Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2007-81

Norfolk Southern
Abilene, VA
December 13, 2007

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

FRA FACTUAL RAILROAD ACCIDENT REPORT

FRA File # HQ-2007-81

1.Name of Railroad Operating Train #1 Norfolk Southern Corp. [NS]	1a. Alphabetic Code NS	1b. Railroad Accident/Incident No. 031159
2.Name of Railroad Operating Train #2 Norfolk Southern Corp. [NS]	2a. Alphabetic Code NS	2b. Railroad Accident/Incident No. 031159
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. 031159
5. U.S. DOT_AAR Grade Crossing Identification Number	6. Date of Accident/Incident Month 12 | Day 13 | Year 2007	7. Time of Accident/Incident 03:35:00 ☑ AM ☐ PM

8. Type of Accident/Indicent *(single entry in code box)*: 1. Derailment; 2. Head on collision; 3. Rear end collision; 4. Side collision; 5. Raking collision; 6. Broken Train collision; 7. Hwy-rail crossing; 8. RR grade crossing; 9. Obstruction; 10. Explosion-detonation; 11. Fire/violent rupture; 12. Other impacts; 13. Other *(describe in narrative)* — Code: 04

9. Cars Carrying HAZMAT	10. HAZMAT Cars Damaged/Derailed	11. Cars Releasing HAZMAT	12. People Evacuated	13. Division
0	N/A	N/A	0	Virginia

14. Nearest City/Town	15. Milepost *(to nearest tenth)*	16. State Abbr / Code	17. County
Abilene	B21.3	N/A / VA	PRINCE EDWARD

18. Temperature (F) *(specify if minus)*	19. Visibility *(single entry)* 1. Dawn 2. Day 3.Dusk 4.Dark — Code	20. Weather (single entry) 1. Clear 2. Cloudy 3. Rain 4. Fog 5.Sleet 6.Snow — Code	21. Type of Track 1. Main 2. Yard 3. Siding 4. Industry — Code
42 F	4	2	1

22. Track Name/Number	23. FRA Track Class (1-9, X) — Code	24. Annual Track Density *(gross tons in millions)*	25. Time Table Direction 1. North 2. South 3. East 4. West — Code
Aitavista Main Track	4	15.6	3

OPERATING TRAIN #1

26. Type of Equipment Consist *(single entry)* 1. Freight train 2. Passenger train 3. Commuter train 4. Work train 5. Single car 6. Cut of cars 7. Yard/switching 8. Light loco(s). 9. Maint./inspect.car A. Spec. MoW Equip. — Code	27. Was Equipment Attended? 1. Yes 2. No — Code	28. Train Number/Symbol
1	1	838V312

29. Speed *(recorded speed, if available)* R - Recorded E - Estimated — Code	31. Method(s) of Operation *(enter code(s) that apply)*	31a. Remotely Controlled Locomotive?
29 MPH | R	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)*	0 = Not a remotely controlled; 1 = Remote control portable; 2 = Remote control tower; 3 = Remote control transmitter - more than one remote control transmitter
30. Trailing Tons *(gross tonnage, excluding power units)*: 10339	Code(s): e | N/A | N/A | N/A | N/A	0

32. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded *(yes/no)*
(1) First involved *(derailed, struck, etc)*	NS E09624	1	no
(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	Drugs
N/A	N/A

34. Was this consist transporting passengers? (Y/N): N

35. Locomotive Units	a. Head End	Mid Train b. Manual	Mid Train c. Remote	Rear End d. Manual	Rear End c. Remote
(1) Total in Train	2	0	0	0	0
(2) Total Derailed	2	0	0	0	0

36. Cars	Loaded a. Freight	Loaded b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Equipment Consist	82	0	0	0	0
(2) Total Derailed	5	0	0	0	0

37. Equipment Damage This Consist	38. Track, Signal, Way, & Structure Damage	39. Primary Cause Code	40. Contributing Cause Code
$226,732.00	$400,000.00	H221	H199

Number of Crew Members				Length of Time on Duty	
41. Engineer/ Operators	42. Firemen	43. Conductors	44. Brakemen	45. Engineer/Operator	46. Conductor
1	0	1	0	Hrs 6 Mi 20	Hrs 6 Mi 20

