Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2005-48

Norfolk Southern (NS)
Galilee, Pennsylvania
June 20, 2005

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.

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION (FRA)

FRA FACTUAL RAILROAD ACCIDENT REPORT

FRA File # HQ-2005-48

1. Name of Railroad Operating Train #1	1a. Alphabetic Code	1b. Railroad Accident/Incident No.
Norfolk Southern Corp. [NS]	NS	21342
2. Name of Railroad Operating Train #2	**2a. Alphabetic Code**	**2b. Railroad Accident/Incident No.**
Norfolk Southern Corp. [NS]	NS	21342
3. Name of Railroad Responsible for Track Maintenance (single entry)	**3a. Alphabetic Code**	**3b. Railroad Accident/Incident No.**
Norfolk Southern Corp. [NS]	NS	21342

4. U. S. DOT-AAR Grade Crossing Identification Number	5. Date of Accident/Incident (month / day / year)	6. Time of Accident/Incident
N/A	06 / 20 / 2005	10:30:00 AM [X] PM [ ]

7. Type of Accident/Incident (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: 03

8. Cars Carrying HAZMAT	9. HAZMAT Cars Damaged/Derailed	10. Cars Releasing HAZMAT	11. People Evacuated	12. Division
3	0	0	0	Pittsburgh

13. Nearest City/Town	14. Milepost (to nearest tenth)	15. State Abbr.	15. State Code	16. County
New Galilee	PC 39.3	PA		BEAVER

17. Temperature (F) (specify if minus)	18. Visibility (single entry) 1. Dawn 2. Day 3. Dusk 4. Dark — Code	19. Weather (single entry) 1. Clear 2. Cloudy 3. Rain 4. Fog 5. Sleet 6. Snow — Code	20. Type of Track 1. Main 2. Yard 3. Siding 4. Industry — Code
72 °F	2	1	1

21. Track Name/Number	22. FRA Track Class (1-9, X) — Code	23. Annual Track Density (gross tons in millions)	24. Time Table Direction 1. North 2. South 3.East 4. West — Code
Ft. Wayne Line / 1	3	50.50	3

OPERATING TRAIN # 1

25. 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	26. Was Equipment Attended? 1. Yes 2. No — Code	27. Train Number/Symbol
1	1	24VB119

28. Speed (recorded speed, if available) R - Recorded E - Estimated — Code	30. Method(s) of Operation (enter code(s) that apply)	30a. Remotely Controlled Locomotive?
24 MPH R	a. ATCS; b. Auto train control; c. Auto train stop; d. Cab signals; e. Traffic control; 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 rules; o. Positive train control; p. Other (specify in narrative) — Code(s): d, e, N/A, N/A, N/A	0= Not a remotely controlled operation; 1 = Remote control portable transmitter; 2 = Remote control tower operation; 3 = Remote control portable transmitter - more than one remote control transmitter: 0
29. Trailing Tons (gross tonnage, excluding power units)		
2,050		

31. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded (yes/no)	32. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box. Alcohol	Drugs
(1) First involved (derailed, struck, etc)	NS 9901	001	N/A	0	0
(2) Causing (if mechanical cause reported)	0	0	N/A	33. Was this consist transporting passengers ? (Y/N)	N

34. Locomotive Units	a. Head End	Mid Train b. Manual	Mid Train c. Remote	Rear End d. Manual	Rear End e. Remote	35. 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	11	0	0	0	0
(2) Total Derailed	1	0	0	0	0	(2) Total Derailed	0	0	0	0	0

36. Equipment Damage This Consist	37. Track, Signal, Way, & Structure Damage	38. Primary Cause Code	39. Contributing Cause Code
$95,100.00	$0.00	H222	H605

Number of Crew Members				Length of Time on Duty	
40. Engineers/ Operators	41. Firemen	42. Conductors	43. Brakemen	44. Engineer/Operator	45. Conductor
1	0	1	0	Hrs: 07 Mins: 30	Hrs: 07 Mins: 30

