BROTHERHOOD OF LOCOMOTIVE ENGINEERS AND TRAINMEN

A DIVISION OF THE RAIL CONFERENCE
INTERNATIONAL BROTHERHOOD OF TEAMSTERS

SAFETY TASK FORCE

INDEPENDENCE, OHIO

BEFORE THE NATIONAL TRANSPORTATION SAFETY BOARD

NTSB Accident Number: RRD-18FR009

Class: REGIONAL

June 5, 2018

Proposed findings, probable cause, and safety recommendations in connection with the collision of Burlington Northern Santa Fe Railway ("BNSF") trains S-MEMSCO1-02L and W-NEESG2M1-05R in Crozier Canyon near Kingman, Arizona on June 5, 2018.

Stephen J. Bruno, BLET-Safety Task Force, National Chairman
Ronald E. Sprague, BLET-Safety Task Force, Party Spokesman

FINAL SUBMISSION

Accident Synopsis:

On June 5, 2018, at approximately 2:50 p.m. Mountain Daylight Time ("MDT")[1] a BNSF Railway[2] ("BNSF") westbound intermodal train[3] and a BNSF eastbound work/rail train collided at Milepost ("MP") 480.2 on Main Track No. 1 of the BNSF Southwest Division, Seligman Subdivision. One (1) Herzog employee was fatally injured, and another Herzog employee was injured, as well as a BNSF employee. The accident occurred in Crozier Canyon (between Truxton and Valentine, Arizona) near the city of Kingman, AZ. This territory is double main track, controlled by centralized traffic control ("CTC"),[4] BNSF Train Dispatcher control authority.[5] Prior to the collision, the intermodal train was traveling westward on a downhill grade of 1.36% at fifteen (15) miles per hour ("MPH"), and the work/rail train was traveling eastward at ten (10) MPH. Both trains were operating in the same 8° curve. The lead locomotives of both trains were equipped with Positive Train Control ("PTC")[6] and PTC was also operational on the Seligman Subdivision. At the time of the accident, weather was reportedly clear, the wind was from the southwest at twenty-five (25) MPH, with the temperature of 97° F. Damage estimates exceed one-million dollars.

Accident Narrative:

Train Information:

The BNSF intermodal train (S-MEMSCO1-02L) consisted of three (3) locomotives (BNSF 4283 lead), and seventy-two (72) loaded cars. The train was 6,574 feet in length, and weighed 8,156 tons. Crew members included a Locomotive Engineer and a Conductor.

The BNSF work/rail train (W-NEESG2M1-05R) consisted of two (2) locomotives (BNSF 6613 lead), and twenty-nine (29) loaded railcars. This train was 1800 feet in length; no weight was

[1] All times throughout report will be Mountain Daylight Time ("MDT").
[2] Formerly known as Burlington Northern Santa Fe Railway. For the remainder of this report the railroad will be referred to as "BNSF".
[3] An intermodal train (and/or stack train) is one which transports containers and/or trailers on/in specially designed rail cars (flat cars or well cars).
[4] Centralized Traffic Control ("CTC") is a signaling system that uses block signal systems to authorize train movements.
[5] The BNSF Train Dispatchers are based out of Ft. Worth, Texas.
[6] Positive Train Control ("PTC") is a system to prevent train to train collision, overspeed derailment, incursion into established work zone limits, the movement of a train through a Main Track switch in the improper position.

given due to the unloading of ribbon rail along the tracks. The Herzog Rail Unloading Machine ("RUM") was attached to the rear of the rail train. The operating crew members on the work/rail train W-NEESG2M1-05R included a Locomotive Engineer, a Conductor and a Brakeman. There were two (2) Herzog employees on the RUM equipment and three (3) BNSF maintenance of way ("MOW") employees on the train, as well.

Method of Operation:

The Seligman Subdivision is part of the BNSF Southwest Division and extends from East Winslow, Arizona (MP 284.5) to Needles, California (MP 578.4) in a timetable east-west direction. The maximum authorized speed ("MAS") on the subdivision is seventy (70) MPH for freight trains, with permanent speed restrictions between posted timetable mileposts. In the area of the accident (MP 480.2), permanent speed restrictions were in place on both Main tracks between MP 479.0 to MP 480.6. Both Main tracks were classified as Class 2 Track under FRA part §213.9(a), with a MAS of twenty-five (25) MPH for freight trains and thirty (30) MPH for passenger trains.[7]

BNSF Rules and/or Documents:

The below listed rules and/or documents are those that were produced by BNSF:

- *General Code of Operating Rules ("GCOR"),* Sixth Edition, effective April 1, 2015
- *BNSF System Special Instructions No. 8,* effective October 4, 2017
- *BNSF Southwest Division Timetable No. 6,* effective November 8, 2017
- *TY&E Safety Rules,* effective January 1, 2015
- *Airbrake and Train Handling Rules No. 6,* effective April 1, 2015
- *General Track Bulletins for the S-MEMSCO-02L and W-NEESGM1-05R*
- *BNSF Train Dispatchers and Control Operators Manual,* effective August 16, 2017
- *BNSF Maintenance of Way Operating Rules,* effective October 31, 2004

BNSF train crew S-MEMSCO1-02L:

The train crew of BNSF S-MEMSCO1-02L went on duty on June 5, 2018 at 9:16 a.m. in Needles, California. Prior to the start of duty, the Locomotive Engineer had 52 hours and 57 minutes off duty, the Conductor had 30 hours and 50 minutes off duty. The Conductor contacted the BNSF first shift Train Dispatcher who instructed them to meet train S-MEMSCO1-02L at Peach Springs,

[7] *See* Appendix A at the end of this report.

Arizona. When the train arrived at East Peach Springs (MP 465.8),[8] the crew took charge of the train, ensured the air brake pipe pressure on the end-of-train device was being restored, initialized PTC[9], then contacted the BNSF first shift Train Dispatcher and headed westward on Main Track No. 1 under a Clear signal indication.

The crew proceeded west, eventually arriving at an intermediate Restricting signal[10] (Red aspect) at MP 478.707.[11] The S-MEMSCO1-02L train crew decided to stop the train at the Restricting signal instead of continuing at Restricted Speed.[13] As their train was coming to a stop, the crew heard a radio transmission from the W-NEESG2M1-05R work/rail train crew to the Train Dispatcher advising that they needed forty-five (45) more minutes to work.

