National Transportation Safety Board
Office of Railroad, Pipeline and Hazardous Materials
Washington, DC 20594

RRD23FR013

OPERATIONS FACTUAL

Group Chair's Factual Report

September 25, 2023

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A. ACCIDENT

Location:	Elliston, Virginia
Date:	July 6, 2023
Time:	7:44 p.m. local time 11:44 p.m. UTC
Train:	814V404

B. OPERATIONS FACTUAL

Group Chair	Michael Bachmeier NTSB Operations Group Chairman
Party Coordinator	Robert Lewis NS Division Superintendent
Party Coordinator	Ron Sabol SMART TD Safety Task Force
Party Coordinator	Scott Bunten BLET Safety Task Force
Party Coordinator	John Ranschaert Federal Railroad Administration Operations Inspector

C. SUMMARY

On July 6, 2023, at about 7:42 pm local time, an NS freight train derailed 19 loaded coal cars (line 71-89). All cars remained upright, there was no release, no evacuation, and no injuries. The incident train (814V04) was a loaded unit coal train, consisting of 3 locomotives and 105 cars. The train originated in Bluefield, WV and was destined for Norfolk, VA. The incident occurred on the White Thorne Subdivision near Elliston, VA. The White Thorne Subdivision was recently acquired by Virginia Passenger Rail Authority and is operated and maintained by NS.

Investigators identified a burnt off journal on car 71 of the consist. At about 5:29 pm, a hot bearing detector at milepost 276.3 flagged the car, and the crew was in the process of moving the train to a siding to set the car out when the derailment occurred. Due to operational concerns, the train crew bypassed two setout locations and were moving the train to another location when the derailment occurred at milepost 263.6. The POD was about three miles west of the destination set-out point. The train was traveling at approximately 25 mph at the time of the derailment.

D. ACCIDENT NARRATIVE

The crew of the 814V04 consisted of a locomotive engineer and a conductor. The assigned train consisted of three locomotives on the head end and 105 loads and no empties, it was 14,158 tons and 5,562 feet long. They reported for duty at Bluefield, WV at 10:15 a.m. local time and departed Bluefield at 2:39 p.m. The 814 received a Class 1 brake test (Initial Terminal Inspection) at Lamberts Point on 6/30/23.

The engineer stated the trip was uneventful until the 71st rail car (CR 507499) passed over the Yellow Sulphur detector at MP V276.3, when it received a critical alarm for a hot bearing on axle number 299 passing over the detector traveling at 26 mph. The engineer started to stop his train after they received the critical alarm and the train stopped with the head end at MP V274.3 at 5:32 p.m. The train crew contacted the New River dispatcher and advised him that they had been stopped by the detector and the dispatcher asked them to put eyes on the bearing and contact the Wayside Detector Help Desk. The crew contacted the detector help desk and the help desk advised the crew it was the 71st rail car behind the locomotives, CR 507499, the #1 wheelset and to contact him back after they had inspected it. Once the conductor reached the CR 507499 at approximately 6:20 p.m. according to his interview, he tested it with the temple stick on the axle cap and bearing cage, the temple stick melted slightly. He then inspected the end cap, and all bolts were in place with no discoloration of the wheel. He did notice slight grease coming out of the back of the bearing but nothing significant according to his interview.

At 6:57 p.m. the detector desk contacted the crew to see if they had inspected the axle and the crew advised that they had and that it had melted the temple stick and some grease was visible. The detector desk told them to talk to the dispatcher for the next steps and where to set out the car. The dispatcher contacted the crew at 6:59 p.m. and said that he had talked to the Road Manager and the detector desk and instructed them to set out the rail car at the Fagg siding at MP V268.8. The crew stated that they didn't know if they could shove back into Fagg due to the grade and asked the dispatcher if it was ok to take car to Riverside at MP V259.8. The dispatcher said that he would have to discuss with the Road Manager and detector desk.

At 7:10 p.m. the dispatcher contacted their train and told them it was ok to take the car to Riverside and set it out in the siding. The dispatcher let the train know they could depart on signal indication with no speed restrictions. The crew of 814 started to pull at 7:16 p.m.

