



***Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2008-61***

***Norfolk Southern (NS)
Salem, OH
July 3, 2008***

Note that 49 U.S.C. §20903 provides that no part of an accident or incident report made by the Secretary of Transportation/Federal Railroad Administration under 49 U.S.C. §20902 may be used in a civil action for damages resulting from a matter mentioned in the report.

| | | | | | | |
|---|--|---|--|---|--|--|
| 1. Name of Railroad Operating Train #1 Norfolk Southern Corp. [NS] | | 1a. Alphabetic Code NS | | 1b. Railroad Accident/Incident No. 33421 | | |
| 2. Name of Railroad Operating Train #2 Norfolk Southern Corp. [NS] | | 2a. Alphabetic Code NS | | 2b. Railroad Accident/Incident No. 33421 | | |
| 3. Name of Railroad Operating Train #3 N/A | | 3a. Alphabetic Code N/A | | 3b. Railroad Accident/Incident No. N/A | | |
| 4. Name of Railroad Responsible for Track Maintenance: Norfolk Southern Corp. [NS] | | 4a. Alphabetic Code NS | | 4b. Railroad Accident/Incident No. 33421 | | |
| 5. U.S. DOT_AAR Grade Crossing Identification Number | | 6. Date of Accident/Incident Month 07 Day 02 Year 2008 | | 7. Time of Accident/Incident 09:15:00 <input type="checkbox"/> AM <input checked="" type="checkbox"/> PM | | |
| 8. Type of Accident/Incident (single entry in code box) | | | | | | |
| 1. Derailment | | 4. Side collision | | 7. Hwy-rail crossing | | |
| 2. Head on collision | | 5. Raking collision | | 10. Explosion-detonation | | |
| 3. Rear end collision | | 6. Broken Train collision | | 11. Fire/violent rupture | | |
| | | 9. Obstruction | | 12. Other impacts | | |
| | | | | 13. Other (describe in narrative) Code 03 | | |
| 9. Cars Carrying HAZMAT 9 | | 10. HAZMAT Cars Damaged/Derailed N/A | | 11. Cars Releasing HAZMAT N/A | | |
| | | | | 12. People Evacuated 0 | | |
| | | | | 13. Division Pittsburgh | | |
| 14. Nearest City/Town Salem | | 15. Milepost (to nearest tenth) 69.6 | | 16. State Abbr Code N/A OH | | |
| | | | | 17. County COLUMBIANA | | |
| 18. Temperature (F) (specify if minus) 74 F | | 19. Visibility (single entry) Code 1. Dawn 3. Dusk 2. Day 4. Dark 4 | | 20. Weather (single entry) Code 1. Clear 3. Rain 5. Sleet 2. Cloudy 4. Fog 6. Snow 1 | | |
| | | | | 21. Type of Track Code 1. Main 3. Siding 2. Yard 4. Industry 1 | | |
| 22. Track Name/Number #2 Main Track | | 23. FRA Track Code Class (1-9, X) 4 | | 24. Annual Track Density (gross tons in millions) 105 | | |
| | | | | 25. Time Table Direction Code 1. North 3. East 2. South 4. West 4 | | |
| OPERATING TRAIN #1 | | | | | | |
| 26. Type of Equipment Consist (single entry) | | 1. Freight train | | 4. Work train | | |
| 2. Passenger train | | 5. Single car | | 7. Yard/switching | | |
| 3. Commuter train | | 6. Cut of cars | | A. Spec. MoW Equip. Code | | |
| | | 9. Maint./inspect.car | | 27. Was Equipment Attended? Code 1. Yes 2. No 1 | | |
| | | | | 28. Train Number/Symbol 35NC302 | | |
| 29. Speed (recorded speed, if available) Code R - Recorded E - Estimated 8 MPH R | | 31. Method(s) of Operation (enter code(s) that apply) a. ATCS g. Automatic block m. Special instructions b. Auto train control h. Current of traffic n. Other than main track c. Auto train stop i. Time table/train orders o. Positive train control d. Cab j. Track warrant control p. Other (Specify in narrative) Code(s) e. Traffic k. Direct traffic control f. Interlocking l. Yard limits | | | 31a. Remotely Controlled Locomotive? 0 = Not a remotely controlled 1 = Remote control portable 2 = Remote control tower 3 = Remote control transmitter - more than one remote control transmitter 0 | |
| 30. Trailing Tons (gross tonnage, excluding power units) 9166 | | | | | | |
| 32. Principal Car/Unit | | a. Initial and Number NS 9430 | | b. Position in Train 1 | | |
| (1) First involved (derailed, struck, etc) | | | | c. Loaded (yes/no) N/A | | |
| (2) Causing (if mechanical cause reported) | | 0 | | 0 N/A | | |
| | | | | 33. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box. Alcohol 0 Drugs 0 | | |
| | | | | 34. Was this consist transporting passengers? (Y/N) N | | |
| 35. Locomotive Units | | a. Head End | | Mid Train | | |
| | | b. Manual | | c. Remote | | |
| | | d. Manual | | c. Remote | | |
| (1) Total in Train | | 3 | | 0 0 0 0 | | |
| (2) Total Derailed | | 0 | | 0 0 0 0 | | |
| | | | | 36. Cars | | |
| | | | | a. Freight b. Pass. c. Freight d. Pass. e. Caboose | | |
| | | | | (1) Total in Equipment Consist 61 0 46 0 0 | | |
| | | | | (2) Total Derailed 0 0 0 0 0 | | |
| 37. Equipment Damage This Consist \$1,736.00 | | 38. Track, Signal, Way, & Structure Damage \$0.00 | | 39. Primary Cause Code H222 | | |
| | | | | 40. Contributing Cause Code H605 | | |
| Number of Crew Members | | | | Length of Time on Duty | | |
| 41. Engineer/Operators 1 | | 42. Firemen 0 | | 43. Conductors 1 | | |
| | | | | 44. Brakemen 0 | | |
| | | | | 45. Engineer/Operator Hrs 5 Mi 35 | | |
| | | | | 46. Conductor Hrs 5 Mi 35 | | |
| Casualties to: | | 47. Railroad Employees | | 48. Train Passengers | | |
| Fatal | | 0 | | 0 | | |
| Nonfatal | | 0 | | 0 | | |
| | | | | 49. Other 0 | | |
| | | | | 50. EOT Device? 1. Yes 2. No 1 | | |
| | | | | 51. Was EOT Device Properly Armed? 1. Yes 2. No 1 | | |
| | | | | 52. Caboose Occupied by Crew? 1. Yes 2. No N/A | | |
| OPERATING TRAIN #2 | | | | | | |
| 53. Type of Equipment Consist (single entry) | | 1. Freight train | | 4. Work train | | |
| 2. Passenger train | | 5. Single car | | 7. Yard/switching | | |
| 3. Commuter train | | 6. Cut of cars | | A. Spec. MoW Equip. Code | | |
| | | 9. Maint./inspect.car | | 54. Was Equipment Attended? Code 1. Yes 2. No 1 | | |
| | | | | 55. Train Number/Symbol 13NC301 | | |
| 56. Speed (recorded speed, if available) Code R - Recorded E - Estimated 0 MPH R | | 58. Method(s) of Operation (enter code(s) that apply) a. ATCS g. Automatic block m. Special instructions b. Auto train control h. Current of traffic n. Other than main track | | | 58a. Remotely Controlled Locomotive? 0 = Not a remotely controlled 1 = Remote control portable | |