The investigators asked the Locomotive Engineer why he decided to stop at the Restricting signal at MP 478.07.[14] The Locomotive Engineer stated, in part, "Because Crozier Canyon's almost 3 miles long with blind curves, and we – I briefed with my Conductor. I said do you want to flag this signal? And he said no, let's just wait to see if we get a better signal."[15]

While the westbound intermodal train was stopped on Main No. 1, it was passed by two (2) westbound trains on Main Track No. 2. During the interview, the Locomotive Engineer stated "We were just waiting, and two westbound trains went by us on Main Track No. 2. And that's what peaked us to something must be up. You know, what's – so I asked him, do you want to – well, we talked, do you want to creep down? He said yeah, let's go down, let's see."[16] The investigators asked the Conductor if the decision to proceed west was because they had been run around by two (2) trains on Main Track No. 2, he replied yes. The Conductor stated, "The trains that ran around

[8] *See* Appendix B at the end of this report.
[9] Initializing PTC: Entering and/or verifying employee and train information, slow orders, bulletins, work limits, etc.
[10] *See* Appendix C at the end of this report.
[11]The Restricting Signal aspect is red. The indication is "Proceed at restricted speed".
[12] PTC logs corroborated what signals were displayed, according to the train crew's testimony.
[13] Restricted Speed, General Code of Operating Rules ("GCOR") rule 6.27 states: Movement at Restricted Speed: When required to move at restricted speed, movement must be made at a speed that allows stopping within half the range of vision short of: Train, Engine, Railroad car, Men or equipment fouling the track, Stop signal or, Derail or switch lined improperly. When a train or engine is required to move at restricted speed, the crew must keep a lookout for broken rail and not exceed 20 MPH. Comply with these requirements until the leading wheels reach a point where movement at restricted speed is no longer required.
[14] Not all signals in CTC territory are controlled by the dispatcher. Intermediate signals (signals with number plates) generally govern movements between interlockings. These signals operate automatically within the CTC system and their aspect is determined by train location and track condition.
[15] *See* Locomotive Engineer Tower testimony page 7, lines 16-20.
[16] *See* Locomotive Engineer Tower testimony page 7, line 25 and page 8 lines 1-4, respectively.

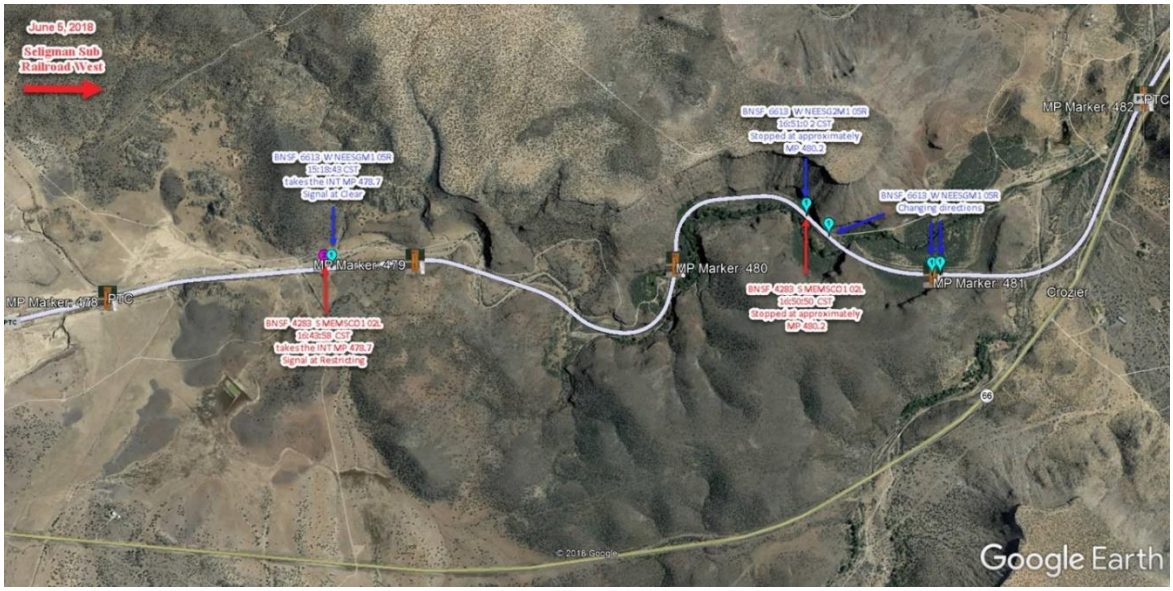
us were a manifest train and a vehicle train, and there's no way that those trains are going to be clearing Z-trains,[17] which is how it works up here."[18] The crew of the S-MEMSCO1-02L waited at the Restricting signal for about one (1) hour before they proceeded west. It remains unexplained why the Train Dispatchers chose to route the intermodal train onto the same track as the work train when the option to route it around the work train on No. 2 track was apparently available.

The S-MEMSCO1-02L crew then made the decision to proceed at restricted speed (per signal indication) through signal 478.1. The train crew did not contact the BNSF Train Dispatcher nor the work train to determine their location or get additional information prior to initiating the westward movement. Such contact is not required by GCOR rules. After the train passed the signal at MP 478.1, (Restricting) the Locomotive Engineer gradually increased the train's speed to fifteen (15) MPH. Both crew members felt that the speed was appropriate for the grade and curvature. The Locomotive Engineer said during the interview that he and the Conductor knew that the work/rail train was ahead of them. He said he thought the work/rail train was further down the hill, because he overheard radio transmissions with the Train Dispatcher about the work train clearing up at Hackberry, approximately MP 486.0.[19]

The Intermodal train was operating in a right hand 8° curve and the line-of-sight was limited by trees and vegetation. As the train negotiated the curve, they came upon the hind end of the work/rail train. When the intermodal train crew initially saw the approaching work/rail train (shoving eastward towards them), they assumed that the work train was traveling east on Main Track No. 2. Moments later, both crew members realized it was on Main Track No. 1 and called out emergency on the locomotive's radio, the Locomotive Engineer simultaneously placed the train into emergency braking application. When asked if "…you could operate by the Restricting signal at intermediate signal 478.1 because you were operating at a Restricted speed under the PTC setup, and there was no warning to you that there were men or equipment in the next block" the Locomotive Engineer's response was "Correct."[20]

Below: Google Earth overview of layout of terrain and train movements (courtesy of BNSF).

[17] Z-Trains are high priority expedited intermodal trains (e.g.; commodity transported UPS, US mail, etc.).
[18] *See* Conductor Irwin testimony page 10, lines 11-14.
[19] *See* Locomotive Engineer Tower testimony page 8, lines 10-13.
[20] See Locomotive Engineer Tower testimony page 15, lines 2-6.



After the two (2) trains collided, the locomotive came to rest leaning to the right, and diesel fuel started to leak into the locomotive cab. Both crew members evacuated the locomotive and started looking for the crew members of the work/rail train. They immediately found the Brakeman of the work/rail train. A BNSF MOW employee that was part of the work/rail train notified the Locomotive Engineer and Conductor that there were two (2) Herzog employees trapped in the RUM truck on the south side of the tracks. The Conductor said he pulled one of the Herzog employees out of the cab of the RUM truck.

Below bottom left: photo to left is looking east at the westbound S-MEMSCO01-02L lead locomotive (courtesy of SMART)

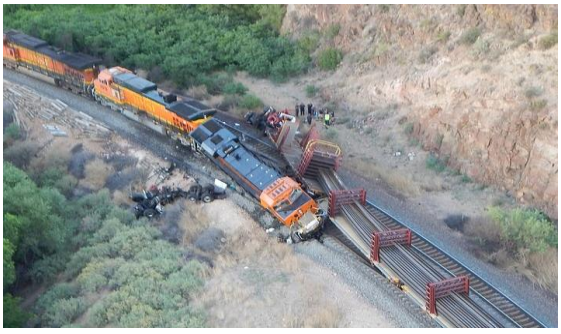


Photo above: Drone aerial photo (photo courtesy of BNSF).

BNSF Work/Rail train W-NEESG2M1-05R:

The train crew of the BNSF work/rail train W-NEESG2M1-05R went on duty on June 5, 2018 at 6:00 a.m. in Needles, California and consisted of a Locomotive Engineer, a Conductor and a Brakeman. The Locomotive Engineer and Conductor both had been off duty for 11 hours, 45 minutes, and the Brakeman for 11 hours and 50 minutes.