The engineer stated in his interview that they were traveling around 25 MPH at around MP V262.8 with the dynamic brakes in notch 6, when he felt a slight tug at approximately 7:42 p.m. When that happened, the engineer went into full dynamic and the speed dropped and within a few minutes, the train went into an undesired emergency brake application at 14 MPH at 7:44 p.m. The head end of the train came to a stop at MP V263.03 at 7:44 p.m. The conductor stated that after they went into emergency, he went out to tie some handbrakes on the train account the grade they were on. Once he completed that, he started walking back to see why they went into emergency and the crew was contacted by the MOW that they had derailed. The conductor got a ride back to the location and determined that their train had derailed 19 loaded coal cars which were all up right.

E. DECISION OF SET OUT LOCATION

The Road Manager worked with the Senior General Supervisor of Mechanical, Dispatcher, and the Detector Help Desk to find a spot for the crew to set out the rail car tagged by the critical alarm. The Road Manager let the Dispatcher know that they could depart with no speed restriction according to the interviews.

The original plan was to set out the car in the siding at Fagg. The train crew told the dispatcher they would not be able to shove back up the hill at this location due to the grade and car being 71 deep with only two working locomotives on the head end. The next set out location discussed would be between Kumis and Riverside. Road Manager communicated with the Senior General Foreman and discussed if he would be okay to set the car off in the siding at Riverside. The two determined the car would be ok to set out in Riverside for repair. Road Manager told the dispatcher and dispatcher relayed the information to the train crew. At 7:20 p.m. the dispatcher called the 814 train crew and told them that the plans changed, and

they were to set the car out in the house track between Riverside and Kumis and the MOW would open the switch.

F. DETAILS OF THE INVESTIGATION

1.0 Territory

The Whitethorne District extends from MP V 316.8 to MP V 261.9 in a timetable West to East direction. The district consists of single main track with passing sidings. Maximum authorized speed is 40 mph for freight trains. The maximum speed for freight trains in the accident location is 40 mph.

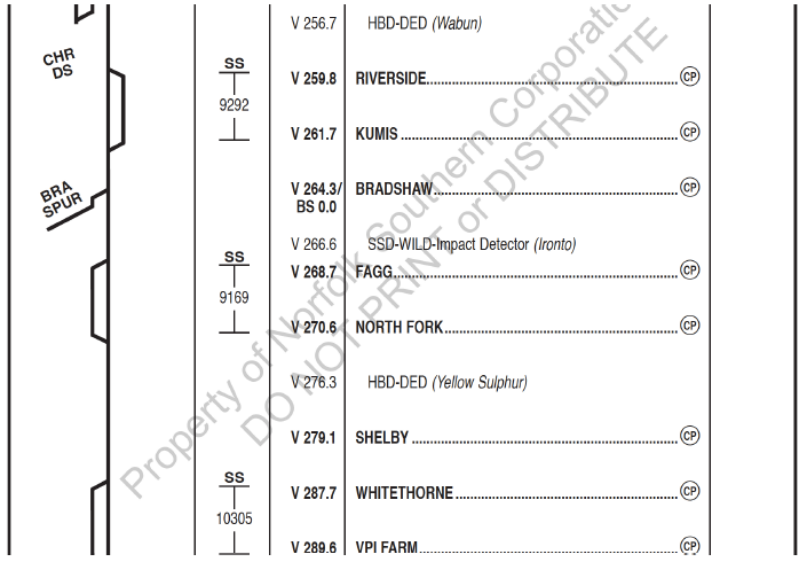

Figure 1: Snapshot showing the accident area in the Whitethorne district timetable.

2.0 Method of Operation

In the vicinity of the accident area, the NS authorizes train movements with a Centralized Traffic Control (CTC). Train movements are coordinated by the New River dispatcher located at the Network Operations Center in Atlanta, GA. Train movements on the Whitethorne District are governed by operating rules, special instruction, timetable instructions, and the signal indications of the traffic control system.

3.0 Interviews

The investigative team interviewed five NS employees (Senior General Supervisor, Road Manager, the Train Dispatcher the Chief Dispatcher, and the ATC Manager) on Sunday, July 9, 2023, and Monday, July 10, 2023, at the Hampton Inn in Roanoke, Virginia. The Train Dispatcher and ATC Manager participated virtually from NS Headquarters in Atlanta, GA. FRA interviewed the train crew (Engineer and Conductor) on Friday, July 7th, 2023.

Please refer to the docket for the full interview transcripts[1].