Casualties to:	46. Railroad Employees	47. Train Passengers	48. Other	49. EOT Device? 1. Yes 2. No	50. Was EOT Device Properly Armed? 1. Yes 2. No
Fatal	0	0	0	1	1
Nonfatal	0	0	0	51. Caboose Occupied by Crew? 1. Yes 2. No: 2	

OPERATING TRAIN # 2

52. 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	53. Was Equipment Attended? 1. Yes 2. No — Code	54. Train Number/Symbol
1	1	20RB119

55. Speed (recorded speed, if available) R - Recorded E - Estimated — Code	57. Method(s) of Operation (enter code(s) that apply)	57a. Remotely Controlled Locomotive?
0 MPH R	a. ATCS; b. Auto train control; c. Auto train stop; d. Cab signals; e. Traffic control; 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 rules; o. Positive train control; p. Other (specify in narrative) — Code(s): d, e, N/A, N/A, N/A	0= Not a remotely controlled operation; 1 = Remote control portable transmitter; 2 = Remote control tower operation; 3 = Remote control portable transmitter - more than one remote control transmitter: 0
56. Trailing Tons (gross tonnage, excluding power units)		
1,390		

FORM FRA F 6180.39 (Revised July 2003)

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION (FRA)

FRA FACTUAL RAILROAD ACCIDENT REPORT

FRA File # HQ-2005-48

OPERATING TRAIN # 2 (CONTINUED)

58. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded (yes/no)	59. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box.	Alcohol	Drugs
(1) First involved (derailed, struck, etc)	AOK	11	yes		N/A	N/A
(2) Causing (if mechanical cause reported)	0	0	N/A	60.Was this consist transporting passengers ? (y/n)		N

61. locomotive Units	a. Head End	Mid Train b. Manual	Mid Train c. Remote	Rear End d. Manual	Rear End e. Remote	62. 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	9	0	0	0	0
(2) Total Derailed	0	0	0	0	0	(2) Total Derailed	1	0	0	0	0

63. Equipment Damage This Consist	64. Track, Signal, Way, & Structure Damage	65. Primary Cause Code	66. Contributing Cause Code
$138,400	$0	H222	H605

Number of Crew Members				Length of Time on Duty	
67. Engineers/ Operators	68. Firemen	69. Conductors	70. Brakemen	71. Engineer/Operator	72. Conductor
1	0	1	0	Hrs: 06 Mins: 30	Hrs: 06 Mins: 30

Casualties to:	73. Railroad Employees	74. Train Passengers	75. Other
Fatal	0	0	0
Nonfatal	0	0	0

76. EOT Device? 1. Yes 2. No — 1

77. Was EOT Device Properly Armed? 1. Yes 2. No — 1

78. Caboose Occupied by Crew? 1. Yes 2. No — 2

Highway User Involved

79. Type — 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

80. Vehicle speed (est. MPH at impact): 0

81. Direction (geographical) 1. North 2. South 3. East 4. West — Code: N/A

82. Position 1. Stalled on Crossing 2. Stopped on Crossing 3. Moving Over Crossing 4. Trapped — Code: N/A

86a. 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

Rail Equipment Involved

83. 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 Loco(s) (standing), 8. Other (specify in narrative) — Code: N/A

84. Position of Car Unit in Train: 0

85. Circumstance 1. Rail Equipment Struck Highway User 2. Rail Equipment Struck by Highway User — Code: N/A

86b. Was there a hazardous materials release by 1. Highway User 2. Rail Equipment 3. Both 4. Neither — Code: N/A

86c. State here the name and quantity of the hazardous materials released, if any.