The crew was transported to their train by a BNSF Trainmaster. The work/rail train W-NEESG2M1-05R was parked in the auxiliary track at Truxton (MP 477.3) adjacent to Main Track No. 1. The crew took charge of the work/rail train and had a job briefing with the MOW supervisors. During the job briefing, the Locomotive Engineer asked whether they were going to use form B[21] protection or Track and Time protection.[22] The BNSF Assistant Roadmaster told the work/rail train crew that the work/rail train moves would be protected by signal indication.[23] The Assistant Roadmaster told the interviewers in part "…it says [System Special Instructions] the Conductor is in charge of all movements. So the entire work train crew is in charge of the safety and responsible for the entire operation."[24] The BNSF Track Supervisor informed the MOW workers their form of protection would be operating under the train's authority [GCOR rules].[25]

During the job briefing, the BNSF Track Supervisor, Assistant Roadmaster, and Herzog employees instructed the Locomotive Engineer to monitor channel No. 60 (MOW channel), and the Conductor to monitor channel No. 36 (BNSF Train Dispatcher channel). The Brakeman was positioned at the rear of the train to communicate with the Herzog employees; and relay movement instructions to the Locomotive Engineer in either the east or west direction within specific distances. The Locomotive Engineer said there were times that the crew would switch channels on

[21] A Form B in GCOR refers to rule 5.4.1 Temporary Restrictions
Track bulletins, track warrants, or general orders may restrict or stop train movements because of track conditions, structures or men or equipment. Yellow flags are used to indicate temporary speed restrictions. Yellow-red flags are used to indicate when a train may be required to stop. When flags are not displayed, that information will be included in the track bulletin, track warrant, or general order. When a restriction spans adjoining subdivisions, separate temporary restrictions may be issued on each subdivision.

[22] See APPENDIX D at the end of this report for GCOR rules 10.3 – 10.3.4 regarding Track and Time.

[23] *See* BNSF Assistant Roadmaster Stroup testimony pages 6-7, lines 24-25 and line 1, respectively.

[24] *See* BNSF Assistant Roadmaster Stroup testimony page 11, lines 6-8.

[25] *See* BNSF Track Supervisor Robinson testimony page 7, lines 2-9.

the locomotive radio from channel No. 60 to No. 36 in order to communicate with the BNSF Train Dispatcher.

The work/rail train made several eastward and westward movements laying ribbon rail on four (4) curves on Main Track No. 2. The work/rail train then crossed over to Main Track No. 1 and laid ribbon rail on four (4) curves before making the final reverse movement (eastward) prior to the incident. GCOR 6.4 requires that "reverse movements on any main track, controlled siding, or on any track where a block system is in effect [be made] at restricted speed and only within the limits a train has authority to occupy the track." With the Herzog RUM truck attached to the rear of the work train their speed was further restricted to ten (10) MPH during reverse (eastward) movements, and fifteen (15) MPH in forward (westward) movements. The Brakeman was on the rear of the train riding, inside the cab on the driver's side of the RUM truck to provide point protection during the final reverse movement to return the BNSF Track Supervisor to his highway work vehicle. There were two (2) Herzog employees who were riding in the control compartment located behind the cab of the RUM truck.

Photo below of an exemplar Rail Unloading Machine (courtesy of BLET)

Photo below is a photo of the work train the day prior to the accident (June 4, 2019). The Rail Unloading Machine (RUM) truck is attached to the rear of the work train (photo courtesy of BNSF).

The W-NEESG2M1-05R was operating eastward in a left-hand 8° curve. Their line of sight was limited because of trees and vegetation (*see* photos below).

Photo bottom left: is of an exemplar train approaching in a westward direction where the accident occurred. Photo bottom right is overhead view of accident scene. View of the curve is obstructed by vegetation (Photos courtesy of NTSB)

During his interview, the Brakeman stated "When we were done laying rail, we started shoving back to drop off maintenance of way person at the truck. We entered the curve, I could see 10 cars, so I gave a 10-car count. Right after that, I saw the train coming around the corner. I said hot rail on the radio to warn the work train, because it looked to be on Main 2. Seconds later I saw it was on our track. I said something over the radio. I can't remember the exact words. I plugged[26] the train and jumped, jumped out of the truck, pretty much all at the same time."[27] During the interview the Locomotive Engineer of the work train said, "There was communication just before the incident of somebody on the radio saying, 'stop, stop work train', and then 'plug it'."

Photo of the inside cab compartment of the RUM truck. The Trainline Emergency Switch (which the Brakeman of the work/rail train activated) is circled (photo courtesy of BLET)

[26] "Plug it" is railroad jargon/slang in reference to making an emergency train air brake application. The type of air brake application made when a train must be stopped in the minimum distance possible.
[27] *See* Brakeman Erlenbach testimony page 6, lines 12-20.

BNSF Maintenance of Way ("MOW") crew:

The BNSF MOW crew went on duty at 6:00 a.m., and completed their job briefing at Kingman, Arizona, travelling to meet the work/rail train crew at Truxton. There, the job briefing was conducted by the BNSF Track Supervisor, Assistant Roadmaster, and Herzog employees with the MOW group and the train crew of the W-NEESG2M1-05R work/rail train. The job briefing consisted of a description of the work to be performed and everyone's responsibilities. The BNSF MOW track supervisor also emphasized that anyone could stop the movement. The Locomotive Engineer of the work train asked again if they were going to work under a Form B or track and time. He was told again that they would work under signal indication.

The BNSF Assistant Roadmaster said that the work train's form of protection would be provided by the train crew by contacting the Train Dispatcher and through signal indication. During her interview, the Assistant Roadmaster was asked by investigators who makes the decision on the method of protection for a work train, and she replied, "It's always signal indication. That's – I mean, we don't unload rail under track and time. It would – it's not – it's impossible. I mean, we could, but you'd have to get three blocks in a row."[28] The Assistant Roadmaster further explained that it would not make sense to use a Form B to unload rail, nor have Track and Time been used to unload rail, "It's always been signal indication".[29] The Assistant Roadmaster also stated that it did not make sense to line another train behind a work train that is going back and forth, stopping and going slow. The investigators asked the Assistant Roadmaster whether she was familiar with the signal indications, her reply was "Kind of. It goes red, flashing yellow, and something else. I

[28] *See* BNSF Assistant Roadmaster Stroub testimony page 7, lines 15-18.
[29] *See* BNSF Assistant Roadmaster Stroub testimony page 8, line 18.

don't – yellow, green. I don't know. It's not really my deal."[30] Later during the interview, the Assistant Roadmaster was asked "If an engineering officer received training on signal aspects, signal use of signals for protection?" Her answer was "No."[31] The Assistant Roadmaster explained that the main concern was safety from trains passing on the adjacent track and not the trains traveling on the same track as the W-NEESG2M1-05R work/rail train.As the work/rail train was shoving eastward to drop the track supervisor off at his assigned highway work vehicle, MOW employees reported hearing someone call out emergency over the radio.

The Track Supervisor said that prior to impact, he saw the door of the RUM cab open and close by one of the Herzog employees. The track supervisor said he jumped off on the south side of Main Track No. 1 and landed on the south side of the tracks. The MOW Track Supervisor, track foreman, and track laborer braced themselves and remained on the train during the collision.