4.0 Timeline

The investigative team reviewed the locomotive event recorder from the NS 1019 and built a timeline for the accident. Below is the timeline:

Time	Speed	DB	Brake Pipe	MP	Notes
17:28:22	26	71%	81	275.5806	Subject car passes over detector
17:32:37	0	1%	78	274.3156	Train stopped for hot box detector
19:16:39	0	99%	86	274.3156	Train starts to move to set out location
19:42:05	25	99%	88	262.887	Car derails at MP 263.6
19:44:13	15	99%	0	262.0986	Train goes into emergency
19:44:35	0	99%	0	262.039	Head end comes to a stop

[1] The full interviews are located in the docket at this web address: NTSB Docket - Docket Management System

Local Tim	Miles Tra	Feet Trav	PTC Lead	PTC Lead	Speed	Tractive E	Brake Pip	EOT Brak	AB Air Flo	Brake Cyli	Throttle	DB Effort	Direction	Bell	Horn	Horn (ten	EIE	EIE (tenth	PCS	PCS (tenth	EAB Emer	EAB Brake	HOT Eme
()	(miles)	(ft)	()	()	(mph)	(klbs)	(psi)	(psi)	(cfm)	(psi)	()	(%)	()	()	()	()	()	()	()	()	()	()	()
19:44:11	262.107	1383924	V	262.107	15	102	88	8	0	0	DB	99	Forward	On	Off	----------	Off	----------	Closed	----------	No	Release	Off
19:44:12	262.103	1383902	V	262.103	14	102	25	0	88	0	DB	99	Forward	On	Off	----------	Off	----------	Closed	----------	No	Release	Off
19:44:13	262.099	1383881	V	262.099	15	102	0	0	0	0	DB	99	Forward	On	Off	----------	Off	----------	Closed	----------	Emrgy	Release	Emrgy
19:44:14	262.095	1383859	V	262.094	15	102	0	0	0	7	DB	99	Forward	On	Off	----------	Off	----------	Closed	----------	Emrgy	Release	Off
19:44:15	262.09	1383836	V	262.09	15	97	0	0	0	19	DB	99	Forward	On	Off	----------	Off	----------	Closed	----------	Emrgy	Release	Off
19:44:16	262.086	1383814	V	262.085	15	83	0	0	0	20	DB	99	Forward	On	Off	----------	Off	----------	Closed	----------	Emrgy	Release	Off
19:44:17	262.082	1383791	V	262.081	15	76	0	0	0	20	DB	99	Forward	On	Off	----------	Off	----------	Closed	----------	Emrgy	Release	Off
19:44:18	262.078	1383770	V	262.077	15	79	0	0	0	18	DB	99	Forward	On	On	|||||||---	Off	----------	Closed	----------	Emrgy	Release	Off
19:44:19	262.074	1383748	V	262.073	14	76	0	0	0	13	DB	99	Forward	On	On	|||||||||	Off	----------	Closed	----------	Emrgy	Release	Off
19:44:20	262.07	1383728	V	262.069	14	73	0	0	0	13	DB	99	Forward	On	On	-------|||	Off	----------	Closed	----------	Emrgy	Release	Off
19:44:21	262.066	1383708	V	262.065	13	69	0	0	0	13	DB	99	Forward	On	Off	----------	Off	----------	Closed	----------	Emrgy	Release	Off
19:44:22	262.062	1383689	V	262.062	12	65	0	0	0	13	DB	99	Forward	On	On	|---------	Off	----------	Closed	----------	Emrgy	Release	Off
19:44:23	262.059	1383671	V	262.059	12	62	0	0	0	12	DB	99	Forward	On	On	---|||||||	Off	----------	Closed	----------	Emrgy	Release	Off
19:44:24	262.056	1383655	V	262.056	11	56	0	0	0	12	DB	99	Forward	On	Off	----------	Off	----------	Closed	----------	Emrgy	Release	Off
19:44:25	262.053	1383640	V	262.053	10	53	0	0	0	12	DB	99	Forward	On	Off	----------	Off	----------	Closed	----------	Emrgy	Release	Off
19:44:26	262.051	1383627	V	262.05	9	49	0	0	0	13	DB	99	Forward	On	Off	----------	Off	----------	Closed	----------	Emrgy	Release	Off
19:44:27	262.048	1383614	V	262.048	8	45	0	0	0	28	DB	99	Forward	On	Off	----------	Off	----------	Closed	----------	Emrgy	Release	Off
19:44:28	262.046	1383602	V	262.046	7	40	0	0	0	37	DB	99	Forward	On	Off	----------	Off	----------	Closed	----------	Emrgy	Release	Off
19:44:29	262.044	1383593	V	262.044	6	35	0	0	0	42	DB	99	Forward	On	Off	----------	Off	----------	Closed	----------	Emrgy	Release	Off
19:44:30	262.042	1383584	V	262.042	6	31	0	0	0	47	DB	99	Forward	On	Off	----------	Off	----------	Closed	----------	Emrgy	Release	Off
19:44:31	262.041	1383576	V	262.041	5	27	0	0	0	49	DB	99	Forward	On	Off	----------	Off	----------	Closed	----------	Emrgy	Release	Off
19:44:32	262.04	1383570	V	262.04	4	16	0	0	0	51	DB	99	Forward	On	Off	----------	Off	----------	Closed	----------	Emrgy	Release	Off
19:44:33	262.039	1383565	V	262.039	2	7	0	0	0	55	DB	99	Forward	On	Off	----------	Off	----------	Closed	----------	Emrgy	Release	Off
19:44:34	262.038	1383563	V	262.039	1	5	0	0	0	66	DB	99	Forward	On	Off	----------	Off	----------	Open	|||||||||	Emrgy	Release	Off
19:44:35	262.038	1383562			0	2	0	0	0	71	DB	99	Forward	On	Off	----------	Off	----------	Open	|||||||||	Emrgy	Release	Off
19:44:36	262.038	1383562			0	0	0	0	0	71	DB	99	Forward	Off	Off	----------	Off	----------	Open	|||||||||	Emrgy	Release	Off
19:44:37	262.038	1383562			0	0	0	0	0	72	DB	99	Forward	Off	Off	----------	Off	----------	Open	|||||||||	Emrgy	Release	Off