| | | | | |
|--|---|---|--|--|
| 57. Trailing Tons (gross tonnage, excluding power units) 3636 | c. Auto train stop d. Cab e. Traffic f. Interlocking | i. Time table/train orders j. Track warrant control k. Direct traffic control l. Yard limits | o. Positive train control p. Other (Specify in narrative) Code(s) d N/A N/A N/A N/A | 2 = Remote control tower 3 = Remote control transmitter - more than one remote control transmitter 0 |
|--|---|---|--|--|

| | | | | |
|--|-----------------------------|----------------------------|-------------------------|--|
| 59. Principal Car/Unit (1) First involved (derailed, struck, etc) TTGX978130 | a. Initial and Number 67 | b. Position in Train 67 | c. Loaded(yes/no) no | 60. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box. Alcohol N/A Drugs N/A |
| (2) Causing (if mechanical cause reported) 0 | 0 | 0 | N/A | 61. Was this consist transporting passengers? (Y/N) N/A |

| | | | | | | | |
|----------------------|-------------|----------------------------------|---------------------------------|--------------------------------|-------------------------------|------------------------------|------------|
| 62. Locomotive Units | a. Head End | Mid Train b. Manual c. Remote | Rear End d. Manual c. Remote | 63. Cars | Loaded a. Freight b. Pass. | Empty c. Freight d. Pass. | e. Caboose |
| (1) Total in Train | 2 | 0 0 | 0 0 | (1) Total in Equipment Consist | 0 0 | 67 0 | 0 0 |
| (2) Total Derailed | 0 | 0 0 | 0 0 | (2) Total Derailed | 0 0 | 8 0 | 0 0 |

| | | | |
|--|---|-----------------------------|----------------------------------|
| 64. Equipment Damage This Consist \$9,513.00 | 65. Track, Signal, Way, & Structure Damage \$1,000.00 | 66. Primary Cause Code H222 | 67. Contributing Cause Code H605 |
| Number of Crew Members | | Length of Time on Duty | |

| | | | | | |
|--------------------------|------------------------|----------------------|----------------|--|---|
| 68. Engineer/Operators 1 | 69. Firemen 0 | 70. Conductors 1 | 71. Brakemen 0 | 72. Engineer/Operator Hrs 3 Mi 55 | 73. Conductor Hrs 3 Mi 55 |
| Casualties to: | 74. Railroad Employees | 75. Train Passengers | 76. Other | 77. EOT Device? 1. Yes 2. No 1 | 78. Was EOT Device Properly Armed? 1. Yes 2. No 1 |
| Fatal | 0 | 0 | 0 | 79. Caboose Occupied by Crew? 1. Yes 2. No | N/A |
| Nonfatal | 1 | 0 | 0 | | |