The two (2) Herzog employees riding in the control cab of the RUM truck remained inside. Post-collision, the MOW employees riding on the platforms of the ribbon rail cars ran to the rear of the train to look for the Brakeman and the Herzog employees.

The track laborer said he saw the Track Supervisor trying to extract one of the two Herzog employees who were in the cab of the RUM truck. He ran over to the train crew of the westbound train to ask them to help. They managed to pull one of the Herzog employees free from the wreckage and provided first aid and comfort until help arrived.

During the interview, the MOW employees stated – incorrectly – that the westbound train should not have passed the red intermediate signal indication without talking to the train dispatcher. Also, that signals were the work train's protection from other train movements coming into their limits.

BNSF Train Dispatchers Interviews:

First Shift Train Dispatcher:

The first shift BNSF Train Dispatcher went on duty at 6:30 a.m. and had a job briefing with the previous shift Train Dispatcher. The first shift Train Dispatcher said he himself dispatched the

[30] *See* BNSF Assistant Roadmaster Stroub testimony page 27, lines 5-9.
[31] *See* BNSF Assistant Roadmaster Stroub testimony page 30, lines 1-4.

work train out of Truxton eastbound on Main Track No. 1 and crossed them over to Main Track No. 2 at Cherokee (MP 473.7). The Train Dispatcher said that while he was on duty the work train remained working on Main Track No. 2 until he went off duty (approximately 2:30 p.m.). When the first shift Train Dispatcher was asked how he provided protection to the work/rail train he said, "The signal system was their only protection when I was working with them. Other than that – they were just on signals."[32] When asked if in the past a work/rail train would be dumping rail using Herzog equipment, as on the day of the accident, he replied "Yes." Then he was asked "Have you ever given track and time or Form B's, or just utilize signal protection for that type of work activity?" He responded "Signal protection unless they request track and time."[33]

When asked in part "… Can you tell us typically, if a work train is working between control points, let's say Cherokee and East Valentine, do you usually line other trains in behind the work train…" The First Trick Train Dispatcher responded "Me, myself, I've never had to do anything like that." Then further questioned "Any - - what if the work train is heading for a location such as a tie-up location, would you line other trains up to just follow them over - - or follow them" to which he responded "Yes, that's correct." The Train Dispatcher was also asked "But if they were planning on staying and doing work, then you wouldn't have reason to line them into that block behind that train; would that be correct? To which he responded "No, I would - - if - - I would route around them if I knew they were doing work in a block."[34]

When asked what the Dispatcher's screen shows if a train is between Control Points ("CP"), his response was the color Red, and that the system does not show intermediate signals. The Train Dispatcher explained that, another method of protecting the limits of the work/rail train would be to place tags, or block the signals at the CP and dispatch trains around the work/rail train on the adjacent Main Track. During the interview the Train Dispatcher was asked whether he provides additional information to other trains when a work/rail train is performing work; he stated that he

[32] *See* Train Dispatcher Austin testimony page 8, lines 17-18
[33] *See* Train Dispatcher Austin testimony page 10, lines 15-21.
[34] *See* Train Dispatcher Austin testimony page 17, lines 6-20.

does not. When asked whether he had set up any stacked signals[35] for the S-MEMSCO1-02L, the First Shift Train Dispatcher responded "I can't recall."[36]

Second Shift Train Dispatcher:

The second shift BNSF Train Dispatcher went on duty at 2:30 p.m. He said he had a job briefing with the first shift Train Dispatcher regarding the trains that were operating on the Seligman Sub-division. The second shift Train Dispatcher was asked if he had dispatched the work/rail train from Main Track No. 2 to Main Track No. 1, he replied by saying that he did not. He said that the train was already stacked for Main Track No. 1 when he went on duty. The second shift Train Dispatcher was asked whether he had communicated with the train crew on the S-MEMSCO01-02L, and he replied that he did not.

He explained that when he went on duty, he had a notification that a transport van had been ordered to pick up the work/rail train at Walapai (approximately MP 501.3). During the interview the second shift Train Dispatcher stated, "It was my understanding the work train was done and going to be heading west from Cherokee to Walapai because the van had been ordered for the crew."[37] The second shift Train Dispatcher explained that this was the reason he gave the S-MEMSCO1-02L a proceed indication at the Cherokee CP to follow the work/rail train on Main Track No. 1.[38] The second shift Train Dispatcher further stated that he thought at that time the work/rail train was now just a westbound.

When asked in part "…is it common to run a train in behind them or how would the stack train been dealt with at that time?" His response was "Maybe; maybe not, if you (indiscernible) dispatches involved with that. Based on the signal system, I would have no problem still lining a train in behind a directional train. The work train did not have a bi-directional authority. That allows me to line another westbound in behind them; per the signals and per the rules, that's perfectly fine." [39] It must be noted that this comment by the second shift dispatcher refers to bi-directional

[35] The term "stacked" and/or "stacking" is railroad terminology used when a Train Dispatcher requests the computer to automatically line up requested trains for a desired route.
[36] *See* Train Dispatcher Austin testimony page 22 lines 13-15.
[37] *See* BNSF Train Dispatcher Joneson testimony page 6, lines 15-21.
[38] *See* BNSF Train Dispatcher Joneson testimony pages 8 and 9, lines 25 and 1-5 respectively.
[39] *See* BNSF Train Dispatcher Joneson testimony page 15, lines 22-25 and page 16, lines 1-5.

authority that he would have provided. The signal rules permit trains to make reverse movements within a block at restricted speed. See GCOR 6.4, page 8 of this report.

The Train Dispatcher said during the interview that after noticing that the work/rail train was not moving, he made nine (9) attempts to communicate with them in order to know what the delay was. After a period of time the work/rail train crew contacted the Train Dispatcher and explained that they would be in the clear at Hackberry (MP 489) within forty-five (45) minutes. The Train Dispatcher was asked whether the stacked signal system led him to conclude that the work/rail train was not doing any work, and he answered "Correct."

Event and Image recorder data: A side by side analysis of the respective event recorder and image recorder data from the two controlling locomotives establishes that both trains were still moving toward each other at the time of the accident. At the outset, it should be noted that section 3.2 of the event recorder report explains that a time adjustment was made to the 4283 and 6613 event recorders' time indications which changed the hour from 1500 and 2100 hours respectively to 1400 hours for both. The minutes and seconds were not adjusted and we conclude that the two event recorders were otherwise in sync. The image recorder report from both engines used 2100 hours. No adjustment was made to the hours, minutes and/or seconds.

However, the work train was travelling in reverse so the image recorder on the 6613 was close to 1800 feet away during the recording. Therefore, the image recorder information from the 6613 is not useful to determine the moment the respective trains became visible to one another, the time the brakeman jumped from the work train nor the time of the collision. The table below relies upon the minute and second indications of the two event recorders and image recorder from the 4283 to determine the speed both trains were travelling at certain points during the events of this accident.

The image recorder from the 4283 was used to establish three (3) significant events relevant to this collision. 1) The time that the two trains became visible to one another, 2) The time the Brakeman jumped from the work train, 3) The time of the collision. Once those times are established we can determine the corresponding event recorder time and thus the speed the respective trains were travelling at each event.