Figure 2: NS Event Recorder Data of the NS 1019 at time of emergency and the time the head end stopped.

5.0 Inward and Outward Facing Video Review

The Ops and SS Group met on July 11 to review the NS Inward and Outward Facing Video Recordings from the incident train. The video viewing was conducted remotely and coordinated by NS's William Hawkins, at NS Headquarters in Atlanta, GA.

Below is a summary of the inward facing camera.

- Prior to the Hot Box Detector alert the display showed the train traveling at 26.3 mph.
- No handheld devices, such as cell phones, were observed with either crew member.
- The crew is alert and attentive to their duties
- Engineer made a normal controlled stop
- Prior to derailment, once again the crew is attentive to their duties and conversing normally, no sound
- You visually see the Engineer lean back when he felt the tug
- Both crewmembers look backward after the emergency stop
- Conductor looks at his watch and records time
- Engineer tones up radio

G. OVERSIGHT AND CREW QUALIFICATIONS

NS safety oversight is conducted through a written operations testing program developed by each railroad as required in title 49 Codified Federal Regulations (CFR) Section 217.9, Program of Operational Testing, and Inspections. This regulation requires that railroads have a written testing program and periodically conduct operational tests and inspections of their employees. These tests and inspections determine compliance with and reinforce expectations of operating rules, timetables, and special instructions.

NS managers are required to perform efficiency testing in accordance with their written program. As part of this investigation the operational tests conducted on the crew involved in this incident were reviewed. Employee records reflect the following testing was performed on the involved crew in the preceding 12 months:

- Conductor- 39 contacts entered with 2 contacts associated with temple stick indicator and no exceptions.
- Engineer- 39 contacts entered with 1 contact associated with temple stick indicator and no exceptions.

The requirements for certification of engineers are contained in title 49 CFR part 240, Qualification and Certification of Locomotive Engineers. Within these requirements there are initial training requirements and recurring training that are needed for an engineer to stay current and qualified. As part of the investigation records were reviewed for the engineers pertaining to certification. In accordance with NS rules, the engineer was licensed, qualified and current to operate on the Whitehorne District.

The requirements for certification of conductors are contained in title 49 CFR part 242, Qualification and Certification of Conductors. Within these requirements there are initial training requirements and recurring training that is needed for a conductor to stay current and qualified. As part of the investigation records were reviewed for the conductors pertaining to certification. In accordance with NS rules, the conductor was licensed, qualified and current to operate on the Whitehorne District.