Casualties to:	47. Railroad Employees	48. Train Passengers	49. Other
Fatal	0	0	0
Nonfatal	1	0	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 2. Passenger train 3. Commuter train 4. Work train 5. Single car 6. Cut of cars 7. Yard/switching 8. Light loco(s). 9. Maint./inspect.car A. Spec. MoW Equip. — Code	54. Was Equipment Attended? 1. Yes 2. No — Code	55. Train Number/Symbol
1	1	227V112

56. Speed *(recorded speed, if available)* R - Recorded E - Estimated — Code	58. Method(s) of Operation *(enter code(s) that apply)*	58a. Remotely Controlled Locomotive?
40 MPH | R	a. ATCS; b. Auto train control; g. Automatic block; h. Current of traffic; m.Special instructions; n. Other than main track	0 = Not a remotely controlled; 1 = Remote control portable

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57. Trailing Tons *(gross tonnage, excluding power units)*: 4273

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): e | 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	a. Initial and Number	b. Position in Train	c. Loaded *(yes/no)*
(1) First involved *(derailed, struck, etc)*	DDTX732267	24	no
(2) Causing *(if mechanical cause reported)*	0	0	N/A

60. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box.

Alcohol	Drugs
N/A	N/A

61. Was this consist transporting passengers? (Y/N): N

62. Locomotive Units	a. Head End	Mid Train b. Manual	Mid Train c. Remote	Rear End d. Manual	Rear End c. Remote	63. Cars	Loaded a. Freight	Loaded b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Train	2	0	0	0	0	(1) Total in Equipment Consist	12	0	30	0	0
(2) Total Derailed	0	0	0	0	0	(2) Total Derailed	0	0	7	0	0

64. Equipment Damage This Consist: $795,488.00

65. Track, Signal, Way, & Structure Damage: $0.00

66. Primary Cause Code: H221

67. Contributing Cause Code: H199

Number of Crew Members

68. Engineer/ Operators	69. Firemen	70. Conductors	71. Brakemen
1	0	1	0

Length of Time on Duty

72. Engineer/Operator: Hrs 6 Mi 35

73. Conductor: Hrs 6 Mi 35

Casualties to:	74. Railroad Employees	75. Train Passengers	76. Other
Fatal	0	0	0
Nonfatal	1	0	0

77. EOT Device? 1. Yes 2. No: 1

78. Was EOT Device Properly Armed? 1. Yes 2. No: 1

79. Caboose Occupied by Crew? 1. Yes 2. No: N/A

OPERATING TRAIN #3

80. Type of Equipment Consist *(single entry)*: 1. Freight train; 2. Passenger train; 3. Commuter train; 4. Work train; 5. Single car; 6. Cut of cars; 7. Yard/switching; 8. Light loco(s); 9. Maint./inspect.car; A. Spec. MoW Equip. Code: N/A

81. Was Equipment Attended? 1. Yes 2. No: N/A

82. Train Number/Symbol: N/A

83. Speed *(recorded speed, if available)* Code: R - Recorded; E - Estimated: N/A MPH: 0

84. Trailing Tons *(gross tonnage, excluding power units)*: N/A

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

86. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded *(yes/no)*
(1) First involved *(derailed, struck, etc)*	0	0	N/A
(2) Causing *(if mechanical cause reported)*	0	0	N/A

87. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box.

Alcohol	Drugs
N/A	N/A

88. Was this consist transporting passengers? (Y/N): N/A

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

95. Engineer/ Operators	96. Firemen	97. Conductors	98. Brakemen
0	0	0	0

Length of Time on Duty

99. Engineer/Operator: Hrs 0 Mi 0

100. Conductor: Hrs 0 Mi 0

Casualties to:	101. Railroad Employees	102. Train	103. Other
Fatal	0	0	0
Nonfatal	0	0	0

104. EOT 1. Yes 2. No: N/A

105. Was EOT Device Properly 1. Yes 2. No: N/A

106. Caboose Occupied by Crew? 1. Yes 2. No: N/A

Highway User Involved

107. A. Auto; B. Truck; C. Truck-Trailer.; D. Pick-Up Truck; E. Van; F. Bus; G. School Bus; H. Motorcycle; J. Other Motor Vehicle; K. Pedestrian; M. Other *(spec. in narrative)*; Code: N/A