The imbedded time stamp from the 4283 image recorder established that the train came to a complete stop at 21:50:38, the event recorder from 4283 established that the train came to a complete

stop at 14:50:42, a difference of plus four (+4) seconds. Therefore, we can establish with a reasonable degree of certainty that any event time stamped in the 4283 image recorder has a corresponding time in the event recorder of plus four (+4) seconds.

The sight distance measurements and analysis determined the straight line distance when the two trains became visible to one another. The imbedded time stamp of the 4283 image recorder established that time as 21:50:10. The corresponding event recorder time is plus four (+4) seconds or 14:50:14. The event recorders' data establishes that at 14:50:14 the 4283 was travelling at 14 MPH and the 6613/RUM was travelling at 10.1 MPH.

The imbedded time stamp of the 4283 image recorder established the collision occurred at 21:50:24 the corresponding time in the event recorder is plus four (+4) seconds or 14:50:28 The event recorders' data establishes that at 14:50:28 the 4283 was travelling at 13 MPH and the 6613/RUM was travelling at 5.8 MPH.

It should be noted that the 6613/RUM did not make an emergency application of the brakes for ten (10) seconds after the 4283 became visible. Although we cannot find in the record where this specific questions was asked of the Brakeman it is reasonable to conclude that the Brakeman didn't realize the train was on the same track (Main Track No. 1) in part because he had just witnessed two other trains pass him westward in the Crozier Canyon on Main Track No. 2. He probably wasn't expecting the third train to be dispatched westward into Crozier Canyon on Main Track No. 1.

4283

	Event Recorder Time	Event Recorder Speed	4283 Image Recorder
RUM visible	14:50:14	14 MPH	21:50:10
Emergency Brake	14:50:18	14 MPH	21:50:14
Brakeman Jumped	14:50:26	13MPH	21:50:22
Collision	14:50:28	13 MPH	21:50:24
Complete stop	14:50:42	0 MPH	21:50:38

6613

	Event Recorder Time	Event Recorder Speed	6613 Image Recorder
4283 seen from RUM	14:50:14	10.1MPH	N/A
Emergency Brake	14:50:24	9 MPH	N/A

Brakeman Jumped	14:50:26	7.1 MPH	N/A
Collision	14:50:28	5.8 MPH	N/A
Complete stop	14:50:32	0 MPH	21:50:29

Drug and Alcohol Test Results:

Federal Railroad Administration ("FRA") Post-Accident Forensic Toxicology Result Reports establish negative test results for drugs and alcohol for one (1) fatally injured employee and six (6) surviving employees.

Cell Phone Records:

Cell phone records from all affected employees were received and during the time of the accident; no cell phone usage was discovered.

Post-Accident Response from BNSF Railway:

The BNSF Railway has since put into effect, on August 1, 2018, Safety Briefing Notice No. 28 (also titled TDCOM rule 40.28), and renaming Item No. 29 of their System Special Instructions "Trains Performing Track Maintenance Work."[40] In summary, it requires the Conductor of work trains to job brief with the on-duty Train Dispatcher prior to beginning their work on milepost limits of where such work will be performed.

Probable Cause

Restricted Speed:

As we indicated above both crews were operating in the same signal block at restricted speed, in opposite directions toward each other. One of the requirements of operating a train at restricted speed is that a train must be able to stop within one-half of the range of vision. Therefore, in theory, two trains operating toward each other in compliance with restricted speed will result in both trains stopping short of a collision. In this accident, the event recorder data from both trains

[40] *See* APPENDIX E at the end of this report.

together with the on board image recorder reports, establishes that both trains were still moving toward each other at the time of the collision. If either train had been operating in compliance with restricted speed that train would have been stopped at the time of the collision. Therefore, we conclude that both trains were not in compliance with restricted speed.

Operating Procedure:

The choice by the first shift Train Dispatcher and the maintenance of way supervisors to rely upon signal protection rather than establishing "Working Limits" is the root cause of this accident. Also, the Train Dispatcher testified that as a matter of practice he does not dispatch trains to follow work trains because work trains regularly make movements in both directions. Relying upon the signal system allows trains to proceed into working limits (albeit at restricted speed) while the preceding work train may be moving in the opposite direction on the same track. That operational decision placed the responsibility of protecting the lives of the workers with human performance. Furthermore, it created a condition where a single point of failure could result in a catastrophe. Given human nature it was a matter of time before an accident would occur.

Although the practice is permissible it is not the safest possible procedure. It certainly wasn't the safest procedure available. The fact that two other trains were routed around the intermodal and work trains via Main track No. 2 leaves no doubt that routing S-MEMSCO1-02L on Main Track No. 2 was a safer and available routing. In the light of these facts, and absent any explanation why that routing was not utilized, the decision to route the intermodal train on Main Track No. 1 is also the probable cause of the accident.

The lack of clarity provided by the railroad as to what is the best practice contributed to this accident. BNSF should implement rules and procedures that require – except in emergencies or where no other option is available – trains following work trains that could make movements in both directions within a block shall be protected by establishing working limits which can be established by at least two methods.

> First, establish "Track and Time" protection by prohibiting any other trains from entering the Absolute Blocks occupied by the working train. This option was clearly available in

this case as the testimony establishes the Train Dispatcher ran two other trains past the work train in the west direction on No. 2 track.

Second, and only when the need to have the revenue train proceed into the working limits exists, BNSF Railway should implement rules that require Form B protection be provided when MOW crews are working in and or around equipment. For example, in this case the S-MEMSCO1-02L would have had to contact the Roadway worker in charge ("RWIC") of the work area in order to enter their working limits and the RWIC would have responded with the exact location of the hind end of the work train Either procedure likely would have likely prevented this collision.

Finally, contributing to the accident was the absence of a rule requiring work/rail trains to job brief with each Train Dispatcher at the beginning of each of their shifts. Such a rule would provide valuable safety information by informing the Train Dispatcher where work would be performed.

Proposed Recommendations

To the BNSF Railway:

1. Enhance training to maintenance of way personnel to include identification of signal indications and their application in the field.

2. Revise rules regarding protection for maintenance of way workers and operating craft employees when they are working in concert. Create a hierarchy of best practice to provide such protections as; a) "Track and Time" authorization; b) Form B protection; c) Wayside signal protection.

