

BROTHERHOOD OF LOCOMOTIVE ENGINEERS AND TRAINMEN

*A DIVISION OF THE RAIL CONFERENCE OF THE
INTERNATIONAL BROTHERHOOD OF TEAMSTERS*

SAFETY TASK FORCE

INDEPENDENCE, OHIO

BEFORE THE NATIONAL TRANSPORTATION SAFETY BOARD

NTSB Accident Number: DCA17FR004

**Class: Regional
January 17, 2017**

Proposed findings, probable cause, and safety recommendations, in connection with the BNSF Railway Roadway Worker Fatalities at Edgemont, South Dakota January 17, 2017

Stephen J. Bruno, BLET-Safety Task Force, National Chairman

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FINAL SUBMISSION

Accident Synopsis

On Tuesday, January 17, 2017, at approximately 10:09 a.m. Mountain Standard Time (“MST”),¹ a Burlington Northern Santa Fe (“BNSF”) Railway westbound train, E-DOLEBM0-01E, struck two (2) maintenance of way (“MOW”) employees, causing fatal injuries to both, at milepost (“MP”) 477 on the BNSF Black Hills Subdivision in Edgemont, South Dakota. The two (2) MOW employees — along with an uninjured third employee — were cleaning ice and snow from a track switch on Main Track No. 1. The crew of the striking train gave audible warning (horn and bell), and applied emergency braking after they observed the employees; however, the train did not stop before reaching the work location. Prior to the emergency brake application, the train was traveling at approximately thirty-five (35) miles per hour (“MPH”). The maximum authorized speed (“MAS”) on the Black Hills Subdivision between MP 476.1 and 477.0 is thirty-five (35) MPH. The weather at the time of the accident was clear, with calm wind, and reported temperatures ranging from 13° F to 18° F.

Train Information:

The westbound BNSF Railway train, E-DOLEBM0-01E, consisted of two (2) locomotives on the head-end (BNSF 8489 and BNSF 9826) and two (2) distributed power units (“DPU”) (BNSF 8537 and BNSF 8400) on the rear of the train.² The train was comprised of 135 empty coal cars totaling 2,849 tons and was 7,167 feet long (total length 7,463 including the locomotives). The crew picked up the train at MP 475.1 on the Butte Subdivision.

Test Train:

Prior to the E-DOLEBM0-01E coming on duty, a test train, which had been placed in the Deadwood Wye track, was to be pulled out and tested on Main Track No. 1, once E-DOLEBM0-01E had cleared the area. The train crew for the test train had to get the locomotives (BNSF 9180 lead) from the depot and couple on to the test train using the No. 1 mainline hand-throw, switch leading into the west leg of the Deadwood Wye track. By doing so, the train crew reported the switch to

¹ All times throughout this report will be shown in Mountain Standard Time (“MST”).

² Distributed Power Unit (“DPU”) is a term used when locomotives are strategically placed within a train to maintain buff/draft forces; all locomotives are controlled by the lead locomotive.

be very hard to move due to ice and snow build up, having spent 45 minutes to 1 hour to perform the task.

Maintenance of Way (“MOW”) Section crew:

On Tuesday, January 17, 2017, the Temporary Supervisor (regular Track Inspector) was filling in for the Regular MOW supervisor, a Roadmaster, who was in Scotts Bluff, Nebraska for a pre-planned training class. In his post-accident interview, the Temporary Supervisor stated he called the Dispatcher about 7:20 a.m. to verify that the MOW crew (Foreman, Regular Truck Driver and Gang Trackman) would be able to work on track welding scheduled on Main Track No. 2 between Marietta, SD and Dewey, SD for that day. He received information about a Test train at the Deadwood Wye that would use Main Track No. 1 for part of the day, making single track for the welding work not possible that day.

The Temporary Supervisor stated he then called the Edgemont section house at 7:30 a.m. from his desk in the Roadmaster’s office in Newcastle, Wyoming to conduct their morning job briefing. He spoke, on speakerphone, with the Foreman and the Regular Truck Driver, but not with the Gang Trackman (who was also in the room). In addition, he spoke with two Track Inspectors who were in the section house. In his interview, the Temporary Supervisor stated that he knew the MOW crew members, and that their conversation was unremarkable.