N/A

87. Type of 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	

88. Signaled Crossing Warning (See instructions for codes) — Code: N/A

89. Whistle Ban 1. Yes 2. No 3. Unknown — Code: N/A

90. Location of Warning 1. Both Sides 2. Side of Vehicle Approach 3. Opposite Side of Vehicle Approach — Code: N/A

91. Crossing Warning Interconnected with Highway Signals 1. Yes 2. No 3. Unknown — Code: N/A

92. Crossing Illuminated by Street Lights or Special Lights 1. Yes 2. No 3. Unknown — Code: N/A

93. Driver's Age: 0

94. Driver's Gender 1. Male 2. Female — Code: N/A

95. Driver Drove Behind or in Front of Train and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown — Code: N/A

96. 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

97. Driver Passed Standing Highway Vehicle 1. Yes 2. No 3. Unknown — Code: N/A

98. View of Track Obscured by (primary obstruction) 1. Permanent Structure 2. Standing Railroad Equipment 3. Passing Train 4. Topography 5. Vegetation 6. Highway Vehicles 7. Other (specify in narrative) 8. Not obstructed — Code: N/A

Casualties to:	Killed	Injured
101. Highway-Rail Crossing Users	0	0

99. Driver Was 1. Killed 2. Injured 3. Uninjured — Code: N/A

100. Was Driver in the Vehicle? 1. Yes 2. No — Code: N/A

102. Highway Vehicle Property Damage (est. dollar damage): $0

103. Total Number of Highway-Rail Crossing Users (include driver): 0

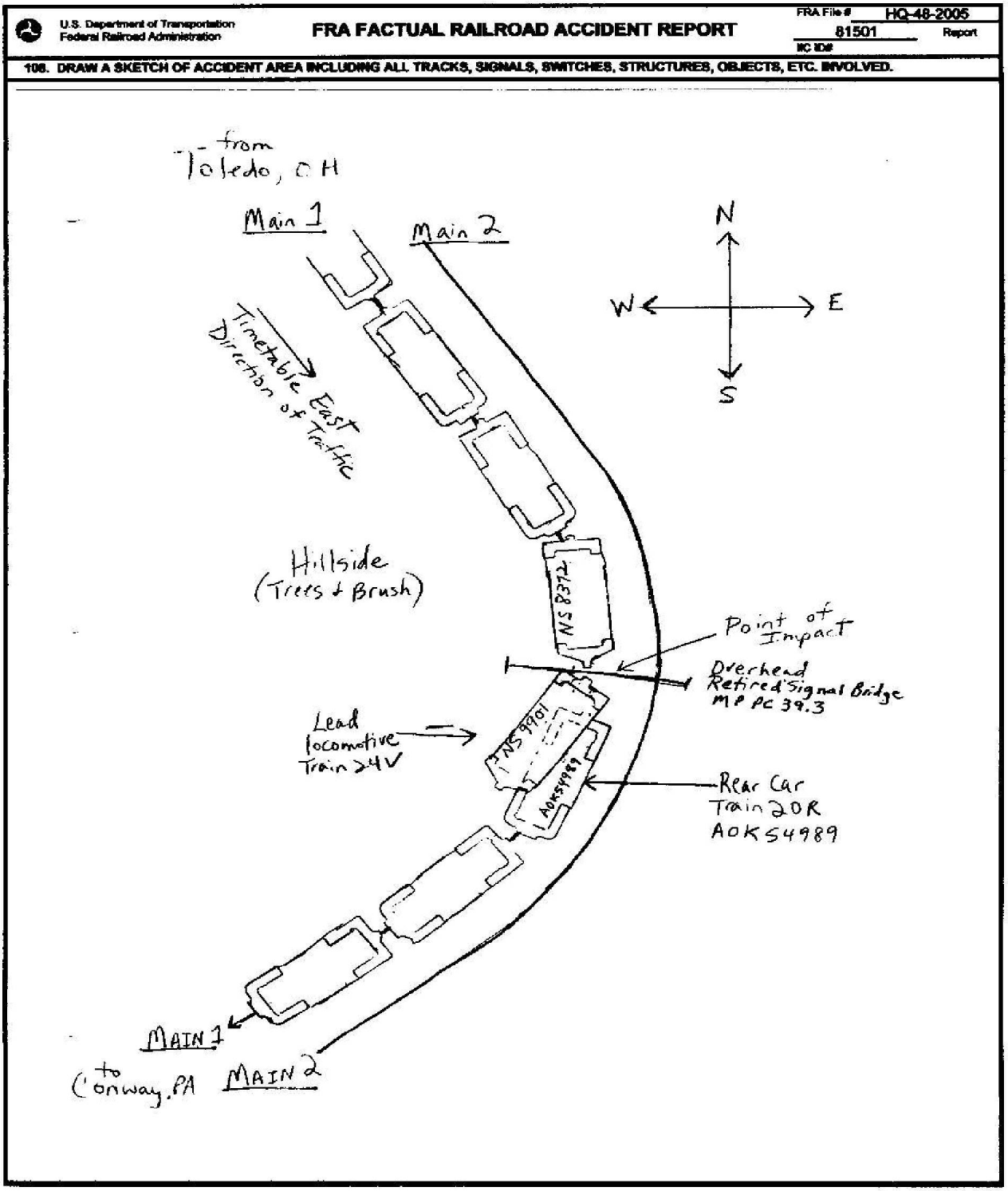
104. Locomotive Auxiliary Lights? 1. Yes 2. No — Code: N/A