H. APPLICABLE RULES

6.0 NS Operating Rules effective April 15, 2023

6.1 141. Equipment with Defects

Conductors must if possible, remedy defects in their equipment, and must remove from the consist any cars that are unsafe to run. They must report all defective brakes, hot boxes or other defects, as well as repairs made between terminals.

They must comply with instructions for reporting materials applied to cars and disposition of defective parts.

Conductors must not move cars bearing Bad Order tags without proper authority.

Cars bearing Home Shop tags must be moved in accordance with any restrictions shown.

6.2 147. Defect Message for All Detectors (Except Stress State Detectors)

When a train is occupying a detector and a defect has been detected, an automatic radio transmission as described below will occur:

• A defect warning alarm and/or a "TONE" will indicate that a defect has been detected.

• A defect warning message stating "CRITICAL ALARM" will indicate that an excessively hot journal or dragging equipment defect has been detected. The train must be immediately stopped for inspection, consistent with safe train handling procedures anytime a "CRITICAL ALARM" is received for detection of a hot bearing (hot box) or any dragging equipment defect.

When a non-critical defect message is received, the train must immediately reduce speed to not less than 8 MPH until the rear of the train clears the detector at which point the train must be stopped for inspection.

When the rear clears the detector, or a detector times out due to lack of movement, a radio message is transmitted to indicate nature of any defects and its location in the train by axle count, starting at the first axle in the locomotive consist.

6.3 150. Hotbox Detectors

(a) When authorized by the Help Desk, after stopping, a roll by inspection may be performed on the side of the train indicated as having defects. The person making the inspection must visually monitor the train during the roll-by inspection for any defects, and must stop the train and inspect the cars identified as being defective.

(b) Inspections must be made using a temperature indicator to determine if a bearing is over heated and car cannot continue in service. Results must be provided to the Help Desk.

(c) If no apparent defects are found, 20-axles ahead and behind of the designated defect must be inspected for the noted defect.

7.0 POCAHONTAS DIVISION OPERATIONS BULLETIN No. 001

ITEM NO. 7:

Effective immediately, a Wayside Detector Help Desk has been established in Atlanta, GA. This Help Desk will be staffed continuously by supervisory personnel to monitor computer- generated analysis of trains passing "networked" wayside detectors. Approximately one fourth of all detectors are networked with plans to have all networked by the end of 2011.

Crewmembers must immediately contact the Help Desk when stopped by a Hot Box (HBD) or Hot Wheel (HWD) defect alarm. Using a hand- held axle counter, the conductor must locate and inspect the identified car in accordance with System Timetable Instruction GR 9-1. The inspection results must be provided to the Help Desk prior to departing the car location.

Additionally, the Help Desk may contact crewmembers regarding high temperature readings indicated by the computer analysis. This information may be provided even though the wayside detector did not indicate a defect alarm. Crewmembers will be governed by the instructions received from the Help Desk. The Help Desk is available to assist crews during any detector stop or malfunction and be contacted as follows: "Radio Road Channel - DTMF Code 128"

The Train Dispatcher must be notified of all delays associated with detector stops or instructions received from the Help Desk.

NOTE: These instructions apply to Hot Box and Hot Wheel defect alarms only.

8.0 System Timetable Instructions GR9-1

1.0 INSTRUCTIONS FOR DETECTORS:

When a detector announces one or more defects to a passing train, the crew must stop the train and the specified axle(s) must be exam-ined for excessive bearing heat, dragging equipment, sticking brakes, over dimension, and/or sliding wheel, as applicable.

When approaching, passing, or departing detector locations, crew members must be alert for radio transmissions from detectors (on the road frequency for that territory). When in the vicinity of the· detector locations, all employees must keep radio transmissions to an abso-lute minimum to avoid interference with detector radio messages.

When stopped by hot bearing detector and no hot bearing is found, the Conductor on the inbound train will advise the proper authority at the final terminal so the car(s) may be inspected by mechanical forces prior to the train departing.

When an inspection is made for a suspected hot bearing or dragging equipment, the crew member will take available tools and supplies for use If needed.

1.1 Temperature Indicator

Crews in road service must have a 200 Degree Temperature indicator accessible while on duty.