The Temporary Supervisor stated during his interview that the morning job briefing covered the MOW crew assignment for the morning, which was to remove snow from the track crossing on the Deadwood spur, so a Test train could back up to hook up the cars to it. The Temporary Supervisor informed the Foreman about the Test train at the Deadwood Wye and also instructed him to speak with the Trainmaster, who “would have a better idea of when they were coming out – which direction they were going in and which direction they were coming out because there’s two legs to the Wye. [I] knew they were going to have to probably clean some switches because those cars had been in there for extended periods of time and I know the switches hadn’t been cleaned or used in months.” The Temporary Supervisor stated that he further instructed the Foreman to contact the welders regarding the previously planned work for the day, after the switches were cleaned for the Test train.

The Edgemont MOW section crew, consisting of a section foreman, a truck driver, and a trackman, went on duty at 7:30 a.m. at Edgemont, S.D. The foreman and the truck driver took the section truck down to the 18 Cutacross Road highway crossing (Department of Transportation (“DOT”) crossing number 088754H), on the west leg of the Deadwood Wye track. The trackman operated a frontend loader to assist in snow removal at the road crossings left by county snow plows while clearing the roads. While the frontend loader worked between the cut of cars at the crossing, the track foreman and truck driver worked with the test train Conductor and Trainmaster cleaning snow and ice from the inside of the rails so that the car wheel flanges would stay on the rail as the train was coupled together.

The trackman, operating the frontend loader, cleaned the piled up snow from the ends of the crossings. While they were working at 18 Cutacross Road, a BNSF Trainmaster told the section foreman that the train crew for the test train had difficulty operating the west leg wye switch and that the switch would need snow and ice removal cleaning (he also told the section foreman about an industry switch that needed cleaning).

After the section crew finished at 18 Cutacross Road, they returned to the section building to pick up the frontend loader operator. All three returned in the section truck and proceeded to the west leg of the Deadwood Wye switch on Main Track No. 1, the location the Trainmaster told them about where the test train crew had difficulty operating the switch.

Upon arrival at the west leg of the Deadwood Wye switch, the truck driver was designated as a watchman/lookout and decided they would use train approach warning for their “on track safety” while cleaning the switch.^{3,4} The truck driver was a qualified watchman/lookout and completed a BNSF Statement of On-Track Safety (“OTS Statement”).⁵ While still in the truck, he indicated on the OTS Statement, at 10:03 a.m., that there was a minimum of 770 feet of sight distance available to allow the work gang to clear the track fifteen (15) seconds prior to the arrival of an approaching train. Subsequent sight distance tests would establish that there was not 770 feet of visibility from where the watchman/lookout was located.

³ On-track safety is allowed per 49 C.F.R. § 214.329.

⁴ See Attachment A at the end of this Report.

⁵ See Attachment A at the end of this Report.

The OTS Statement also indicated that the method of warning of an approaching train would be “verbal” and that the designated place of safety was the section truck. BNSF does not provide visual or auditory warning devices such as whistle, air horn, white disk, red flag, lantern, and/or fuseses for their watchmen/lookouts, leaving a verbal warning the only option under this form of protection.⁶

The section crew walked from the crew truck to the west leg switch that was located 191 feet away from the switch points on Main Track No. 1, and started cleaning the snow and ice from the switch points. At the time of the accident, the watchman/lookout was positioned near the north rail and east of the other two (2) workers. The section foreman, using the backpack blower to remove snow, was just west of the watchman/lookout between the Main Track No. 1 switch and the west leg of the Deadwood Wye. The trackman, the furthest west person, was removing ice and snow from the long rods of the switch components through the use of a short handled shovel at the switch stand outside of the north rail.

The trackman (lone survivor of the MOW crew) said an eastbound train was occupying Main Track No. 2 when they were working on the west leg of the Deadwood Wye switch on Main Track No 1.⁷ He also stated that he did not hear the train approaching – as neither of the track workers were wearing hearing protection, hoods, or helmet liners.