OPERATING TRAIN #3

| | | | | | | |
|--|--------------------|----------------|-----------------------|------------------------------|--|-----------------------------|
| 80. Type of Equipment Consist (single entry) | 1. Freight train | 4. Work train | 7. Yard/switching | A. Spec. MoW Equip. Code N/A | 81. Was Equipment Attended? 1. Yes 2. No N/A | 82. Train Number/Symbol N/A |
| | 2. Passenger train | 5. Single car | 8. Light loco(s) | | | |
| | 3. Commuter train | 6. Cut of cars | 9. Maint./inspect.car | | | |

| | | | | |
|--|--|--|---|---|
| 83. Speed (recorded speed, if available) Code R - Recorded E - Estimated N/A MPH 0 | 85. Method(s) of Operation (enter code(s) that apply) a. ATCS b. Auto train control c. Auto train stop d. Cab e. Traffic f. Interlocking | g. Automatic block h. Current of traffic i. Time table/train orders j. Track warrant control k. Direct traffic control l. Yard limits | m. Special instructions n. Other than main track o. Positive train control p. Other (Specify in narrative) Code(s) N/A N/A N/A N/A N/A | 85a. Remotely Controlled Locomotive? 0 = Not a remotely controlled 1 = Remote control portable 2 = Remote control tower 3 = Remote control transmitter - more than one remote control transmitter N/A |
| 84. Trailing Tons (gross tonnage, excluding power units) N/A | | | | |

| | | | | |
|---|----------------------------|---------------------------|--------------------------|--|
| 86. Principal Car/Unit (1) First involved (derailed, struck, etc) 0 | a. Initial and Number 0 | b. Position in Train 0 | c. Loaded(yes/no) N/A | 87. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box. Alcohol N/A Drugs N/A |
| (2) Causing (if mechanical cause reported) 0 | 0 | 0 | N/A | 88. Was this consist transporting passengers? (Y/N) N/A |

| | | | | | | | |
|----------------------|-------------|----------------------------------|---------------------------------|--------------------------------|-------------------------------|------------------------------|------------|
| 89. Locomotive Units | a. Head End | Mid Train b. Manual c. Remote | Rear End d. Manual c. Remote | 90. Cars | Loaded a. Freight b. Pass. | Empty c. Freight d. Pass. | e. Caboose |
| (1) Total in Train | 0 | 0 0 | 0 0 | (1) Total in Equipment Consist | 0 0 | 0 0 | 0 0 |
| (2) Total Derailed | 0 | 0 0 | 0 0 | (2) Total Derailed | 0 0 | 0 0 | 0 0 |

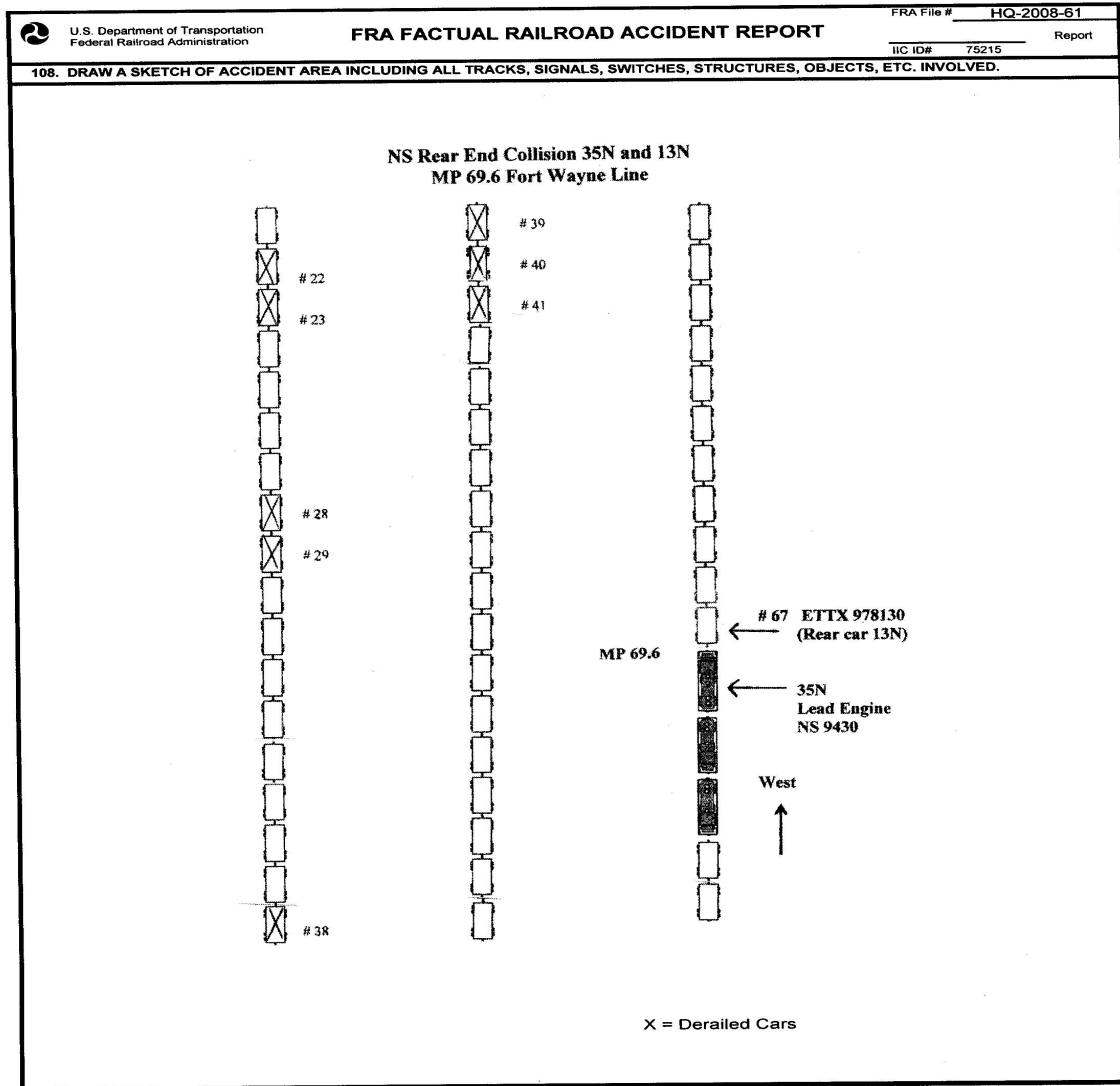
| | | | |
|--|---|----------------------------|---------------------------------|
| 91. Equipment Damage This Consist \$0.00 | 92. Track, Signal, Way, & Structure Damage \$0.00 | 93. Primary Cause Code N/A | 94. Contributing Cause Code N/A |
| Number of Crew Members | | Length of Time on Duty | |