To determine if a bearing is overheated and car cannot continue in service, a crew member must:

- Stroke the outside surface of the top of the journal box or the lower half of the cup of the roller bearing

- Stroke the top of the inboard surface of the adapter on Amfleet cars equipped with inboard bearings

If a liquid smear results, obtain instructions from the Train Dispatcher/ Control Operator.

The temperature indicator should be used only on the reported bearing or if there is evidence of an overheated bearing.

1.2 Information

When a train is stopped for a defect, a crew member must give the following information to the Train Dispatcher/Control Operator as quickly as possible by railroad radio or authorized communication device:

(a) Car Initials and Number
(b) Type of defect
(c) Type of car
(d) Loaded or empty
(e) Type of journal for hot bearing
(f) Standard or unusual journal configuration (if cars are not hot)
(g) Axle or wheel position on car
(h) Disposition of car
(i) Name or location of detector involved

For hot wheel alarms, the Engineer, after stopping the train, will release the train air brakes after making a full service application and the employee making the inspection will determine that the brake has released, the hand brake will be released if applicable. If not released, Engineer will again make full service application and release. If still not released, the air brake may then be cut out.

2. Hot Bearing Detectors

When a train is occupying a detector and a defect has been detected, an automatic radio transmission as shown in the example below will occur:

(a) A warning alarm and/or a "TONE" will indicate that a hot bear-ing (or other defect) has been detected. The speed of the train must be reduced, and after the rear of the train has cleared the detector, train must be stopped for inspection as soon as pos-sible, consistent with safe train handling procedures. When the rear has cleared, a radio message will be transmitted to indicate nature of any defect(s) and its location in the train. The location will be given by axle count, counting from the first axle in the locomotive consist. The detector will identify track to which mes-sage is applicable in multiple track territory.

NOTE: At Dragging Equipment Detector locations that do not provide an axle location for the defect, the entire train must be inspected.

(b) When excessively hot journal or dragging equipment has been detected by a detector, a radio message stating "CRITICAL ALARM" will be transmitted at once and train must be stopped for inspection as soon as possible consistent with safe train han-dling procedures.

(c) When an inspection is required, a thorough inspection will be made of both sides of the car(s) indicated as being defective. If no apparent defects are found, 20-axles ahead and behind on either side of the designated car(s) will be thoroughly inspected on both sides.

Crews in road service must:

- have a hand-held counter accessible and available for immediate use while on-duty
- take every precaution to ensure the proper axle is inspected including the use of a hand-held counter

A copy of train consist must not be used to locate an axle indi-cated as defective. While en route to and from either end of the train to inspect a car(s), crew members will, when practicable and safe to do so, make a visual inspection of both sides of the train.

(d) After a defect message has been received, if train is stopped while occupying the detector, or if train speed over the detector drops below 8 MPH, all cars following the last car indicated as being defective must be inspected.

(e) If three (3) or more of the same type of defects are reported, those defect locations must be inspected and the balance of the train behind the last reported defect must be inspected in accor-dance with Item 5.

When no defects have been detected, the exit radio message will be:

"NS detector, milepost location, identification of track to which message is applicable (in multiple track territory)," and followed by "NO DEFECTS."

NOTE: If "NO DEFECTS" message has been received from a defect detector before passing the designated radio acknowledgement point (milepost locations designated in Timetable or the train length plus approximately 20 car lengths beyond the detector when a mile-post is not designated), Train Dispatcher/Control Operator must be contacted for further handling. The train will be handled in accordance with Item 5.

(f) All defect messages, including nature of the defect and its location in the train, must be acknowledged to the Train Dispatcher/Control Operator. A crew member must notify the Train Dispatcher/Control Operator of the results of the inspec-tion even if no exception is taken.

3. HOT WHEEL DETECTORS

For hot wheel alarms, the Engineer, after stopping the train, must release the train air brakes atter making a full service application and the person making the inspection will determine that the brake is released, the hand brake is released, and the retainer is in the proper position if applicable. If not released, Engineer will again make a full service application and release. If still not released, air brake may then be cut out.

5. CONDITIONS WHEN VISUAL INSPECTION REQUIRED

The Train Dispatcher/Control Operator may relieve a crew from inspecting their train when office information is available confirm-ing no defects, or if a detector is known to be defective, the Train Dispatcher/Control Operator may authorize a roll-by inspection, not exceeding 30 MPH, of both sides of the train by qualified persons within the designated acknowledgement point (milepost locations designated in Timetable) or a train length plus 20 car lengths beyond the detector when a milepost is not designated.