105. Locomotive Auxiliary Lights Operational? 1. Yes 2. No — Code: N/A

106. Locomotive Headlight Illuminated? 1. Yes 2. No — Code: N/A

107. Locomotive Audible Warning Sounded? 1. Yes 2. No — Code: N/A

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



109. SYNOPSIS OF THE ACCIDENT

An eastbound NS freight train 24VB119 collided with the rear car of another eastbound NS freight train, 20RB119, on June 20, 2005, at approximately 10:30 a.m. The accident occurred near New Galilee, PA, at NS Milepost PC 39.3, on the Fort Wayne Line of the Pittsburgh Division. Train 20R had stopped for traffic ahead to enter Conway Yard.

Both train crews consisted of an engineer and a conductor. There were no injuries and no hazardous cars were derailed or damaged. The collision caused the derailment of the rear car of train 20R and the lead locomotive of train 24V (NS9901). The fuel tank of NS 9901 was ruptured, spilling approximately 50 gallons of fuel. Estimated damage to the equipment was placed as follows:

$138,400.00 - AOK 54989 (rear car of train 20R)
95,000.00 - NS 9901 (lead locomotive of train 24V)
100.00 - NS 8372 (2nd locomotive of train 24V)

$233,500.00 - Total

At the time of the accident it was daylight and clear with calm skies. The temperature was 72 F.

The accident was caused by the failure of the crew on train 24VB119 to comply with restricted speed in connection with the cab signal displayed. The crew on train 24VB119 was drug tested under CFR 219, Subpart C, at Beaver Valley Medical Center in Beaver, PA. Both crew members tested negative.

110. NARRATIVE

Circumstances Prior to the Accident

The Norfolk Southern (NS) crew on the 24VB119 reported at Toledo, OH, at 3:00 a.m. on Monday, June 20, 2005 and consisted of an engineer and a conductor. The engineer was hired in 1998 and promoted to engineer in January 2002. The conductor was hired June 2004 and promoted to conductor in November 2004. Prior to being called to work on June 20th, both crew members received their statutory rest. The engineer had 12 hours and 10 minutes rest from his last off duty time on June 19th to his reporting for duty time on June 20th. The conductor had 16 hours and 11 minutes rest from his last off duty time on June 19th to his reporting for duty time on June 20th. The crew waited for their train to arrive, and NS records indicate that the train departed Toledo at 3:34 a.m. with two locomotives and 17 freight cars. The train had a Class 1 Initial Air Brake Inspection on June 19, 2005, with End of Train Device (EOTD) 41277, and a current cab signal test which had been performed at on June 19, 2005 at Chicago. There were no mechanical problems with the train according to the previous crew or the 24V crew, nor were any problems listed on the daily locomotive inspection form. Train 24V proceeded to set out 8 Cleveland cars at Maple Heights. They performed a full service brake test (set-up and release) before departing with 11 loads, 2522 feet long and with 2050 trailing tons.

