



National Transportation Safety Board

Office of Railroad, Pipeline and Hazardous Materials Investigations

Washington, D.C. 20594

BNSF Railway
Roadway Worker Fatalities
Edgemont, South Dakota
January 17, 2017

NTSB Accident Number DCA17FR004

Mechanical Group Factual Report
Joey Rhine, Mechanical Group Chairman

BNSF Railway – Two Roadway Worker Fatalities
Edgemont, South Dakota
January 17, 2017

Accident

NTSB Accident Number:	DCA17FR004
Date of Accident:	June 28, 2016
Time of Accident:	10:09 a.m. (MST)
Type of Trains:	Freight
Railroad Owner:	BNSF Railway
Train Operator:	BNSF Railway
Fatalities:	2
Location of Accident:	Edgemont, SD

Synopsis

For a summary of the accident, refer to the *Accident Summary Report* in the docket for this investigation.

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Mechanical Group Members

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Train Consist

E DOLEBM001E

The westbound BNSF Railway empty coal train E DOLEBM0 01E consisted of two west facing locomotives at the front of the train and two east facing distributed power locomotives at the rear. The 135 empty car train was 7,463 feet long including the locomotives and weighed 2,849 tons. In addition, the four locomotives weighed 838 tons.

Table 1. Locomotive Consist

Consist Position	Locomotive Number	Direction	Manufacturer and Model	Date Built	Type Service
1	BNSF 8489	West	EMD SD70ACE	2014	
2	BNSF 9824	West	EMD SD70MAC	1997	Isolated
3	BNSF 8537	East	EMD SD70ACE	2014	DPU
4	BNSF 8400	East	EMD SD70ACE	2014	DPU

Pre-Departure Inspections

On January 14, 2017, BNSF qualified mechanical inspectors conducted an extended haul Class I air brake test and pre-departure inspection on the E DOLEBM0 01E at Temple, Texas. Again, on January 17, 2017, BNSF qualified mechanical inspectors conducted a Class I air brake test on the E DOLEBM0 01E at Alliance, Nebraska. All inspections and tests were completed in accordance with 49 *Code of Federal Regulations* (CFR) parts 215 and 232.

Equipment Post Accident Inspections

On January 19, 2017, the mechanical group met at the Donkey Creek Yard and conducted a Class I air brake test on train E DOLEBM0 01E. (See Figure 1.) The air brakes applied and released without exception and the brake components showed normal wear patterns. The mechanical group noted eleven FRA defects during its inspection. Ten cars had one brake shoe worn to the backing plate, and one car had insufficient piston travel.

The mechanical group also tested the horn on the lead locomotive, BNSF 8489. The horn activated as intended followed by the crossing bell activation.



Figure 1. Train E DOLEBM0 01E staged at Donkey Creek for the Class I Air Brake Test.

[508 text inserted into photo]

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On January 24, 2017, BNSF and contractor, Terracon, tested the decibel levels of the locomotive BNSF 8489 at the Argentine Railyard in Kansas City, KS. The test was conducted (See Appendix A) following the Federal Railroad Administration Standard 49 CFR 229.129 for Audible Warning Devices.

Test results indicate the average sound level produced by the horn of locomotive BNSF 8489 was 105.5 dBA, at a measured distance of 100 feet from the front knuckle of the locomotive, 15 feet above the rail surface.

Evidence Collected

E DOLEBM001E

BNSF 8489 Video Module and event recorder .dat file
BNSF 9826 Event recorder .dat file
BNSF 8537 Event recorder .dat file
BNSF 8400 Event recorder .dat file

Documentation Received

Train list
Weight list
Diagrams and photos of accident scene
Aerial photos of accident scene
Event recorder data download
Forward facing camera modules

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FRA form F6180-49A inspection records and/or repair records

Daily inspection reports

Air brake test inspection certificate

Horn testing history

Group Member to the Investigation – Acknowledgement Signatures

The undersigned designated *Group Member to the Investigation* representatives attest that the information contained in this report is a factually accurate representation of the information collected during the on-scene phase of this investigation, to the extent of their best knowledge and contribution in this investigation.