| | | | | | |
|--------------------------|-------------------------|------------------|----------------|---|---|
| 95. Engineer/Operators 0 | 96. Firemen 0 | 97. Conductors 0 | 98. Brakemen 0 | 99. Engineer/Operator Hrs 0 Mi 0 | 100. Conductor Hrs 0 Mi 0 |
| Casualties to: | 101. Railroad Employees | 102. Train | 103. Other | 104. EOT 1. Yes 2. No N/A | 105. Was EOT Device Properly 1. Yes 2. No N/A |
| Fatal | 0 | 0 | 0 | 106. Caboose Occupied by Crew? 1. Yes 2. No | N/A |
| Nonfatal | 0 | 0 | 0 | | |

| | | | | | | | |
|---|---|--|--|---|--|--|--|
| Highway User Involved | | | | Rail Equipment Involved | | | |
| 107. C. Truck-Trailer F. Bus J. Other Motor Vehicle Code A. Auto D. Pick-Up Truck G. School Bus K. Pedestrian B. Truck E. Van H. Motorcycle M. Other (spec. in narrative) N/A | | | | 111. Equipment 3. Train (standing) 6. Light Loco(s) (moving) Code 1. Train(units pulling) 4. Car(s) (moving) 7. Light(s) (standing) 2. Train(units pushing) 5. Car(s) (standing) 8. Other (specify in narrative) N/A | | | |
| 108. Vehicle Speed (est. MPH at impact) N/A | 109. geographical Code 1. North 2. South 3. East 4. West N/A | | | 112. Position of Car Unit in N/A | | | |