108. Vehicle Speed *(est. MPH at impact)*: N/A

109. *geographical)* 1.North 2.South 3.East 4.West; Code: N/A

Rail Equipment Involved

111. Equipment 1.Train *(units pulling)*; 2.Train *(units pushing)*; 3.Train *(standing)*; 4.Car(s) *(moving)*; 5.Car(s) *(standing)*; 6.Light Loco(s) *(moving)*; 7.Light(s) *(standing)*; 8.Other *(specify in narrative)*; Code: N/A

112. Position of Car Unit in: N/A

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110. Position	Code	113. Circumstance	Code
1.Stalled on Crossing 2.Stopped on Crossing 3.Moving Over Crossing 4. Trapped	N/A	1. Rail Equipment Struck Highway User 2. Rail Equipment Struck by Highway User	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	N/A	114b. Was there a hazardous materials release 1. Highway User 2. Rail Equipment 3. Both 4. Neither	N/A

114c. State here the name and quantity of the hazardous materials released, if any.
N/A

115. Type Crossing Warning	1.Gates	2.Cantilever FLS	3.Standard FLS	4.Wig Wags	5.Hwy. traffic signals	6.Audible	7.Crossbucks	8.Stop signs	9.Watchman	10.Flagged by crew	11.Other *(spec. in narr.)*	12.None
Code(s)	N/A	N/A	N/A	N/A	N/A	N/A	N/A					

116. Signaled Crossing *(See instructions for codes)*	Code	117. Whistle Ban 1. Yes 2. No 3. Unknown	Code
	N/A		N/A

118. Location of Warning 1. Both Sides 2. Side of Vehicle Approach 3. Opposite Side of Vehicle Approach	Code	119. Crossing Warning with Highway Signals 1. Yes 2. No 3. Unknown	Code	120. Crossing Illuminated by Street Lights or Special Lights 1. Yes 2. No 3. Unknown	Code
	N/A		N/A		N/A

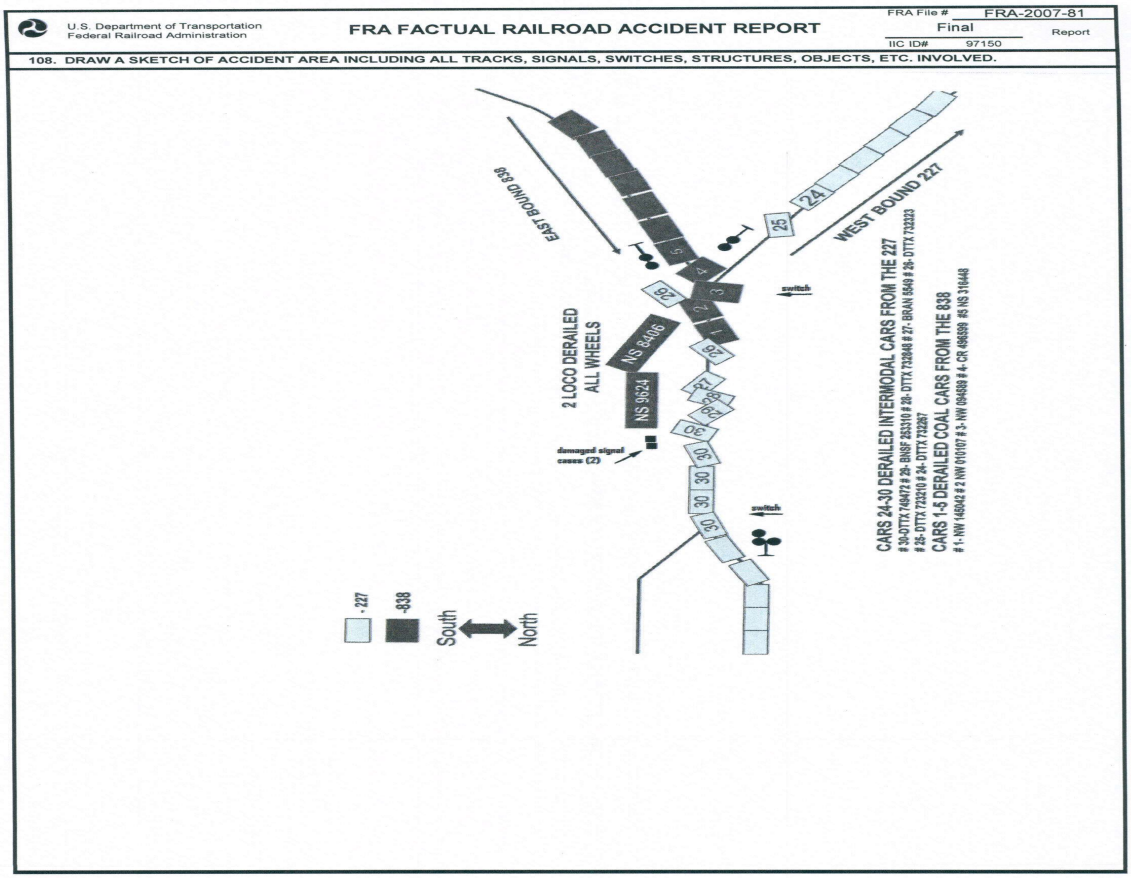
121. Age	122. Driver's Gender 1. Male 2. Female	Code	123. Driver Drove Behind or in Front of and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown	Code	124. Driver 1. Drove around or thru the Gate 2. Stopped and then Proceeded 3. Did not Stop 4. Stopped on Crossing 5. Other *(specify in narrative)*	Code
N/A		N/A		N/A		N/A