To the Federal Railroad Administration ("FRA"):

1. Mandate railroads to implement a best practice hierarchy for providing protection of working limits.

CERTIFICATE OF SERVICE

I certify that on April 1, 2019 I have electronically served upon Mr. Don ("Joey") Rhine (don.rhine@ntsb.gov), Investigator in Charge, National Transportation Safety Board, a complete and accurate copy of these proposed findings regarding the June 5, 2018, rear-end collision and derailment of BNSF Railway trains S-MEMSCO1-02L and W-NEESGM1-05R near Kingman, Arizona (NTSB Docket No. RRD18FR009). 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. Don ("Joey") Rhine
Investigator in Charge, RRD18FR009
490 L' Enfant Plaza, SW
Washington, DC 20594
don.rhine@ntsb.gov

Mr. Mark Adamczak
Federal Railroad Administration
Deputy Regional Administrator
[redacted]

Mr. Ryan Ringelman
BNSF Railway
General Director, System Safety
[redacted]

Mr. Trey Rowe
Herzog Railroad Services
Director, Safety & Health
[redacted]

Mr. Tim Good
Arizona Commerce Commission
Signal & Train Control Inspector
[redacted]

Mr. Scott Jones
SMART Transportation Division
Investigator, National Safety Team
[redacted]

Mr. Randy Lunow
BMWED
Assistant General Chairman
[redacted]

Mr. Vern VanAusdall
BMWED
Vice General Chairman
[redacted]

Sincerely yours,

[redacted]

Stephen J. Bruno
Brotherhood of Locomotive Engineers & Trainmen
National Secretary Treasurer
National Chairman, Safety Task Force
7061 East Pleasant Valley Road
Independence, OH 44131

APPENDIX A

TOC Home

1(A). Speed—Maximum

Main Track	Psgr	Frt*	
		Under 100 TOB	100 TOB & Over
MP 284.5 to 578.4, E Winslow to Needles	79	55	55
MP 284.5 to MP 326.7, EWD	90	55	55
MP 364.1 to MP 418.3	90	55	55
MP 465.8 to MP 578.0, MT1	90	55	55
MP 490.2 to MP 514.0, MT2	90	55	55

* Unless otherwise restricted, the maximum speed for freight trains is 70 MPH provided:

1. Train does not contain empty car(s). Refer to SSI 1(C) for determining speed for multiplatform, intermodal equipment.
2. Train does not exceed 6,500 feet.
   Exception(s):
   a. Trains operating with distributed power equipment with remote DP automatic brake valve cut in may operate at 70 MPH up to 10,000 feet in length.
   b. Trains operating with two distributed power remote consists and both DP remote automatic brake valve(s) cut in may operate at 70 MPH up to 16,000 feet in length (excluding Locomotive length).
3. Train does not average more than 80 TOB.
   Exception(s):
   a. Trains consisting entirely of intermodal equipment (all equipment listed under BNSF System Special Instruction 1C), including equipment designed to carry automobiles/trucks (auto racks), must not average more than 90 tons per operative brake.
   b. Trains consisting entirely of double stack and spine car equipment (car kind codes beginning QU, QK, QV, QW, QT, QX, QY, QM, QC, QO, Q5, QE) must not average more than 105 tons per operative brake.

   In addition, the intermodal trains described above may also handle as many as 15 refrigerated box cars identified as "Super Reefers" - BNSF 793110 thru BNSF 794112, provided train does not exceed 90 TOB.
4. Engineer can control speed to 70 MPH without use of air brakes. (If unable to control speed to 70 MPH on long descending grades, two additional attempts are allowed to control speed with dynamic brake at slower speeds before speed must be reduced to 55 MPH while negotiating descending grade.)

   See ABTH 103.2.1 Dynamic Brake Limitations, regarding when 32 axles of dynamic brakes may be used on lead consist.

Temperature Restrictions

When the ambient (air) temperature exceeds threshold temperature, the applicable speed restriction will apply. If in doubt as to the temperature, contact the train dispatcher. Notify the train dispatcher when the train is speed restricted.

Temperature	Limits	Speed
100 & over	MP 287.4 to MP 305.7	40
	MP 314.8 to MP 487.1	40
	MP 496.5 to MP 500.0	40
	MP 514.6 to MP 516.4, MT 1	40
110 & over	MP 514.1X to MP 526.8X, MT 2	40
	MP 516.4 to MP 525.7, MT 1	40
	MP 527.2 to MP 565.6	40

1(B). Speed—Permanent Restrictions

	Psgr	Frt
MP 284.5 to MP 286.4	65	55
MP 286.5, HER	20	20
MP 286.4 to MP 287.4 * **	45	40
MP 301.9 to MP 303.3, EWD	80	—
MP 327.0 to MP 328.5	75	65
MP 328.5 to MP 330.8 * **	55	50
MP 330.8 to MP 331.8 * **	40	35
MP 331.8 to MP 335.6* **	45	40
MP 335.6 to MP 336.2 * **	40	35
MP 336.2 to MP 338.0	60	55
MP 338.0 to MP 342.2	55	55
MP 342.2 to MP 343.6	55	50
MP 343.6 to MP 345.3	45	40
MP 345.3 to MP 348.2	40	35
MP 348.2 to MP 350.2	45	40
MP 350.2 to MP 352.6 * **	50	45
MP 352.6 to MP 353.9	70	65
MP 364.1 to MP 367.9	50	45
MP 367.9 to MP 371.8	55	50
MP 421.6 to MP 422.8 * **	50	45
MP 422.8 to MP 425.4 * **	55	50
MP 448.3 to MP 451.5	60	55
MP 451.5 to MP 470.5	55	45
MP 477.0 to MP 479.0	70	60
MP 479.0 to MP 480.6	30	25
MP 480.6 to MP 481.6	45	40
MP 481.6 to MP 482.5	60	55
MP 482.5 to MP 490.2, MT1	80	
MP 514.1 to MP 515.2X, MT2	75	60
MP 514.4 to MP 518.8, MT1, WWD freight trains exceeding 400 tons per rated dynamic brake axle	—	25
MP 514.4 to MP 517.0, MT2, WWD freight trains exceeding 400 tons per rated dynamic brake axle	—	25
MP 514.4 to MP 515.1, MT1 *	60	55
MP 515.1 to MP 516.4, MT1	45	40
MP 515.3X to MP 517.8X, MT2	40	35
MP 517.8X to MP 519.9X, MT2	35	30
MP 516.4 to MP 518.8, MT1	40	35
MP 518.8 to MP 520.5, MT1	70	60
MP 518.8 to MP 562.8, WWD freight trains exceeding 400 tons per rated dynamic brake axle	—	45
MP 519.9X to MP 520.3, MT2 **	30	30
MP 520.5 to MP 524.3, MT1	80	—
MP 520.3X to MP 524.0X, MT2	60	55
MP 524.0X to MP 524.3X, MT2	50	45
MP 524.3 to MP 525.7, MT1	85	—
MP 524.3X to MP 525.9X, MT2 **	55	50
MP 525.9X to MP 526.9X, MT2 **	79	65
MP 562.3 to MP 564.5	60	55
MP 564.5 to MP 565.9	50	45
MP 565.9 to MP 574.8	55	55
MP 574.8 to MP 578.4, MT1	50	50
MP 574.8 to MP 578.4, MT2, MT3	55	55

(Tons per Dyn Brake Axle = divide tonnage of train by the total rated operative dyn brake axles within the train, DP consists included if equipped)