| | | | | | | | | | | | | | |
|--|--|--|--------|-------------|---|-----|-----|-----|-------------|---|--|-------------|-------------|
| 110. Position 1. Stalled on Crossing 2. Stopped on Crossing 3. Moving Over Crossing 4. Trapped | | | | Code N/A | 113. Circumstance 1. Rail Equipment Struck Highway User 2. Rail Equipment Struck by Highway User | | | | Code N/A | | | | |
| 114a. Was the highway user and/or rail equipment involved in the impact transporting hazardous materials? 1. Highway User 2. Rail Equipment 3. Both 4. Neither | | | | Code N/A | 114b. Was there a hazardous materials release 1. Highway User 2. Rail Equipment 3. Both 4. Neither | | | | Code N/A | | | | |
| 114c. State here the name and quantity of the hazardous materials released, if any. N/A | | | | | | | | | | | | | |
| 115. Type Crossing 1. Gates 2. Cantilever FLS 3. Standard FLS Warning 4. Wig Wags 5. Hwy. traffic signals 6. Audible | | | | Code N/A | 116. Signaled Crossing (See instructions for codes) | | | | Code N/A | 117. Whistle Ban 1. Yes 2. No 3. Unknown | | Code N/A | |
| Code(s) | | | | N/A | N/A | N/A | N/A | N/A | N/A | | | | |
| 118. Location of Warning 1. Both Sides 2. Side of Vehicle Approach 3. Opposite Side of Vehicle Approach | | | | Code N/A | 119. Crossing Warning with Highway Signals 1. Yes 2. No 3. Unknown | | | | Code N/A | 120. Crossing Illuminated by Street Lights or Special Lights 1. Yes 2. No 3. Unknown | | | Code N/A |
| 121. Age N/A | | 122. Driver's Gender 1. Male 2. Female | | Code N/A | 123. Driver Drove Behind or in Front of and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown | | | | Code N/A | 124. Driver 1. Drove around or thru the Gate 2. Stopped and then Proceeded 3. Did not Stop | | | Code N/A |
| 125. Driver Passed Highway Vehicle 1. Yes 2. No 3. Unknown | | | | Code N/A | 126. View of Track Obscured by (primary obstruction) 1. Permanent Structure 2. Standing Railroad Equipment 3. Passing Train 4. Topography 5. Vegetation 6. Highway Vehicle 7. Other (specify in narrative) 8. Not obstructed | | | | Code N/A | | | | |
| Casualties to: | | | Killed | Injured | 127. Driver 1. Killed 2. Injured 3. Uninjured | | | | Code N/A | 128. Was Driver in the Vehicle? 1. Yes 2. No | | | Code N/A |
| 129. Highway-Rail Crossing Users | | | N/A | N/A | 130. Highway Vehicle Property Damage (est. dollar damage) | | | | N/A | 131. Total Number of Highway-Rail Crossing Users (include driver) | | | N/A |
| 132. Locomotive Auxiliary Lights? 1. Yes 2. No | | | | Code N/A | 133. Locomotive Auxiliary Lights Operational? 1. Yes 2. No | | | | Code N/A | | | | |
| 134. Locomotive Headlight Illuminated? 1. Yes 2. No | | | | Code N/A | 135. Locomotive Audible Warning Sounded? 1. Yes 2. No | | | | Code N/A | | | | |

136. DRAW A SKETCH OF ACCIDENT AREA INCLUDING ALL TRACKS, SIGNALS, SWITCHES, STRUCTURES, OBJECTS, ETC., INVOLVED.



137. SYNOPSIS OF THE ACCIDENT

Westward Norfolk Southern (NS) freight train 35NC3-02 struck the rear of a stopped NS train 13N3-01 derailing 8 empty cars of the stopped train. The derailment occurred at 9:15 p.m. July 2, 2008 at Salem, Ohio on # 2 Main Track at Mile Post (MP) PC 69.6 on the Fort Wayne Line of the NS Pittsburgh Division.

No injuries were reported at the time of the collision but subsequently the engineer of the stopped train complained of soreness to the lower back and missed work. The adjacent main track was not blocked but a westward Amtrak Train (designated 03TC302) was delayed about one hour. Six NS trains were also delayed due to the re-railing of equipment. The last car was re-railed at 7:30 a.m. the following morning.

Equipment damage was \$11,249 with track damage set at \$1,000. No signal damage occurred.

At the time of the accident it was dark with weather conditions listed as clear. The temperature was 74 degrees F with wind variable from the south/southwest at 8 MPH.

The accident was caused by the crew's failure to comply with a restricted speed cab signal indication. Both trains were operating in a westward direction according to the timetable, which was also the geographical direction.

The crew members of the moving train were tested under CFR 219 Appendix D; (Cause Testing)- the results were negative.

138. NARRATIVE

CIRCUMSTANCES PRIOR TO THE ACCIDENT

NS Train 13N3-01 (Stopped)

The crew of NS freight train 13NC302 (13N) included a locomotive engineer and conductor. The crew went on duty at their away-from-home terminal in Conway at 5:20 p.m. The employees had received more than the required statutory off duty rest period prior to reporting for work.

NS Train 13N consisted of two locomotives (NS 9506 and NS 9791) with 67 empty multi-level rail cars. The train was 6,579 feet in length with 3,636 trailing tons. End-of-train Device (EOTD) # 70905 was attached to the last car and armed. The train was given a class 1 brake test at Wilmington, DE and was being relayed west. Carrier records (AEI Scan) indicate Train 13N departed Conway at 7:04 p.m.

As Train 13N traveled westward they reported a trespasser on and around the tracks to the NS dispatcher. As the train approached the trespasser, the engineer made the decision to place the 13N into emergency to avoid hitting the trespasser who was standing in the middle of the tracks waving the train forward. This person reportedly jumped from the track at the last minute; the engines and several cars continued west before coming to a complete stop. The engineer of NS Train 13N was having problems getting his train air (PC valve) to reset following the emergency application. He had talked with NS mechanical personnel, via personal cell phone, for assistance. The conductor's brake valve was found to be in the open position. The valve was closed and the air began to restore.

NS Train 35NC3-02

The crew of NS freight train 35NC3-02 (35N) included a locomotive engineer and conductor. The crew went on duty 3:40 p.m. at their home terminal of Conway. The employees had received more than the required statutory off duty rest period prior to reporting for work. The engineer had 13 years of experience and worked the past ten years as a locomotive engineer. The conductor had three and one half years of service.