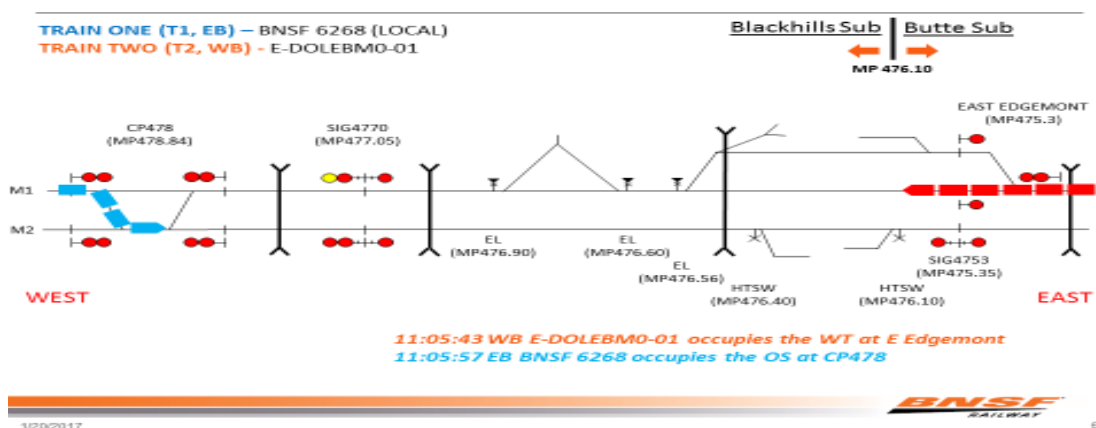


Figure 3. Signal Aspect and Train Movement. (Graphic courtesy of BNSF Railway).

⁶ Per 49 C.F.R. § 214.7.

⁷ See Figure 3 eastbound train which also had a DPU on the rear of their train.

Figure 3 shows the westbound accident train, E-DOLEBM0-01, on Main Track No. 1 occupying the WT track circuit at CP East Edgemont. It also shows the eastbound local train, BNSF 6268, crossing over from Main Track No. 1 to Main Track No. 2 at CP478.

The Accident:

Westbound BNSF Train E-DOLEBM0-01E had a brief radio conversation with the test train as they approached the Deadwood Wye to inform them that they would be passing the test train's point of entry (west leg of the Wye). As they came around a 2° left-hand curve, the train crew observed a MOW section crew working on the No. 1 mainline switch. The Locomotive Engineer began sounding the horn and bell, but saw no response from the track gang. The Locomotive Engineer then initiated an emergency brake, application as the train struck the section foreman and the watchman/lookout at 10:09 a.m., approximately six (6) minutes after the OTS Statement had been completed by the watchman/lookout.

See photo below for the track image recorder from the E-DOLEBM0-01E lead locomotive as the train approached the worksite (workers are blocked out in red—photo courtesy of NTSB). Note the eastbound loaded coal train traveling east on Main Track No. 2.



PROPOSED FINDINGS

Operations:

There were no exceptions taken with the performance of the E-DOLEBM0-01E train crew.

Human Performance:

There were no exceptions taken with the performance of the E-DOLEBM0-01E train crew.

Mechanical:

The mechanical group noted eleven (11) FRA defects on the accident train, during its post accident inspection. Ten (10) cars had one (1) brake shoe worn to the backing plate, and one (1) car had insufficient piston travel. The mechanical group also tested the lead locomotive's horn (BNSF 8489) and found it performed as designed.

Signal:

There were no exceptions taken with the signal system leading up to, and throughout, the incident area.

Track:

BNSF had knowledge that the test train was to be moved, and that the west leg of the Deadwood Wye switch had not been inspected prior to ordering a train crew to couple on to the Wye track. Contributing to this lack of foresight was the use of on track safety protection in lieu of taking the track out of service, which would have afforded the MOW workers full benefit of a safer working environment.⁸

In an interview with the Track and Engineering Group, the BNSF Roadmaster stated he did not like using the watchman/lookout as a form of on track safety while working on the track. His preference was the "track and time" or "Form B".⁹ The Roadmaster further stated that track and time was used about 90 percent of the time, and the surviving trackman stated this crew used the watchman/lookout only once before during the two (2) to three (3) weeks he was with them.

⁸ See p. 17 Track and Engineering Factual Report.

⁹ Track and time or Form B are written mandates through the Train Dispatcher that takes the requested section of rail out of service until released by the employee-in-charge.

PROBABLE CAUSE

The Brotherhood of Locomotive Engineers and Trainmen (“BLET”) finds that the probable cause of this accident was the use of train approach warning for “on track safety” while fouling an active mainline track. A contributing factor was BNSF’s failure to issue the MOW crew visual and auditory warning devices (e.g., whistle, air horn, white disk, red flag, lantern, and/or fuses) for its watchman/lookout to use in the performance of their duties, and the use of the leaf blower to remove snow which prevented the watchman/lookout from detecting the locomotive’s bell and whistle over the sound of the leaf blower motor.

The Tanaka Model TBL 7800R Backpack Leaf Blower in use by the foreman generates 77 decibels (dB(A)) at a distance of fifty (50) feet, according to the user’s manual,¹⁰ rendering a verbal warning useless and impacting an employee’s ability to hear an oncoming train. The use of the leaf blower in this instance negated all three (3) employees’ ability to detect the train aurally, and likely would have prevented a worker from verbally warning the others had the train been detected. The actual noise level output at the time of the accident of the backpack used cannot be determined, due to the damage it sustained from the accident.