Meanwhile, NS freight train 20RB119 was called out of Toledo at 4:00 a.m. and departed at 4:29 a.m. This train consisted of two locomotives and nine loads, 1977 feet long and 1390 trailing tons. The crew of train 20R heard the 24V just completing their work at Maple Heights as they came by. Train 20R proceeded to catch up with train 20Q which was being held at CP Wood while the dispatcher realigned traffic to get the 20Q train into Conway Yard. A few minutes after train 20R stopped around MP PC 39, between crossings, train 24V rounded a curve at MP PC 39.3, near New Galilee, PA, and impacted the rear of their train.

The geographic direction of train 24V was south east, but the timetable direction of all three trains was eastward. For the purpose of this report timetable directions will be used. The engineer on train 24V was operating from the south side of the engine (short hood forward) and the conductor was seated on the north side, front seat, as the train proceeded east.

Track movement authority is Traffic Control System (TCS) and the method of operation is Cab Signal System (CSS) with Rule 261 (track signaled in both directions). This portion of the Fort Wayne main line consists of double main tracks with dispatcher controlled, wayside signals at the interlockings (crossovers).

Track geography at the point of impact: full body of a 5.9 degree left hand curve with a .21 percent ascending grade.

The Accident

Train NS 24VB119 East
The 24V train was being operated at 44 mph on approach to the last wayside signal which was at CP Enon (MP PC 45.3). The signal displayed an approach indication and the engineer promptly reduced speed to the required 30 mph. Using locomotive tapes and post accident statements by the crew, the final cab signal indications were:

•Approach (1.09 miles/1 minute 57 seconds)
•Clear (.33 miles/.34 seconds - but crew reported the cab signal displaying this as restricting)
•Approach (1.41 mles/2 minutes 15 seconds), and
•Restricting (2.74 miles/5 minutes 48 seconds)

The train was traveling 37 mph when the cab signal dropped to the final approach. Train speed continued to range between 37 and 39 mph. When the cab signal again downgraded to the final restricting signal, the 24V engineer acknowledged the downgrade. At some point, the conductor told the engineer that he should slow down, and the speed was reduced to approximately 25 mph prior to impact. Sight distance for the 24V to the rear of train 20R was estimated at 430 feet and this was supported by evidence of sand on the rail and ties from where the engineer initiated the emergency brake application. The lead locomotive of train 24V (NS 9901) rode up onto the rear car of train 20R (AOK 54989), then tilted off to the right (south) side derailing both. According to event recorder information the speed of the train at the time of impact was approximately 24 mph.

There were no injuries to the crew. No hazardous cars were derailed or damaged. No evacuations were performed. The fuel tank of lead locomotive NS 9901 was ruptured, spilling approximately 50 gallons of fuel. Post accident crew statements indicated no problems with the train, track, or signal system. FRA interviewed the crew regarding actual rest/fatigue issues and noted that this collision occurred the day after Father's Day when family activities did in fact impact the normal rest period.

The crew on train 24V was transported to Beaver Valley Medical Center in Beaver, PA for drug testing under CFR 219, Subpart C. Damage to 24V locomotive NS 9901 was placed at $95,000, and $100 for the second locomotive, NS 8372.

Train NS 20RB119 East
Train 20R had stopped at MP PC 39, between road crossings, because train 20Q was stopped ahead of them at CP Wood (MP PC 34.8). They had been stopped for less than 10 minutes when they heard 20Q starting to move into Conway yard. 20R was preparing to move up when they felt the impact of 24V striking the rear of their train. The engineer noted that his train lost air on the rear, and the conductor headed back to inspect. Train 20R heard 24V announce the emergency over the radio, and proceeded to relay information between the dispatcher and 24V when the dispatcher was unable to communicate with the 24V conductor via his handset radio. Damage to 20R rear car, AOK 54989, was placed at $138,400.