The following instructions do not apply to Key Trains. All Key Trains must stop immediately and must be given full inspection with any detector failure.

When no defects have been indicated and one of the following conditions exists, a visual inspection of the train is required if:

(a) Train stops on detector.
(b) Train speed over detector drops below 8 MPH.
(c) Train is operated over a track, which caused it to bypass a detector it normally would pass over.

Except as noted above, a train receiving no message from a detector must stop immediately and must perform a full inspection of the train.

9.0 NS Post-Accident Rule Change

On July 7, 2023, NS issued new System Special Instructions OB-21 to provide additional clarification and requirements for (1) when a detector defect alarm is received, and (2) responding to hot bearing and dragging equipment detectors.

The below System Special Instructions relate to existing NS Operating Rules 147 and 150. Special Instructions supersede existing rules and instructions and govern for compliance.

The below System Special Instructions are effective immediately as follows:

1. Defect Message For All Detectors (Except Stress State Detectors)

When notified of any detector defect alarm, immediately notify the Train Dispatcher and contact the Wayside Detector Help Desk for instruction.

If a "CRITICAL" alarm is received, the train must be immediately stopped for inspection, consistent with safe train handling procedures.

If a non-critical defect message is received, the train must immediately reduce speed to not less than 8 MPH until the rear of the train clears the detector at which point the train must be stopped for inspection.

2. Hot Bearing (HBD) and Dragging Equipment (DED) Detectors

(a) Inspections for bearing defects must be made using a 169-degree temperature indicator and/or approved temperature inspection device. Each device must be operated in accordance with the specific respective operating instructions to properly assess bearing temperature to determine if a bearing is over heated and the car cannot continue in service. If the temperature indicator confirms an overheated condition, the Wayside Detector Help Desk must be informed and consulted for movement instructions to set the car(s) out at the next available location. Any authorized movement must not exceed 10 mph and the defective car(s) must be re-inspected at least every 3 miles until set out.

(b) A visual inspection of the bearing, associated wheel and brakes must be performed whenever responding to a defect alarm. When visual inspection of the bearing defect(s) reveals exceptions (e.g. leaking grease, visible damage, heat discoloration, missing or damaged end cap, misaligned or distorted components, etc.), the Wayside Detector Help Desk must be notified and ATC-Mechanical Department personnel must perform a visual inspection before moving the car(s).

(c) If visual inspection reveals a brake-related issue, the Wayside Detector Help Desk may(s) once the brake-related issue is resolved and no other visual exceptions are noted to the bearing or any other components.

(d) When physical conditions do not allow walking access to perform visual inspection(s), the Wayside Detector Help Desk may authorize the train, after stopping, to be advanced at a speed not to exceed 10 MPH, to make the designated defective axle(s) safely accessible for an on-ground visual inspection and temperature determination.

(e) If no apparent bearing or dragging equipment defects are found where indicated by the detector, 20 axles ahead and behind of the designated axle(s) on both sides must be inspected for the noted defect.

(f) If there are no defects noted from inspection, the Wayside Detector Help Desk may permit continued movement with any required speed restrictions.

(g) The inspection results and corrective actions must be provided to the Wayside Detector Desk prior to the crewmember departing the car location.

I. SUBMITTED BY AND CHIEF REVIEW

Submitted by:

Michael Bachmeier
Investigator-In-Charge

/s/ September 25, 2023

Approved by:

Robert Gordon
Branch Chief / RPH-120

/s/ September 25, 2023

J. PARTIES TO THE INVESTIGATION – ACKNOWLEDGEMENT SIGNATURES

The undersigned designated *Party to the Investigation* representatives attest that the information contained in this factual report for NTSB's accident investigation HWY23MH006 of the Brightline Grade Crossing fatality in Delray Beach, Florida is a factually accurate representation of the information collected during the investigation, to the extent of their best knowledge and contribution in this investigation.

Robert Lewis, NS	Date /s/ 12-29-2023
Scott Bunten, BLET	Date /s/ 12-29-2023
Ron Sabol, SMART-TD	Date /s/ 12-29-2023
John Ranschaert, FRA	Date /s/ 12-29-2023