125. Driver Passed Highway Vehicle 1. Yes 2. No 3. Unknown	Code	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		N/A

Casualties to:	Killed	Injured	127. Driver 1. Killed 2.Injured 3. Uninjured	Code	128. Was Driver in the Vehicle? 1. Yes 2. No	Code
				N/A		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	133. Locomotive Auxiliary Lights Operational? 1. Yes 2. No	Code
	N/A		N/A
134. Locomotive Headlight Illuminated? 1. Yes 2. No	Code	135. Locomotive Audible Warning Sounded? 1. Yes 2. No	Code
	N/A		N/A

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



137. SYNOPSIS OF THE ACCIDENT

On December 13, 2007, at 3:35 a.m. EST, at Abilene, Virginia, approximately 17 miles south of Farmville, Virginia, Norfolk Southern Railway Company (NS) Unit Coal Train 838V3-12 was traveling eastbound on the Virginia Division, Altavista District, en route to Crewe, Virginia. The train consisted of 2 locomotives and 94 loaded coal hopper cars when it departed from Shaffer's crossing in Roanoke, Virginia. The crew made a stop at Altavista to drop off 12 cars in the consist. The train consist was reduced to 82 loaded coal hopper cars. NS Train 838V3-12 was operating at a recorded speed of 29 mph when the emergency brake was applied 142 feet west of the Abilene east stop signal at the Abilene Connection. The engineer of NS Train 838V3-12 attempted to prevent a collision with NS Train 227V1-12 operating westward on the Blue Ridge District at the Abilene/Altivista District Connecting Track. However, NS Train 838V3-12 continued to travel east for 673 feet after the emergency brake was applied and collided into the side of NS Train 227V1-12, which was en route from Norfolk to Roanoke. The collision resulted in the derailment of both trains. NS Train 838V3-12 derailed both the lead and trailing locomotives and the first five loaded coal hopper cars. NS Train 227V1-12 was struck at the 24th head car resulting in a total of seven empty intermodal cars derailing. The accident fouled the Altavista District Main Track and Blue Ridge District Main Line. No hazardous materials cars were damaged, however the lead locomotive of NS Train 838V3-12 spilled approximately 2000 gallons of diesel fuel. Damages totaled $1,022,220 for equipment; $100,000 for track structures; and $300,000 for the signal system, for a grand total of $1,422,220 reported by NS Officials.

At the time of the accident it was dark and cloudy. The temperature was 42º F.

PROBABLE CAUSE

The probable cause of the collision was determined to be human factor, failure to stop in compliance with a stop signal indication (at the Abilene Connection). The engineer of NS Train 838V3-12 failed to reduce the train speed in compliance with NS Operating Rules after passing an Approach aspect at the Cullen intermediate signal.