NS Train 35N consisted of three locomotives (NS 9430, NS 9078 and NS 2732) with 61 loaded and 46 empty rail cars that included one loaded and eight residue hazardous material cars. The train was 6,338 feet in length with 9,166 trailing tons. End-of-Train device # 77380 was attached to the last car and armed. A class one air brake test was performed by mechanical personnel prior to the train departing.

NS Train 35N crew reviewed operating bulletins and paperwork in the crew room at the Conway Terminal. The crew received Train Bulletins 4346, 0858, 3196, and 4490.

Employees were instructed to use three locomotives that were located on # 5 House Track. Daily locomotive and cab signal inspections had been performed by engine house employees. NS Train 35N crew doubled the head end 31 cars of their train from the west end of Track # 209 to 76 cars in Track # 208. A utility employee assisted with the double. One shop car had been previously removed from the cars on Track # 208. The conductor said they first coupled to their train at 4:25 p.m. and departed Conway with 107 cars on # 1 Main Track. Carrier records (AEI scan) show the train departing at 7:17 p.m. The west end of Conway Yard is at Mile Post (MP) 24.5. The crew had been delayed because of traffic and bridge work on the Beaver River Bridge.

NS Train 35N crew members knew Train 13N was ahead; the crew said they were taking signals from 13N as cab signals dropped to approach several times with signals returning to a clear indication afterward. NS Train 35N crossed from Track # 1 to # 2 Main Track at Control Point (CP) ENON at MP 45.3...

NS Train 35N crew overheard a radio conversation between the train dispatcher and the NS Train 13N they were following. The train dispatcher said there was a person on the tracks ahead and the crew should be on the look-out for the individual. The dispatcher also contacted the crew of NS Train 35N, via radio, while they were between MP 58 and MP 60 to make sure they were aware of the trespasser. NS Train 35N conductor was contacted by Central Yard Operations (CYO), via radio, as the train started up-hill toward Salem. As the train approached the top of the grade, CYO contacted NS Train 35N a second time after determining that NS Train 35N had an extra car in their train that was not included on their original documents from Conway yard. Radio communications were poor. The conductor was given the initial and number of the car and told it was located 74 cars from the head-end of his train. He believes the radio communication with CYO took place while NS Train 35N was located between MP 67 and MP 68. The train had been operating on an approach cab signal indication. The conductor said his engineer called a restricting cab signal; the speed was approximately 22 miles per hour. The engineer was sitting on the right front engineer's seat behind the operating console and the conductor was sitting on the conductor's seat on the left side of the lead locomotive cab.

The approaching accident area has a slight westward ascending grade beginning at MP 64, and increasing to a heavier .70 per cent grade between MP 65 and MP 66 further increasing to a maximum .89% grade from MP 66 to MP 68. Grade reduces back to .64 % at MP 68 with the westward up-hill grade continuing to decrease as trains reach the top of the hill at MP 69.

THE ACCIDENT

As NS Train 35N rounded a right hand curve, they saw the rear car of NS Train 13N and placed their train into emergency. The crew estimated the rear of NS Train 13N was eight to ten cars away when they initiated and emergency application. The engineer of NS Train 35N estimated the impact speed at 14 MPH. The collision took place at MP 69.6 at 9:15 p.m.

At the time of the occurrence, NS Train 13N conductor was out inspecting his train in accordance with his operating rules. NS Train 13N engineer reported that the impact from the collision shoved his train forward 25 to 50 feet. Cab and wayside signals were working properly.

Eight empty multi-level cars derailed on NS Train 13N. The rail canted and rolled at several locations under the train. The derailed wheels were lying on the web of the rail. The derailed cars were in the following positions: 22, 23, 28, 29, 38, 39, 40, and 41. The last car of the sixty-seven car train was damaged but did not derail. Car damage to NS Train 13N, including the rear EOTD, was \$9,513. No locomotives or cars of NS Train 35N were derailed; however, damages to lead locomotive NS 9430 was set at \$1,736. The south

(left) rail over-turned for about two car lengths at four separate locations under NS Train 13N. The total length of the canted/rolled rail was approximately 400 feet. NS set total material and labor cost at \$ 1,000.

The Salem, Ohio Police Department was the only emergency responder. The police had responded to a report of a trespasser on the tracks. Police arrested the individual.

ANALYSIS AND CONCLUSIONS

ANALYSIS - TRACK GRADE & CURVATURE:

The Fort Wayne Line has a slight westward ascending grade beginning at MP 64, increasing to a heavier .70 per cent grade between MP 65 and MP 66 further increasing to a maximum .89% grade from MP 66 to MP 68. Grade reduces back to .64 % at MP 68 with the westward up-hill grade continuing to decrease as trains reach the top of the hill at MP 69. The collision occurred on a tangent section of track just east of Ellsworth Road as the lead (35N) locomotive was exiting a 2 degree right hand curve between MP 69.2 and MP 69.5. The track is FRA Class 4. The timetable lists track speed as 60 MPH for passenger and freight trains. NS track inspection records show no defects were reported for the two weeks preceding the accident.

