

National Transportation Safety Board

Office of Railroad, Pipeline and Hazardous Materials

Washington, DC 20594



RRD24FR009

MECHANICAL

Group Chair's Factual Report

June 10, 2024

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A ACCIDENT

Location: Easton, Pennsylvania
Date: March 2, 2024
Time: 7:11 a.m.¹
Train 1: NS train 268H429
Train 2: NS train 24XH101
Train 3: NS train 19GH501

B MECHANICAL GROUP

Group Chair Matthew Thompson
National Transportation Safety Board (NTSB)
Federal Way, Washington

Group Member Jacob Bilthuis
Norfolk Southern Railway (NS)
Altoona, Pennsylvania

Group Member Kenneth Pugh
Federal Railroad Administration (FRA)
Harrisburg, Pennsylvania

C ACCIDENT SUMMARY

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

¹ All times in this report are local time.



Figure 1 - Lead locomotive NS 8157 from NS Train 19GH501.

D DETAILS OF THE INVESTIGATION

1.0 Consist Information

1.1 Train 1:

NS Train 268H429 consisted of two locomotives, 39 intermodal cars. The train was 5847 tons, with a length of 7364 feet.

- NS 9906 - D9-44CW locomotive (Lead)
- NS 3625 - ET44AC locomotive (Trail)
- DTTX 890980 - Intermodal car.
- DTTX 750876 - Intermodal car.
- DTTX 787516 - Intermodal car (3 pack) - derailed.
- DTTX 467270 - Intermodal car (single well) - derailed.
- DTTX 888792 - Intermodal car (3 pack) - derailed.
- Lines 8 through 41 - Intermodal cars.²

² All lines include locomotives.

The lead locomotive NS 9906 was built in 2004, is 73'2" feet in length, 15'11" tall, weighing 410,000 pounds with a GE³ 7FDL 4400 horsepower engine. The trailing locomotive NS 3625 was built in 2016, is 73'2" feet in length, 15'11" tall, weighing 432,000 pounds and has a GE Evolution 4400 horsepower engine.

1.2 Train 2:

NS Train 24XH101 consisted of three locomotives, 27 intermodal cars. The train was 3079 tons, with a length of 4386 feet.

- NS 4713 - AC44C6M locomotive (Lead)
- NS 7558 - ES44DC locomotive (Trail)
- NS 4710 - AC44C6M locomotive (Trail)
- Lines 4 through 29 - Intermodal cars
- DTTX 788614 - Intermodal car (3 Pack) - Damaged from impact, not derailed.

The lead locomotive NS 4713 was remanufactured in 2018, is 73'2" feet in length, 16'1" tall, weighing 432,000 pounds a GE 7FDL 4400 horsepower engine. The trailing locomotive NS 7558 was built in 2006, is 73'2" feet in length, 15'10" tall, weighing 410,000 pounds and has a GE Evolution 4400 horsepower engine. Third in consist was NS 4710 was remanufactured in 2023, is 73'2" feet in length, 16'1" tall, weighing 432,000 pounds and has a GE 7FDL 4400 horsepower engine.

1.3 Train 3:

NS Train 19GH501 consisted of three locomotives, two on the head end, one mid train DPU⁴, and 199 mixed manifest cars. The train was 15137 tons, with a length of 13162 feet.

- NS 8157 - ES44AC locomotive (Lead) - derailed.
- NS 9891 - D9-44CW locomotive (Trail) - derailed.
- GPLX 77419 - Covered hopper - derailed.
- GATX 223675 - Tank car - derailed.
- UTLX 958593 - Tank car - derailed.
- CBTX 785732 - Tank car - derailed.
- CR 609191 - Gondola car - derailed.

³ GE - General Electric

⁴ DPU - Distributed Power Unit, a locomotive set capable of remote-control operation in conjunction with locomotive units at the train's head end. DPUs are placed in the middle or at the rear of heavy trains (such as coal, grain, soda ash and even manifest) to help climb steep grades.

- NS 202288 - Gondola car - derailed.
- Lines 9 through 105 mixed manifest cars
- NS 4467 - AC44C6M (DPU locomotive line 106)
- Lines 107 through 199 mixed manifest railcars.

The lead locomotive NS 8157 was built in 2013, is 73'2" feet in length, 15'11" tall, weighing 432,000 pounds with a GE Evolution 4400 horsepower engine. The trailing locomotive NS 9891 was built in 2004, is 73'2" feet in length, 15'11" tall, weighing 410,000 pounds with a 7FDL 4400 horsepower engine. The mid train DPU NS 4467 was remanufactured in 2021, is 73'2" feet in length, 16'1" tall, weighing 432,000 pounds with a GE 7FDL 4400 horsepower engine.