138. NARRATIVE

CIRCUMSTANCES PRIOR TO THE ACCIDENT

TRAIN 838V3-12 EAST:

The crew of eastward NS Unit Coal Train 838V3-12 included a locomotive engineer and a conductor. The crew first went on duty at 9:15 p.m. EST, December 12, 2007, at the NS Roanoke Terminal in Roanoke, Virginia. This is the home terminal for both crew members and both received more than the required statutory off-duty rest period prior to reporting for duty.

The assigned freight train consisted of two locomotives and 94 loaded coal hopper cars and weighed 10,339 tons. The train was scheduled to travel to Crewe, Virginia with cars to be removed at one location en route in Altavisita. The train received an initial terminal train air brake test and departed Roanoke Terminal at 11:30 p.m.

The crew stopped the train to remove cars at one location, Altavista. They removed 12 cars in a single block and performed a transfer brake test prior to proceeding toward Crewe, taking approximately 40 minutes to perform this task. The length of the train after the cars were removed was 4,243 feet long.

As the eastbound train approached the accident area, the locomotive engineer was seated at the controls on the south side of the leading locomotive. The conductor was seated on the north side of the leading locomotive. The engineer stated he was "staring at the blue screen" on the computer. The conductor did not remember what he was doing. The last thing he remembered prior to the accident was talking to the engineer. Neither of them was recorded as having called the last two signals prior to the Abilene signal. The last signal they called was Terry, at MP V156.4, as documented by radio transmissions recorded by the Virginia Division Dispatching Center. Neither recalled calling the signals. Both stated they were awake; however, neither could recall seeing the two signals prior to the red stop signal at Abilene.

In this area of the railroad on the Altavista District, there are, in succession, a 4 degree curve to the right of about 1400 feet, another 4 degree curve to the right of about 600 feet; tangent track for about 1500 feet, a 3.2 degree curve to the left for about 1100 feet, ending at the Abilene signal where the Blue Ridge District connecting track meets the Altavista District, at MP V141.5. Beyond is the Blue Ridge connecting track, which continues in a 2.4 degree curve to the left. Approaching the area, there is a .12 percent ascending grade for 2 miles, peaking at .14 percent and descending at .20 percent to the Abilene signal, about 3/4 of a mile. The railroad crosses SR 604 with a highway-rail grade crossing located at MP V142.8. The rail is tangent at this location on a slight ascending grade.

The railroad timetable direction of NS Train 838V3-12 was east. The geographic direction was also east. Timetable directions are used throughout this report.

TRAIN 227V1-12 WEST:

The crew of westward NS Intermodal Train 227V1-12 included a locomotive engineer and a conductor. They crew went on duty at 9:00 p.m. EST, December 12, 2007, at the Norfolk Southern Norfolk Terminal in Norfolk, Virginia. This is the home terminal for both crew members, and all received more than the required statutory off-duty rest period prior to reporting for duty.

The assigned NS Intermodal Train consisted of two locomotives, 12 loaded, and 30 empty cars of several varieties. It weighed 4,273 tons and was 8,168 feet long. NS Intermodal Train 227V1-12 was scheduled to travel to Roanoke, VA with no stops en route. The train received an initial terminal train air brake test prior to departing the NS Yard in Norfolk, VA.

As westbound NS Train 227V1-12 approached the accident area, the locomotive engineer was seated at the controls on the north side of the leading locomotive. The conductor was seated on the south side of the leading locomotive. The engineer stated he had just eaten his lunch. He said he had just gotten through a 45 mph speed zone and was attempting to get the speed back up to 60 mph.

In this area of the railroad on the Blue Ridge District, there are a series of 1.5 degree curves to the left for about 2600 feet to the Abilene Connection. Approaching the area, there is a slight descending grade varying from .14 percent to .17 percent, leveling out at the Abilene Connection at MP B21.3, followed by a slight ascending grade, varying from .23 percent to .35 percent. There is a private road crossing just below the Abilene connection, at MP B20.7. The track is in a 1.5 degree left hand curve at this location.

The railroad timetable direction of the train was west. The geographic direction was north west. Timetable directions are used throughout this report.