Further, 49 C.F.R. Part 214.329(e) anticipates the use of a watchman/lookout even in noisy workplaces as follows: *“Watchmen/lookouts shall communicate train approach warnings by a means that does not require a warned employee to be looking in any particular direction at the time of the warning, and that can be detected by the warned employee regardless of noise or distraction of work.”* Had the watchman/lookout been relieved of all other duties as required, it is likely such a warning would have been heard over the noise of the leaf blower, and the passing train on the adjacent Main Track; an error that was exacerbated by the fact that he was not provided by his employer with any other tool to provide warning in such a noisy environment, despite the Part 214.329(g) requirement that *“Every watchman/lookout shall be provided by the employer with the equipment necessary for compliance with the on-track safety duties, which the watchman/lookout will perform.”*

¹⁰ Refer to Tanaka Model TBL 7800R Backpack Leaf Blower manual.

PROPOSED RECOMMENDATIONS

To Burlington Northern Santa Fe Railway (BNSF):

1. Immediately prohibit the use of train approach warning for on track safety. Require that any work group that will foul a Main track in the course of their duties, receive some form of track authority by the Train Dispatcher for protection from approaching trains and/or on-track equipment.
2. Ensure all Watchmen/Lookouts are provided the necessary tools for them to provide a timely and effective warning in noisy environments such as a whistle, air horn, white disk, red flag, lantern, and/or fusees.

To American Association of Railroads (“AAR”):

1. Seek member concurrence for an industry wide discontinuation of train approach warning for on track safety of work groups while fouling a Main track.

To Federal Railroad Administration (“FRA”):

1. Immediately issue an emergency order prohibiting the use of train approach warning for on track protection of work groups while fouling a Main track, until FRA audits are completed to ensure that all railroads are in full compliance with 49 C.F.R. Part 214, and specifically Part 214.329(c) and (g).

CERTIFICATE OF SERVICE

I certify that on September 29, 2017 I have electronically served upon Mr. Robert (Joe) Gordon (robert.gordon@ntsb.gov), Investigator in Charge, National Transportation Safety Board, a complete and accurate copy of these proposed findings regarding the BNSF Roadway Worker fatalities at Edgemont, South Dakota January 17, 2017, (NTSB Docket No. DCA 17 FR 004). An electronic copy of same was also forwarded to the individuals listed below in this certificate of service, as required by 49 CFR § 845.27 (Proposed Findings).

National Transportation Safety Board
c/o Mr. Robert (Joe) Gordon
Investigator in Charge, DCA17FR004
490 L' Enfant Plaza, SW
Washington, DC 20594
[REDACTED]

Ryan Ringelman
General Director System Safety, BNSF
[REDACTED]

George L Loveland
BMW, Vice General Chairman
Burlington System Division
[REDACTED]

Jim Chase
SMART/UTU Transportation Safety Team
[REDACTED]

W.T. "Bill" Smith
Federal Railroad Administration
Deputy Regional Administrator
[REDACTED]

Yours truly,

[REDACTED]
Stephen J Bruno
Brotherhood of Locomotive Engineers &
Trainmen
National Secretary-Treasurer
National Chairman, Safety Task Force
7061 East Pleasant Valley Road
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ATTACHMENT A

BNSF Rules

6.3.3 B. Lookouts

Lookouts must complete the form entitled “Statement of On-Track Safety” before any member of the work group fouls the track. The completed form must remain in the lookout’s possession while a work group performs minor work or routine inspection and on-track safety is established using a lookout.

See below for a copy of the Statement of On-Track Safety that the watchman/lookout had in his possession.

Accidents and injuries are preventable.
Strive to work accident and injury free.

Lookout Responsibilities
Lookouts must adhere to the following:

- Be trained and rules qualified.
- Identify a place of safety where they and employees they are protecting can go when a train approaches.
- Communicate the place of safety to the other employees prior to the track being fouled.
- Devote their full attention to detecting the approach of trains and warning employees.
- Warn employees and have them positioned in a predetermined place of safety at least 15 seconds prior to the arrival of the train moving at maximum authorized speed as indicated in the Statement of On-Track Safety.
- Use a method to warn employees of the approach of a train or on-track equipment that:
 - Is distinctive, clear and unquestionable.
 - Does not require employees to be looking in any particular direction.
 - Can be detected by employees regardless of noise or work distractions
 - Is identified in the job safety briefing.

Employees who depend upon a lookout for protection must always remain in a position that allows them to receive warning communicated by the lookout.

