporting clear of a track warrant, the track warrant is made void or a portion of track warrant limits is released, the employee must restore hand operated main track switches to normal and will job brief with the train dispatcher about the position of main track switches and those switches operated are locked within the limits being released, referencing completion of the "Position of Switch/Derail" form or stating no entries required. Employees must write "VOID" across each copy of the track warrant when reported clear of the limits or when the track warrant has been made void."

-MOW Rule 8.2 Position of Switches-

"The employee handling the switch or derail is responsible for the position of the switch or derail in use... When operating a main track switch, switch point lock or derail, the employee in charge must record the following information on the form entitled Position of Switches/Derails ...Time the main track switch, switch point lock or derail is finally restored to the proper position ...When a main track switch is operated for any reason and on-track equipment is not being used in non-signaled TWC or Double Track ABS Territory, a walking inspection of the switch points must be made to ensure proper fit and route."

POSSIBLE CONTRIBUTING FACTORS:

FRA's investigation revealed that contributing factors to this accident/incident were the failure of the EIC to properly void a TW (FRA Accident/Incident cause code H405) and the failure to have proper radio communications (FRA Accident/Incident cause code H212).

PROBABLE CAUSE:

FRA's investigation determined that the probable cause of this accident/incident was the failure of the EIC to restore the south switch of the Gerber Industrial Run-Around Track to its normal position for movement on the main track rather than for movement into the siding (FRA Accident/Incident Cause Code H702-switch improperly lined).