THE ACCIDENT:

NS EASTARD TRAIN 838V3-12:

The NS Train 838V3-12 was being operated at a recorded speed of 29 mph on the Altavista District, approaching the accident area. The engineer looked up and saw the Abilene stop signal illuminated a few yards away and initiated an emergency application of the train air brakes. The event recorder data indicated the train was 142 feet from the stop signal when he initiated the emergency brake application. He observed westward NS Train 227V1-12 just beyond the signal, on the Blue Ridge District, which intersects with the Altavista District at this location. It was dark and visibility was limited to what he could see with the train's headlights; he was in a 3.2 degree curve approaching the Abilene signal. The train's speed did not change and was operating at 29 mph, as recorded by the event recorder on the controlling locomotive when the engineer initiated the emergency train air brake application. The maximum authorized speed for this train was 40 mph, as designated in the current NS Timetable No. 7.

Eastward NS Unit Coal Train 838V3-12 passed the Abilene stop signal, and proceeded directly into the side of the passing westward NS Intermodal Train 227V1-12, impacting the side of the 24th car at a recorded speed of 29 mph. The engineer stated he was "frozen" and unable to respond to the situation. He said he could see the cars of the train ahead. The conductor stated he saw the red stop signal indication and the cars just beyond and applied the emergency brake on the conductor's side of the locomotive cab. However, the event recorder on the controlling locomotive could not confirm this had occurred. Neither crew mmember

seemed aware of the other as they approached the point of collision. The engineer said he watched in horror as the locomotive impacted the cars on NS Train 227V1-12 and continued to collide, hitting the signal box and turning it over; eventually turning both locomotives over on their sides and stopping, resulting in the derailment of both trains. NS Train 838V3-12 derailed both the lead and trailing locomotives and the first five loaded coal cars. The event recorder data reveals that the train traveled 673 feet from the time the emergency brake was applied to when it finally stopped after impact around MP B21.3 on the Blue Ridge District. The engineer stated that he held onto his seat and found himself lying on his back in his seat when it stopped. At that point, he said he shouted for the conductor. He looked over and saw him lying on the floor. The conductor told him he smelled diesel fuel and they needed to get out of there. The engineer grabbed his cell phone and the conductor had his radio. Neither the engineer nor the conductor remembered to transmit "Emergency, Emergency, Emergency" on the radio when contacting the dispatcher. When they managed to extricate themselves from the locomotive, they contacted the dispatcher and told him they had wrecked, but both of them were alive. The engineer attempted to contact the crew of the train they had struck but could not contact them.

The conductor was experiencing serious chest pain, so the engineer called the dispatcher and told him the conductor needed immediate medical attention. He told the dispatcher they needed to get in touch with the other train crew. After about 30-40 minutes, an ambulance arrived and transported the conductor to the local hospital in Farmville, Virginia, about 5 miles away. He was diagnosed to have high blood pressure and was treated with prescription drugs and also for an injured finger. He was later released, after he received FRA Post Accident toxicological testing. The engineer told the emergency responder personnel he was in shock, but not injured. He declined medical treatment. No other injuries were reported. Eventually, a railroad official arrived and transported him to the Farmville local hospital to be tested per FRA Post Accident testing guidelines, around 7:00 or 8:00 a.m.

WESTWARD NS INTERMODAL TRAIN 227V1-12:

The train operating west had just traversed a 45 mph curve on the Blue Ridge District, and the engineer was accelerating to get the mixed freight train back up to the maximum authorized speed of 50 mph as designated in the current NS Timetable No. 7. The crew observed NS Train 838V3-12, as they passed the Abilene signal and assumed it was stopped on the Altavista District, behind the signal. Neither was aware the other train was moving. About 45 seconds to one minute after the head end of their train passed the signal went into emergency. The engineer said he was afraid the train had broken in two, and perhaps they had "gotten a knuckle."