STATEMENT OF ON-TRACK SAFETY

A lone worker using individual train detection or a lookout using train approach warning to establish on-track safety must complete this form prior to fouling a track.

To complete this form:

1. Provide the following information:

Name of Lone Worker/Lookout: [REDACTED]
Date: 1-17-17 Division: RR
Subdivision: BH
Location: From MP 476.5 to MP 477.1
Designated Place of Safety: Track
Method of Warning: Verbal
Time form completed: 1603

2. In the table below, place an X in the box adjacent to the maximum authorized speed of trains at the location specified above. Observe the minimum required distance between the approaching train and the employee(s) when the place of safety has been reached.

Maximum Authorized Speed in MPH	Minimum Separation Upon Reaching Place of Safety		Maximum Authorized Speed in MPH	Minimum Separation Upon Reaching Place of Safety	
	X	Feet		X	Feet
5		110	50		1,100
10		220	55		1,210
15		330	60		1,320
20		440	65		1,430
25		550	70		1,540
30		660	75		1,650
35	X	770	80		1,760
40		880	85		1,870
45		990	90		1,980

Note: When the maximum authorized speed is not shown on the form, use the next higher speed.

ATTACHMENT B

Federal Regulations -- Train Approach Warning/Watchman Lookout

The Preamble of the Federal Railroad Administration's (FRA) revised Roadway Worker Protection regulation, published at 49 C.F.R. Part 214, included comments from the Brotherhood of Maintenance of Way Employees Division (BMWED), which expressed concern that some railroads did not provide watchmen/lookouts with any audible or visual warning devices to provide appropriate train approach warning.¹¹ The comment pointed out the existing definition of the term "watchman/lookout" in Part 214.7 that requires, in part, that roadway workers acting as watchmen/lookouts be properly equipped to provide visual and auditory warning, including such tools as whistle, air horn, white disk, red flag, lantern, fusee. The comment urged FRA to clarify in the final rule that the use of such audible and/or visible warning devices is mandatory to provide train approach warning under Part 214.329. The FRA concurred with the BMWED. Both the definition of watchman/lookout and the operative train approach warning regulation at Part 214.329(c) and (g) provide that watchmen/lookouts must be properly equipped to provide train approach warning.

49 C.F.R. § 214.7 – Definitions

Watchman/lookout means an employee who has been annually trained and qualified to provide warning to roadway workers of approaching trains or on-track equipment. Watchmen/lookouts shall be properly equipped to provide visual and auditory warning such as whistle, air horn, white disk, red flag, lantern, fusee. A watchman/lookout's sole duty is to look out for approaching trains/on-track equipment and provide at least fifteen seconds advanced warning to employees before arrival of trains/on-track equipment. The track group inspected the section truck used by the Edgemont section and this watchman lookout "kit" was not found. However, it was later discovered that the BNSF does not provide visual and auditory warning devices such as whistle, air horn, white disk, red flag, lantern, and/or fuse for their watchman/lookout.

49 C.F.R. § 214.329, as published on June 10, 2016:

Roadway workers in a roadway work group who foul any track outside of working limits shall be given warning of approaching trains by one or more watchmen/lookouts in accordance with the following provisions:

(a) Train approach warning shall be given in sufficient time to enable each roadway worker to move to and occupy a previously arranged place of safety not less than 15 seconds before a train moving at the maximum speed authorized on that track can pass the location of the roadway worker.

(b) Watchmen/lookouts assigned to provide train approach warning shall devote full attention to detecting the approach of trains and communicating a warning

¹¹ See 61 Fed. Reg. 65959 (Dec. 16, 1996).

thereof, and shall not be assigned any other duties while functioning as watchmen/lookouts.

(c) The means used by a watchman/lookout to communicate a train approach warning shall be distinctive and shall clearly signify to all recipients of the warning that a train or other on-track equipment is approaching.

(d) Every roadway worker who depends upon train approach warning for on-track safety shall maintain a position that will enable him or her to receive a train approach warning communicated by a watchman/lookout at any time while on-track safety is provided by train approach warning.

(e) Watchmen/lookouts shall communicate train approach warnings by a means that does not require a warned employee to be looking in any particular direction at the time of the warning, and that can be detected by the warned employee regardless of noise or distraction of work.

(f) Every roadway worker who is assigned the duties of a watchman/lookout shall first be trained, qualified and designated in writing by the employer to do so in accordance with the provisions of § 214.349.

(g) Every watchman/lookout shall be provided by the employer with the equipment necessary for compliance with the on-track safety duties, which the watchman/lookout will perform.