_____ Date _____

Joey Rhine, NTSB

_____ Date _____

Brian Ramey, FRA

_____ Date _____

Luz Esquivel, BNSF




January 25, 2017

Ryan Adams
Evidence Preservation Specialist



Ref: Locomotive Number: BNSF 8489
Claim # 49451
Conducted at the Argentine Railyard in Kansas City, Kansas on January 24, 2017

Terracon Project Number 

Dear Mr. Adams:

On January 24, 2017 Blake Harris, Project Industrial Hygienist, and I conducted a locomotive horn test for locomotive number BNSF 8489 at the Argentine Railyard test track in Kansas City, Kansas. The test was conducted as specified in the Record of Locomotive Horn Test (attached) following the Federal Railroad Administration Standard 49 CFR 229.129 for Audible Warning Devices. I have reviewed the test records and results, and am satisfied with the quality and accuracy of the test procedures, documentation, and results.

Test results indicate the average sound level produced by the horn of locomotive BNSF 8489 is 105.5 dBA, at a measured distance of 100 feet from the front knuckle of the locomotive, 15 feet above the rail surface.

Please find attached supporting documentation for the horn test, including the horn test data sheet and a photo plate showing the site conditions. Please contact us if you have any questions regarding the methodology, results, or interpretation of the horn test results. Terracon Consultants very much appreciates the opportunity to provide locomotive horn testing services to Burlington Northern Santa Fe.

Regards,
TERRACON



Jeffery H Brinkmeyer CIH,
Industrial Hygiene Project Manager



Record of Locomotive Horn Test

This document details the results of a field locomotive horn test. The sound measuring device used for the testing was positioned 100 feet forward of the front knuckle of the locomotive, centerline of the direction of locomotive travel and 15 feet above the top of the rail. Six (6) individual readings were collected, and the arithmetic average of all six readings was used to determine the average sound level of the horn.

TEST LOCATION: Argentina Yard - Kansas City, KS

Unit Number: BNSF 8489

Unit Direction: West

Test Date: 1-24-2017

Test Time: 6:00 PM

Test Equipment Used: Casella dBadge

Model Number: CEL-35X

Serial Number: 0973296

Factory Calibration Date: 11-21-2016

Weather Conditions: Clear

Temperature: 50.7°F

Windspeed: 4-7 mph

Wind Direction: ENE

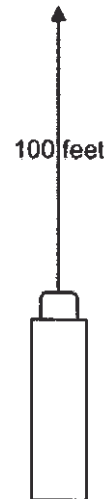
Person Performing Calibration: Blake Harris

Person Performing Test: Blake Harris

Field Calibrations	Date	Value (dBA)
Pre-Test Calibration	1-24-17	114.0
Post-Test Calibration	1-24-17	114.0

Centerline Readings

1. 106.0
 2. 105.4
 3. 106.2
 4. 105.8
 5. 105.0
 6. 104.8
- 105.5
Average
0.56
Standard Deviation



Person Performing Test (Printed Name) Blake Harris

Signature of Person Performing Test [Redacted] Date: 1-24-2017

Certified Industrial Hygienist Review by (Printed Name) Jeff Brinkmeyer CIH

Certified Industrial Hygienist Signature: [Redacted] Date: 1-24-2017

Terracon

PHOTO LOG

LOCATION: Argentine Test Track, Kansas City Kansas.

DATE: January 24, 2017

ADDRESS: 39° 4.7273' N 94° 39.779'W

CONTACT NAME: Ryan Adams

PHONE: 913-551-4208

Terracon TEAM: Jeff Brinkmeyer CIH, Blake Harris IH



Photo #1 Locomotive BNSF 8489
Positioned at test location facing west.
Photo taken from sample location



Photo #2 Locomotive BNSF 8489
No reflective obstructions 200ft to the
south



Photo #3 Locomotive BNSF 8489
No reflective obstructions 200 ft to the
north



Photo #4 Locomotive BNSF 8489
Side view of locomotive indicating horn
position mid-vehicle