CONCLUSION:

Track condition, grade, and curvature were not factors in the cause of the collision.

ANALYSIS – SIGNAL SYSTEM:

Authority for main track movement is via NORAC Rule 261 (Track signaled in both directions) and Locomotive Cab Signal System Rules. (550 through 563)

The method of operation on the Fort Wayne Line is by Traffic Control System (TCS) and Cab Signal System (CSS) Rules. The control points are controlled by the Cleveland Line Train Dispatcher located in the NS Dispatch Center in Greentree, PA. The control points are wayside signals with all train movements between the control points controlled by cab signal systems with no wayside signals. Traffic control points are approximately 16 miles apart. A FRA signal inspector accompanied NS Officials and signal maintainers while tests were performed on the signal system. Signal system tests indicate the train should have received the restricting cab signal at MP 68.1. The event log from the lead locomotive event recorder (35N) also shows the restricting cab signal at MP 68.1. It was determined the signaling system was operating as intended at the time of the accident. NS Train 35N crew stated that cab signals were working properly.

CONCLUSION:

The signaling system was operating as intended and was not a factor.

ANALYSIS - POST ACCIDENT TRAIN AIR BRAKE INSPECTION:

A post accident locomotive and air brake inspection of NS Train 35N indicates that all air brakes were operable. Carrier records also show the 76 cars from Track # 208 and 31 cars from Track # 209 at Conway received a Class 1 air brake test inspection prior to locomotive road power coupled to the train on July 2, 2008. The inspections were performed by NS car department personnel.

CONCLUSION:

The condition of car air brakes was not a factor:

ANALYSIS - LOCOMOTIVE INSPECTIONS:

Carrier records show cab signals on the lead NS 35N locomotive (NS 9430) were tested and functioning at 4:13 p.m. on July 2, 2008. Dynamic brakes were cut in and operating on the lead two locomotives. 92 day and daily locomotive inspection records were current for NS Train 35N. No defects were reported.

CONCLUSION:

The condition of locomotive power was not a factor.

ANALYSIS - ENGINEER CERTIFICATION, QUALIFICATIONS AND OPERATING RULES TRAINING:

NS TRAIN 35N

The engineer on Train 35N was qualified as a locomotive engineer in 1995 and transferred from Conrail to NS June 1, 1999. He was recertified 12/2/06 and received an on-board monitoring/check ride on 1/17/08. No exception was taken on train handing skills. (NS supervision) Vision & hearing testing and motor vehicle background checks were conducted prior to recertification. Knowledge testing, performance skills testing and rule checks were current and performed during the current calendar year. He attended an operating rules class 2/26/08 and 2/27/08. He has worked on the territory most of his railroad career.

NS TRAIN 13N - stopped

The engineer on NS Train 13N was recertified 7/27/07 and received an on-board monitoring/check ride on 3/20/08. Vision & hearing testing and motor vehicle background checks were conducted prior to recertification. Knowledge testing, performance skills tests and rules check were all performed the current calendar year. He attended an operating rules class 2/26/08.

CONCLUSION:

Engineer certification, qualification, monitoring rides, and training were current and not a factor in the collision.

ANALYSIS - OPERATING RULES TRAINING - CONDUCTOR (NS TRAIN 35N):

The conductor of NS Train 35N attended 2008 operating rules classes on April 14 & April 15, 2008. He received test scores of 98.5 % and 95 %. The employee was hired 6/3/04 and was promoted to conductor 11/14/04. He has worked in the same general area since hiring with NS.

CONCLUSION:

Training was current and not a factor in the collision.

ANALYSIS -EFFECIENCY TESTING:

FRA reviewed six months of carrier efficiency test records for the two member crew of NS Train 35N. A total of 122 tests were recorded; 68 tests for the engineer and 54 tests for the conductor. Twenty tests were classified as observations. 61 tests related to speed and signal compliance. A focused review of speed and signal compliance is as follows:

Engineer (NS Train 35N)

- Total of 34 speed and signal tests - no failures
 - 5 radar speed tests
 - 3 restricted speed tests
 - 1 restricted speed observation on main track
 - 6 tests on calling of signals
 - 7 tests and 1 observation on not exceeding maximum authorized speed
 - 3 tests and 1 observation for stopping short of stop signal
 - 4 tests for compliance with approach signal indication
 - 1 test on medium approach signal indication
 - 2 tests on compliance with a restricting signal indication.

Conductor (NS Train 35N)

- Total of 27 speed and signal tests - no failures
 - 2 radar speed tests
 - 3 restricted speed tests on main track
 - 7 tests on calling of signals
 - 4 tests on not exceeding maximum authorized speed

4 tests for stopping short of a stop signal
4 tests on approach signal compliance
3 tests for compliance with restricting signal indication
Tests were conducted with-in guidelines of NS efficiency testing policy.