The engineer Oof NS Train 838V3-12 eventually contacted the engineer on NS Train 227V1-12 and talked to him briefly. Meanwhile, NS Train 227V1-12's conductor had gotten off his train to inspect it. En route, he was contacted by the dispatcher and told there had been a collision, most likely, and to be careful. He was asked to supply information regarding the location of any hazardous materials cars in his consist. He reported that there was only one hazardous materials car in his consist and it was not affected by the collision. He attempted to get in touch with the crew od NS Train 838V3-12, but was unable to reach them due to limited visibility and the overwhelming wreckage. When the local fire department arrived, apparently contacted by Virginia Division's Shenandoah Dispatcher, they shored up some of the wreckage so they could get through to the other side. The investigation revealed that the 24th car of NS Train 227V1-12 had been struck first, followed by the derailment of seven empty intermodal cars. After speaking briefly with the engineer of NS Train 838V3-12, the conductor went back to the head end of his train and waited. Eventually, a Road Foreman of Engines arrived from Virginia Division Headquarters in Roanoke, Virginia and took charge of the situation. He inquired as to the condition of the crew on NS Train 227V1-12 and transported the engineer of NS Train 838V3-12 to the hospital in Farmville, Virginia for mandatory Post Accident toxicological testing. He and another officer arranged for both crews to be tested under FRA's Post-Accident Toxicological guidelines. The crew of NS Train 227V1-12 was not taken for testing until after their hours of duty had expired which was approximately 9:00 a.m. According to the crew, they were told by the Road Foreman of Engines that the dollar amount of damages incurred by the collision required the crew of NS Train 227V1-12 to be tested, although they were not considered culpable in the accident.

Damages incurred by the accident for all rolling equipment totaled $1,022,220. Track structure damages amounted to $100,000; Signal System damages totaled $300,000. The grand total of damages reported by the NS for the accident totaled $1,422,220.

There was no release of hazardous materials from any cars involved in the collision and no evacuation of the area. However, locomotive NS 8406, the leading locomotive of NS Train 838V3-12, EE D8-40CW, with a fuel capacity of 5,000 gallons, experienced a release of approximately 2,000 gallons of diesel fuel. A team of environmental clean up personnel were dispatched to clean up the area. There was no fire as a result of the spill.

ANALYSIS AND CONCLUSIONS:

ANALYSIS: FATIGUE

FRA obtained fatigue related information, for the 10-day period preceding this incident including the 10-day work history (on duty/off duty cycles) for all of the employees involved.

CONCLUSION:

Upon analysis of that information FRA concluded that one or more of the employees may have been working at a diminished level of safety (effectiveness) due to mental and/or physical attributes associated with fatigue, which may have contributed to the cause of the accident.

CONCLUSIONS:

FRA concluded fatigue was probable for both the locomotive engineer and conductor assigned to westward NS Intermodal Train 227V1-12 but not a contributing factor in the accident. FRA concluded fatigue was evident for the locomotive engineer and the conductor assigned to eastward NS Unit Coal Train 838V3-12 and was definitely a contributing cause in the accident.

ANALYSIS - TOXICOLOGICAL TESTING:

Toxicological testing was conducted on both train crews primarily due to the fact that the dollar amount of the collision surpassed one million dollars, qualifying as a major train accident under FRA.'s Post Accident Toxicological Testing requirements under 49 CFR Part 219, Subpart C. The results of the toxicological testing were negative for all employees tested. However, the tests were not conducted in the proper time frame required for the crew of NS Train 227V1-12. Their hours of duty had expired prior to testing, over five hours after the accident occurred at 3:30 a.m. Nearly two additional hours elapsed before testing was completed, between 10:30 and 11:00 a.m. making it more than seven hours altogether after the accident occurred.

CONCLUSIONS:

Neither alcohol nor drug use was considered a factor in the cause of the accident, since toxicological test results for all four employees tested were negative. A civil penalty will be recommended for delay in obtaining specimens due to failure to make every reasonable effort, under 49 CFR Part 219.203(b) (1) for two counts; one for each employee tested who was assigned to NS Train 227V1-12.

ANALYSIS - HOURS OF SERVICE ISSUES:

During the routine data collection for the investigation of the accident, it was determined that the Hours of Service Law was violated when the carrier made the decision to require the crew on NS Train 227V1-12 submit to toxicological testing after their hours of duty had expired. There was a sufficient amount of time to make a decision and transport the employees for FRA mandatory toxicological testing under 49 CFR Part 219, Subpart C. Additionally, when the crew was transported to the Farmville, Virginia medical facility after their hours of duty had expired at 9:00 a.m., they were forced to wait for an additional period of time while the NS officer procured an FRA Post Accident Testing kit for each employee, because he failed to bring one with him to the testing location. This is a violation of FRA regulations under 49 CFR Part 228.11 (commingled service).