NS reported total damages of $233,500 for the accident.

Analysis and Conclusions
Analysis
There was no evidence of mechanical, track or signal failure. The train carried documentation of a current Class I Brake test, current cab signal test, and daily locomotive inspection records. NS provided documentation of brake tests, speed indicator inspection and calibration records, and 60- and 92-day

cab signal tests; additionally, they performed post accident testing.

Drug tests for both crew members were negative. Event recorder analysis revealed incidents of excessive speed between CP Rave, MP RD 85.9 and MP PC 39.3 between the hours of 8:50 a.m. and 10:30 a.m. The engineer's locomotive certificate was revoked for a period of 6 months per 49 CFR 240.117(e)(2).
NS records indicate that the 24V engineer was qualified between Toledo and Conway, but mainly worked between Toledo and Detroit, Toledo and Cleveland, and various yard jobs on the Dearborn Division. There is no evidence of a supervisor check ride with this engineer while on the Pittsburgh division. This engineer was banner checked for compliance with restricted speed on May 8, 2005, while on the Dearborn Division.

Conclusions
The railroad was in compliance with their own and all applicable Federal standards. Supervision initiated a plan to improve and increase efficiency testing in CSS territory with emphasis on restricted speed compliance testing.

Probable Cause & Contributing Factors

Failure of the crew on train 24VB119 to comply with restricted speed in connection with the restrictive cab signal indication.

Possible contributing factors:
•Minimal efficiency testing for restricted speed
•Crew inexperience
•Fatigue

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

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1.Name of Railroad Operating Train #1: Norfolk Southern Corp. [NS]	1a. Alphabetic Code: NS	1b. Railroad Accident/Incident No.: 21342
2.Name of Railroad Operating Train #2: Norfolk Southern Corp. [NS]	2a. Alphabetic Code: NS	2b. Railroad Accident/Incident: 21342
3.Name of Railroad Responsible for Track Maintenance: Norfolk Southern Corp. [NS]	3a. Alphabetic Code: NS	3b. Railroad Accident/Incident No.: 21342
4. U.S. DOT_AAR Grade Crossing Identification Number	5. Date of Accident/Incident: Month 06 / Day 20 / Year 2005	6. Time of Accident/Incident: 10:30:00 ☑ AM ☐ PM

7. 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): 03

8. Cars Carrying HAZMAT	9. HAZMAT Cars Damaged/Derailed	10. Cars Releasing HAZMAT	11. People Evacuated	12. Division
3	0	0	0	Pittsburgh

13. Nearest City/Town	14. Milepost (to nearest tenth)	15. State Abbr	15. State Code	16. County
New Galilee	PC 39.3	N/A	PA	BEAVER

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

21. Track Name/Number	22. FRA Track Class (1-9, X)	Code	23. Annual Track Density (gross tons in millions)	24. Time Table Direction 1. North 3. East	Code
Ft. Wayne Line / 1		3	50.5		3

OPERATING TRAIN #1

25. 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: 1

26. Was Equipment Attended? 1. Yes 2. No: 1 Code: 1

27. Train Number/Symbol: 24VB119

28. Speed (recorded speed, if available) R - Recorded E - Estimated: 24 MPH Code: R

29. Trailing Tons (gross tonnage, excluding power units): 2050

30. 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): d, e, N/A, N/A, N/A

30a. 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

31. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded (yes/no)
(1) First involved (derailed, struck, etc)	N/A	001	N/A
(2) Causing (if mechanical cause reported)	0	0	N/A