* Equipped with Westward ATS Inert Inductors

** Equipped with Eastward ATS Inert Inductors

APPENDIX B

TOC Home

WESTWARD ↓	Length of Siding (Feet)	Station Nos.	Mile Post	Seligman Subdivision MAIN LINE STATIONS	Rule 4.3	Type of Oper.	Line Segment	Miles to Next Stn.	EASTWARD ↑
Adjoining Sub: Gallup End Seligman Sub MT, MP 284.5 / Begin Gallup Sub MT, MP 284.5									
		20500	284.5	EAST WINSLOW	BCT X(2)	2MT CTC		0.8	
			285.3	CP 2853				1.3	
	(1) 6,607	20500	286.6	WINSLOW	BCPT	3MT CTC		0.1	
			286.7	CP 2867				1.2	
			287.9	WEST WINSLOW	X(2)			12.5	
			300.4	DENNISON	X(2)			10.1	
	(1) 6,436	20440	310.5	EAST CANYON DIABLO	X			1.6	
			312.1	WEST CANYON DIABLO	X			14.6	
		20420	326.7	EAST DARLING	X			2.8	
			329.5	WEST DARLING	X			8.8	
			338.3	MC PHETRIDGE				2.5	
			340.8	EAST FLAGSTAFF	X(2)			4.0	
		20400	344.8	WEST FLAGSTAFF				9.7	
			354.5	EAST BELLEMONT	X(2)			7.6	
		20382	362.1	MAINE	X(2)			6.0	
			368.1	CHALENDER	X(2)			6.2	
	(1) 2,400	20125	374.3	EAST WILLIAMS JCT	X			0.7	
		20125	375.0	WEST WILLIAMS JCT Adj. Sub: Phoenix MP 375.2 M2	JX			8.1	
			383.1	EAST PERRIN	X			2.5	
		20120	385.6	WEST PERRIN	X			6.4	
			392.0	EAST DOUBLEA	X			3.1	
		20115	395.1	WEST DOUBLEA	X			10.4	
			405.5	EAST EAGLE NEST	X			2.0	
		20109	407.5	WEST EAGLE NEST	X		7200	10.8	
		20105	418.3	EAST CROOKTON	X			2.2	
			420.5	WEST CROOKTON	X			7.2	
		20100	427.7	EAST SELIGMAN	TX	2MT CTC		1.9	
			429.6	WEST SELIGMAN	X(2)			M1 10.0 M2 10.2	
			439.6	AUDLEY	X(2)			5.3	
			444.9	EAST PICA	X			1.9	
			446.8	WEST PICA	X			6.9	
		19950	453.7	YAMPAI	X(2)			12.1	
			465.8	EAST PEACH SPRINGS	X			1.8	
			467.6	WEST PEACH SPRINGS	X			6.1	
			473.7	CHEROKEE	X(2)			10.3	
	(2) 9,100		484.0	EAST VALENTINE	X			1.8	
			485.8	WEST VALENTINE	X			14.0	
		19915	499.8	WALAPAI	X(2)			9.6	
	(1) 9,170		509.4	EAST BERRY	TX			2.1	
			511.5	WEST BERRY	X			2.4	
		19905	513.9	GETZ	BCP			2.5	
		19900	516.4	KINGMAN				10.5	
	(2) 9,169	19835	526.9	EAST GRIFFITH	X			1.9	
			528.8	WEST GRIFFITH	X			10.7	
			539.5	YUCCA	X(2)			12.2	
	(2) 9,473		551.7	EAST FRANCONIA	X			1.8	
			553.5	WEST FRANCONIA	X			7.7	

WESTWARD ↓	Length of Siding (Feet)	Station Nos.	Mile Post	Seligman Subdivision MAIN LINE STATIONS	Rule 4.3	Type of Oper.	Line Segment	Miles to Next Stn.	EASTWARD ↑
		19085	561.2	TOPOCK	X(2)	2MT CTC	7200	13.5	
			574.7	EAST NEEDLES	X(2)			3.7	
		19800	578.4	NEEDLES	BCPT X(2)	3MT CTC		M1 293.9 M2 294.1	
Adjoining Sub: Needles, California Division End Seligman Sub MT, MP 578.4 / Begin Needles Sub MT, MP 578.4 Information for Needles is found in the Needles Sub. Timetable.									

Mountain Continental Time in effect on Seligman Subdivision

Radio Call-In		
Radio Channel 075/036 in service Winslow Yard		
Radio Channel 055 in service East Winslow to West Seligman		
Winslow - 52(X)	Dennison - 12(X)	Darling - 13 (X)
Flagstaff - 14(X)	Bellemont - 21(X)	Chalender - 22(X)
Perrin - 23(X)		Eagle Nest - 15(X)
Crookton - 24(X)		Seligman - 30(X)
Radio Channel 036 in service West Seligman to East Needles		
Audley - 30(X)	Yampai - 31(X)	Nelson - 32(X)
Peach Springs - 33(X)	Valentine - 34(X)	Berry - 35(X)
Kingman - 40(X)		Griffith - 41(X)
Franconia - 43(X)		Needles - 45(X)
Radio Channel 055 in service East Needles to Needles		
East Needles - 43(X)		Needles - 42(X)
Emergency - Call 911		
Dispatcher X=0, Mechanical X=2, Customer Support X=3 Railroad Police X=4, Detector Desk X=5, Winslow Trainmaster (Winslow - Seligman) X=6, PTC Desk X=9		

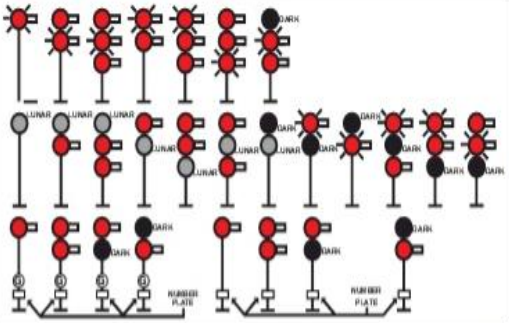
Dispatcher Information

East Winslow to and including West Seligman—817-867-7010,
Fax 817-352-7053
West Seligman to but not including East Needles—817-867-7011,
Fax 817-352-2411
East Needles to Needles
All Days 0800 to 1600 & M-F 1600 to 2400—817-867-7012,
Fax 909-386-4242
All Days 2400 to 0800 & S-S 1600 to 2400—817-867-7113,
Fax 909-386-4243

1. Speed Regulations

See Item 1 of the System Special Instructions for additional speed restrictions.

APPENDIX C: Restricting Signal

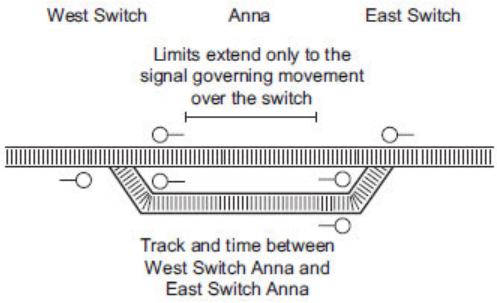
9.1.13			RESTRICTING	Proceed at restricted speed.

APPENDIX D

10.3 Track and Time

The control operator may authorize a train to occupy a track or tracks within specified limits for a certain time period. Authority must include track designation, track limits, and either a time limit or the words "until released". The train may use the track in either direction within the specified limits according to signal indication until the limits are verbally released.

Limits designated by a switch extend only to the signal governing movement over the switch unless otherwise designated.



[Diagram A.]

Track and time does not authorize trains to occupy the main track within automatic interlocking limits.

A. Passing Signal Displaying Stop or Stop and Proceed Indication

Except at interlockings, trains granted track and time:

1. After stopping at a signal displaying a Stop indication, must be granted verbal authority to enter the limits at either end. Verbal authority is not required after stopping within the limits or when entering the limits at any other location. Train must move at restricted speed.
2. Must observe the requirements for inspection of spring switches.
3. May pass a signal within the limits displaying Stop and Proceed indication without stopping.

B. Time Limits

Trains must release track and time before the time granted expires. When necessary to modify the expiration time, an employee and the control operator must communicate before time expires to adjust the time granted. If the employee cannot contact the control operator and the time limit expires, authority is extended until the control operator is contacted.