CONCLUSION:

Carrier efficiency testing does not appear to be a factor in the collision.

ANALYSIS: HOURS OF SERVICE RECORDS:

The engineer and conductor of Train 35N did not work the day before the accident. Employees described their sleep as good the night prior to being called for duty. The crew said they were alert prior to the accident.

CONCLUSION:

Employees had received more than the required statutory off duty rest period prior to reporting for work.

ANALYSIS: CARRIER NS CAUSE TESTING:

The crew members of NS Train 35N were tested under 49 CFR Rule 219 Appendix D; (Cause Testing). The results were negative.

CONCLUSION:

Drug use was not a factor.

ANALYSIS – EVENT RECORDER DOWNLOADS:

NS TRAIN 35N

The event recorder log from the lead locomotive of NS Train 35N indicates the locomotive was in the Run 8 throttle position moving at a speed of 22 MPH while climbing the hill toward Salem. The event log further indicates speed actually increased from 22 MPH to 27 MPH as the head end of the train started to crest the hill. The event recorder log shows cab signals went to an approach signal indication at MP 66.5 and a restricting signal indication at MP 68.1 approximately 1.2 miles prior to where the engineer said he remembered receiving the signal and 1.5 miles before the actual collision site. The throttle remained in the Run 8 throttle position until the emergency air brake application. The speed at impact was 8 MPH.

NS TRAIN 13N

The event recorder log from the lead locomotive of NBS Train 13N indicates the train had been stopped approximately 11 minutes. The train's air brakes were released prior to impact. The event recorder showed a brief forward movement at the time of the collision.

CONCLUSION:

The engineer of NS Train 35N did not reduce throttle position after receiving a restricting cab signal indication and train speed increased.

ANALYSIS - APPLICABLE NORAC OPERATING RULES:

Rule #80 restricted speed indications require controlling the movement to permit stopping within one half the range of vision short of other trains or railroad equipment, obstructions, switches not properly lined, derails set in the derailling position and any signal requiring a stop.

80.1 (System Section Northern Region Timetable 3) Freight trains must not exceed 15 MPH when operating at restricted speed.

94(a) Employees qualified on the operating rules and located on the leading engine or car must be on the lookout for signals affecting the movement of their train. They must communicate to each other in a clear manner the name of each signal. Any change in signal must be communicated.

94.1 (System Section Northern Region Timetable 3) A crew members on the controlling locomotive will communicate, by radio, the name and location of each signal affecting movement as soon as the signal becomes clearly visible.

285 Approach Signal - Proceed prepared to stop at the next signal. Trains exceeding medium speed must begin reduction to medium speed as soon as the engine passes the approach signal.

290 Restricting Signal - Proceed as restricted speed until the entire train has cleared all interlocking and spring switches. If signal is an interlocking or CP signal and the leading wheels have 1) passed a more favorable fixed signal, or 2) entered non-signaled DCS Territory.

553 (1) When a cab signal changes to restricting between fixed signals the engineer must take action at once reduce to restricted speed.

956 Observing signals; moving engine B Engine service employees will be responsible for the observance of all signals and for controlling movements accordingly. To prevent injury to persons, damage to property and lading, and to avoid collisions and derailments they must: (1) regulate the speed of their train, and (2) exercise discretion, care and vigilance in moving their train.

ANALYSIS-TRAIN DOCUMENTATION QUALITY:

A careful inspection of the train documents for NS Train 35N revealed discrepancies between the documented locations of the cars containing hazardous materials verses the actual locations of each car containing hazardous materials. The investigation of the dispatcher's call to NS Train 35N informing them of this extra-car was verified and an extra car that was not included in their train documents was located.

CONCLUSION:

FRA took exception the inaccurate train documents and filed civil penalties against the carrier. This was a non-complying issue but was not a factor in the conclusion.

OVERALL CONCLUSIONS:

The carrier has specific rules and procedures in place. Train crew employees failed to comply with signal indication and requirement of restricted speed. NS terminated the employment of NS Train 35N crew members following a carrier investigation. The crew was charged with a violation of restricted speed in Carrier Operating Rule 80.

The review of carrier records, employee interviews, and FRA investigation supports the Primary Cause of H222 – Failure of the crew to stop short of train ahead when operating on restricting cab signal indication and a Secondary Cause of H605 – Crew members felt the timing of the CYO and dispatcher radio calls added to their confusion prior to the accident. Radio traffic was described as light prior to the dispatcher contacting the crews about the trespasser. The crew had not used portable cell phones.

NS CAUSE CODES AND REPORTING:

NS has not submitted final accident reports to FRA. NS Reporting personnel believed the accident was below the federal reporting threshold of \$8,500. The initial damage estimate was \$8,394. Final equipment damage was \$11,249.00.

PROBABLE CAUSE AND CONTRIBUTING FACTORS

FRA concluded that the engineer of NS Train 35N failed to take action at once to reduce to restricted speed when receiving a restricting cab signal indication. Train crew employees also failed to comply with the requirements of restricted speed.