E PRE-DEPARTURE INSPECTIONS

1.0 Train 1:

The NS maintenance personnel provided pre-departure inspection records for train 268H429. NS records exhibited that the railroad conducted pre-departure and initial terminal brake test inspections pursuant to 49 Code of Federal Regulations (CFR) Part 215 Railroad Freight Car Safety Standards and (CFR) Part 232 Brake System Safety Standards for Freight. The locomotives had a daily inspection pursuant to 49 Code of Federal Regulations (CFR) Part 229 Locomotive Safety Standards at 10:58 p.m. in Harrisburg, Pennsylvania on March 2, 2024. The train inspection records indicated that all pre-departure inspections were completed on February 29, 2024, at 12:20 p.m. at Landers, Illinois.

2.0 Train 2:

The NS maintenance personnel provided pre-departure inspection records for train 24XH101. NS records exhibited that the railroad conducted pre-departure and initial terminal brake test inspections pursuant to 49 Code of Federal Regulations (CFR) Part 215 Railroad Freight Car Safety Standards and (CFR) Part 232 Brake System Safety Standards for Freight. The locomotives had a daily inspection pursuant to 49 Code of Federal Regulations (CFR) Part 229 Locomotive Safety Standards at 02:55 a.m. in Atlanta, Georgia on March 1, 2024. The train inspection records indicated that all pre-departure inspections were completed on March 1, 2023, at 4:36 a.m. at Atlanta, Georgia.

3.0 Train 3:

The NS maintenance personnel provided pre-departure inspection records for train 19GH501. NS records exhibited that the railroad conducted pre-departure and initial terminal brake test inspections pursuant to 49 Code of Federal Regulations (CFR) Part 215 Railroad Freight Car Safety Standards and (CFR) Part 232 Brake System Safety Standards for Freight. The locomotives had a daily inspection pursuant to 49 Code of Federal Regulations (CFR) Part 229 Locomotive Safety Standards at 8:30 p.m. in Croxton, New Jersey on March 1, 2024. The train inspection records indicated that all pre-departure inspections were completed on March 1, 2024, at 1:50 p.m. at Croxton, New Jersey.

F EQUIPMENT POST ACCIDENT INSPECTIONS

On March 3, 2024, NTSB's mechanical investigator arrived on scene in Easton, Pennsylvania, and inspected the equipment at the accident site and River Yard in Bethlehem, Pennsylvania. The mechanical investigator inspected locomotives and railcars, derailed cars and locomotives from NS train 19GH501, derailed intermodal cars from NS train 268H429 and NS train 24XH101.

On March 4, 2024, the NTSB mechanical investigator observed NS mechanical employees conduct a successful air test of the NS train 268H429 lead locomotives, NS 9906 and NS 3625 and testing of the break in two feature⁵ on air brake system. NS mechanical employees were unable to air test NS train 19GH501 locomotives due to extensive damage. The NTSB investigator reviewed mechanical inspection and test records. Class 1 air brake test, pre-departure inspection, locomotive periodic inspection and history, locomotive daily inspection record, and successful air brake test notification records were reviewed. All required inspections and tests were completed with no unusual findings.

⁵ The break in two feature on the locomotive air brake system delays the dropping of engine load when an emergency brake is initiated. The delay varies between 10 and 20 seconds depending on the locomotive.



Figure 2 - Drone image of derailment site (provided by NS).

G MECHANICAL DAMAGE ESTIMATES

Initial	No.	Position In Train	Empty/Load	Train	Damage Estimate
DTTX	787516	5	L	268H429	\$ 135,418.00
DTTX	467270	6	L	268H429	\$ 70,515.00
DTTX	888792	7	L	268H429	\$ 54,341.00
DTTX	788614	30	L	24XH101	\$ 35,000.00
NS	8157	1	-	196H501	\$ 943,048.00
NS	9891	2	-	19GH501	\$ 535,195.00
GPLX	77419	3	L	19GH501	\$ 69,932.00
GATX	223675	4	E	19GH501	\$ 65,958.00
UTLX	958593	5	E	19GH501	\$ 85,506.00
CBTX	785732	6	E	19GH501	\$ 156,694.00
CR	609191	7	L	19GH501	\$ 897.00
NS	202288	8	L	19GH501	\$ 150.00
					\$ 2,152,654.00

Submitted by:

Matthew Thompson
Railroad Accident Investigator