C. Releasing When Within the Limits

Employees releasing track and time must state:

- Their name or other identification.
- The track and time limits being released, including number, if applicable.

If no other employee has received track and time within the same limits, a train within the limits may release its track and time to move in a specified direction. Signal indications will then govern the train, if the control operator verbally authorizes the release specifying direction of movement.

D. Releasing Portion of Limits

When a crew member informs the control operator that the authority is released between two specific points, the authority is considered void between those points. This track release must begin at the outer limit of the authority.

Supplemental Instruction

Requesting Track and Time

The employee requesting track and time will state name, occupation, location and train or other identification. The employee will copy the authority granted on the form provided for that purpose, and repeat from the form the authority granted. If the authority is repeated correctly, the control operator will acknowledge with "That is correct." The train must not move until the engineer understands the track and time granted.

When requesting track and time, if communication is lost or an incomplete message is received while the control operator is issuing track and time, or if after repeating the authority to the control operator, the employee does not hear the response from the control operator "That is correct," the employee must not occupy the track. The employee requesting track and time must contact the control operator as soon as possible and confirm with the control operator that the track and time was not received.

10.3.1 Protection of Limits

Before granting track and time, the control operator must apply blocking or marking devices to the control machine to prevent movement into the limits. The control operator may only grant track and time:

1. If the limits are clear.
2. If the limits are occupied by a train with track and time or that will receive track and time.
3. For an engine to switch a train standing within the limits. Crew members on the engine must provide protection against possible movement of the standing train, if necessary.

   or

4. After all trains moving within the limits that do not have track and time have passed the location where the track will be occupied and the employee has been notified that authority is granted behind such trains.

Blocking or marking devices must not be changed or removed until limits have been released to the control operator.

10.3.2 Protection of Machines, Track Cars, or Employees

Machines, track cars, or employees will receive track and time in the same manner as trains.

Machines, track cars, or employees must be clear of the limits before the employee granted track and time releases the authority.

10.3.3 Joint Track and Time

Before track and time is granted where limits will be jointly occupied, the control operator must issue joint track and time to all trains, machines, track cars, or employees within the same limits or that will enter the limits. Trains must move at restricted speed within joint track and time limits.

10.3.4 Track and Time Acknowledgment

Track and time authority must be recorded and repeated to the control operator. Acknowledgment must be received before being acted upon.

The control operator must maintain a record of the authority granted.

APPENDIX E

BNSF RAILWAY
MDPR JOB SAFETY BRIEFING
NO. 28

Date: July 22, 2018
To: Dispatchers & Chief Dispatchers
From: Manager Dispatching Practices and Rules
Subject: New rule effective August 1, 2018 - **TDCOM 40.28 Trains Performing Work Associated with Track Maintenance**

The System Work Train Policy is located in item 29 of the BNSF System Special Instructions. This rule, will be renamed to "**Trains Performing Track Maintenance Work**" on August 1, 2018, and will be amended to include requirements for a conductor of a train performing work associated with track maintenance in signaled territory to notify the train dispatcher of milepost limits where work will be performed *before* beginning work.

In coordination with these amendments to SSI 29, a new rule has been created in the **Train Dispatcher's and Control Operator's Manual**. This new rule is **TDCOM 40.28 Trains Performing Work Associated with Track Maintenance**.

SSI Item 29 – Trains Performing Track Maintenance Work (in part)

In signaled territory, when at the intended work location and before performing work associated with track maintenance (i.e., dumping ballast, loading/unloading track materials, etc.) the conductor must:

- Notify the train dispatcher of the milepost limits where the work will be performed.
- Notify the train dispatcher when the work has been completed.

Changes to SSI item 29 effective August 1, 2018.

TDCOM 40.28 Trains Performing Work Associated with Track Maintenance:

In signaled territory, when notified by the conductor of a train performing work associated with track maintenance (i.e., dumping ballast, loading/unloading track materials, etc.), the following will apply:

In CTC

- Job Brief with the conductor to ensure a clear understanding of the milepost limits to be used by the train performing work associated with track maintenance.
- Place a restrictive informational tag(s) in the control system at the affected location and notify any following train within the same limits about the train performing work associated with track maintenance and the limits where they are working.
- Prior to authorizing a train to enter a track that allows direct access to the milepost limits identified by the conductor of the train performing work associated with track maintenance, inform crew of train being authorized about the train performing work associated with track maintenance and the limits where they are working.

In ABS

- Job Brief with the conductor to ensure a clear understanding of the milepost limits to be used by the train to perform work associated with track maintenance.
- Place a restrictive informational tag(s) in the control system at the affected location and notify any following train(s) within the same or overlapping limits about the train performing work associated with track maintenance and the limits where they are working.

Maintain the restrictive informational tag and continue notifications until advised by the conductor that work associated with track maintenance is complete.

New TDCOM rule 40.28, effective August 1, 2018.

Rule Change Briefing

Transportation

Trains Performing Track Maintenance Work

July 24, 2018

Item 29 of the BNSF System Special Instructions (SSI) is being renamed **"Trains Performing Track Maintenance Work"** and amended to include requirements for the conductor of any train to notify the train dispatcher of milepost limits where work associated with track maintenance will be performed in signaled territory. The notification must occur while at the work location and before beginning the work. The train dispatcher will use this information to advise other train crews in the vicinity of the work activities before authorizing their train on the same track.

Effective Aug. 1, 2018, SSI item is retitled to read **"29. Trains Performing Track Maintenance Work"** and the following paragraph is added:

In signaled territory, when at the intended work location and before performing work associated with track maintenance (i.e., dumping ballast, loading/unloading track materials, etc.) on a main track or siding, the conductor must:

- *Notify the train dispatcher of the milepost limits where the work will be performed.*
- *Notify the train dispatcher when the work has been completed.*

Questions for Discussion

- ☐ **Why is the requirement being implemented?**
  This process will help crews operating other trains in the vicinity and authorized on the same track to be aware of work activities.
- ☐ **Is the conductor of any train performing this kind of work required to notify the train dispatcher?**
  Yes. These instructions are applicable to all trains performing this kind of work associated with track maintenance. This includes unit trains, locals, and through trains stopping to perform the work. It is not limited to trains symbolled as a work train (i.e., W-ABCABC1-05).
- ☐ **Can the conductor notify the train dispatcher when going on duty before the train is actually at the location where the work is to be performed?**
  No. The conductor must notify the train dispatcher just before the work begins at the intended work location. The train dispatcher will use this information to begin communicating information with other trains as necessary.
- ☐ **Can the conductor use references other than mileposts, such as the West switch of the House track, to inform the train dispatcher where the work will be performed?**
  No. To avoid misunderstandings of limits where the work will be performed, milepost references must be used.
- ☐ **If the milepost limits where the work will be performed change from what was communicated to the train dispatcher, is it necessary to update the train dispatcher?**
  Yes. The conductor must notify the train dispatcher of the new milepost limits before performing work outside the limits previously communicated to the train dispatcher.
- ☐ **What is expected of a train crew receiving notification of work activity in the vicinity?**
  This notification does not modify existing rules regarding operation of trains. The information is intended to heighten the awareness of crews operating trains authorized on the same track in an area where another train is engaged in track maintenance-related work activities.

BNSF | SAFETY