When the FRA Operating Practices Inspector attempted to obtain official FRA Hours of Service records for both train crews involved in the accident, there were no records found in the NS official FRA Hours of Duty database for either crew (four records missing). A month after the accident occurred, there were still no

records found for the hours of service performed on December 12 - 13 for either crew, a violation of Federal Regulations under 49 CFR Part 228.11.

CONCLUSIONS:

A recommendation for civil penalties under FRA Hours of Service regulations, 49 CFR Part 228.11 will be filed for the failure to test the crew of NS Train 227V1-12 within their regular tour of duty, (making it an hours of service violation under commingled service). Additional civil penalties will be recommended under Part 228.11 for failure to have an hours of service record for all employees involved in the accident.

ANALYSIS - LOCOMOTIVE ENGINEER OPERATING PERFORMANCES:

The locomotives assigned to NS Train 838V3-12 were also equipped with a speed indicator and an event recorder as required. The relevant event recorder data was downloaded by the Road Foreman of Engines at the accident site, and analyzed at the NS Virginia Division Headquarters in Roanoke.

CONCLUSIONS:

fThe locomotive engineer of NS Train 838V3-12 was not in compliance with applicable railroad operating and train handling requirements. He was found in violation of several operating rules including NS Rule 34; NS Rule 285, compliance with signal indication of Approach - proceed preparing to stop at next signal; NS Rule 292, compliance with signal indication of Stop. Additionally, he was in violation of Federal Regulations under Part 240.305 Subpart D, Prohibited Conduct, operating past a signal indicating stop.

Analysis - RADIO COMMUNICATION ISSUES:

The crew of NS Train 838V3-12 was required by Federal Regulations under 49 CFR Part 220 to announce “Emergency” three times on the radio when the accident occurred. During a review of the radio communications which occurred during this time for this crew, there was no record that they ever complied with this regulation.

CONCLUSION:

A recommendation for a civil penalty will be filed for the failure of this crew to comply with 49 CFR Part 220.47, Emergency Radio transmission, although it was not a factor in the accident.

OVERALL CONCLUSIONS:

Fatigue was determined to be a contributing cause in this accident, based on the fatigue analysis data and crew interviews, specifically the crew for train 838V312.

All employees tested under FRA’s mandatory toxicological testing required by 49 CFR Part 219, Subpart C had negative results, which indicates that neither drugs nor alcohol is considered a factor in this accident, although the carrier failed to collect the specimens for the crew of train 227V112 in a timely manner, which will result in a civil penalty being recommended.

Additionally, although the carrier was required to test both crews, they were obligated under federal Hours of Service regulations to test the crew within their assigned Hours of Duty, unless there are extenuating circumstances. In this case, there were not. This was not a factor in the accident, but civil penalties will be recommended for failure to comply with 49 CFR Part 228.11 (a total of two counts for commingled service performed.)

Civil penalties will be recommended for the carrier’s failure to maintain an hours of duty record for each employee on both trains for the tour of duty on 12/12 - 12/13/07.

Federal Regulations under 49 CFR Part 220 require the crew to announce “Emergency” three times in the event of an emergency situation such as this. The crew of NS Train 838V3-12 was required to comply with this regulation, but failed to do so. However, it was not a factor in the accident. A civil penalty will be recommended under 49 CFR Part 220.

PROBABLE CAUSE AND CONTRIBUTING FACTORS:

FRA concluded that the cause of this accident was determined to be (Cause code H221) “Automatic block or interlocking signal displaying a stop indication - failure to comply” for both crew members on NS Train 838V3-12. In this case, FRA has determined that fatigue was a contributing cause, based on crew interviews and the fatigue study completed for this crew and should be listed under cause code H199.

The Norfolk Southern did not choose to list fatigue as a contributing cause on their reports to the FRA due to the fact that their longtime (unstated) policy is to assume that an employee who has accepted an assignment and has had the legal period of time off duty required by federal regulations under the Hours of Service Law, is rested and ready for duty unless it can be positively determined that the employee was asleep.