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

Alcohol	Drugs
0	0

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

34. 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	1	0	0	0	0

35. Cars	Loade a. Freight	Loade b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Equipment Consist	11	0	0	0	0
(2) Total Derailed	0	0	0	0	0

36. Equipment Damage This Consist: 95100

37. Track, Signal, Way, & Structure Damage: 0

38. Primary Cause Code: H222

39. Contributing Cause Code: H605

Number of Crew Members

40. Engineer/ Operators	41. Firemen	42. Conductors	43. Brakemen
N/A	0	1	0

Length of Time on Duty

44. Engineer/Operator: Hrs 07 Mi 30

45. Conductor: Hrs 07 Mi 30

Casualties to:	46. Railroad Employees	47. Train Passengers	48. Other
Fatal	0	0	0
Nonfatal	N/A	0	0

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

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

51. Caboose Occupied by Crew? 1. Yes 2. No: 2

OPERATING TRAIN #2

52. 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: 1

53. Was Equipment Attended? 1. Yes 2. No: 1 Code: 1

54. Train Number/Symbol: 20RB119

55. Speed (recorded speed, if available) R - Recorded E - Estimated: 0 MPH Code: R

57. Method(s) of Operation (enter code(s) that apply): a. ATCS; b. Auto train control; g. Automatic block; h. Current of traffic; m.Special instructions; n. Other than main track

57a. Remotely Controlled Locomotive? 0 = Not a remotely controlled; 1 = Remote control portable

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

FRA FACTUAL RAILROAD ACCIDENT REPORT

FRA File # HQ-2005-48

56. Trailing Tons (gross tonnage, excluding power units)	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)	2 = Remote control tower 3 = Remote control transmitter - more than one remote control transmitter
1390			d | e | N/A | N/A | N/A	0

58. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded (yes/no)	59. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box.	Alcohol	Drugs
(1) First involved (derailed, struck, etc)	AOK	11	yes		N/A	N/A
(2) Causing (if mechanical cause reported)	0	0	N/A	60. Was this consist transporting passengers? (Y/N)	N	

61. Locomotive Units	a. Head End	Mid Train b. Manual	Mid Train c. Remote	Rear End d. Manual	Rear End c. Remote	62. Cars	Loade a. Freight	Loade b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Train	2	0	0	0	0	(1) Total in Equipment Consist	9	0	0	0	0
(2) Total Derailed	0	0	0	0	0	(2) Total Derailed	1	0	0	0	0

63. Equipment Damage This Consist	64. Track, Signal, Way, & Structure Damage	65. Primary Cause Code	66. Contributing Cause Code
138400	0	H222	H605

Number of Crew Members				Length of Time on Duty	
67. Engineer/ Operators	68. Firemen	69. Conductors	70. Brakemen	71. Engineer/Operator	72. Conductor
1	0	1	0	Hrs 06 Mi 30	Hrs 06 Mi 30

Casualties to:	73. Railroad Employees	74. Train Passengers	75. Other
Fatal	0	0	0
Nonfatal	0	0	0

76. EOT Device? (1. Yes 2. No)	77. Was EOT Device Properly Armed? (1. Yes 2. No)	78. Caboose Occupied by Crew? (1. Yes 2. No)
1	1	2

Highway User Involved

79. Type	Code
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)	N/A

80. Vehicle Speed (est. MPH at impact)	81. Direction geographical) (1.North 2.South 3.East 4.West)	Code
0		N/A

82. Position	Code
1.Stalled on Crossing 2.Stopped on Crossing 3.Moving Over Crossing 4. Trapped	N/A

86a. 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

Rail Equipment Involved

83. Equipment	Code
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)	N/A

84. Position of Car Unit in Train
0

85. Circumstance	Code
1. Rail Equipment Struck Highway User 2. Rail Equipment Struck by Highway User	N/A

86b. Was there a hazardous materials release by (1. Highway User 2. Rail Equipment 3. Both 4. Neither)	Code
	N/A

86c. State here the name and quantity of the hazardous materials released, if any.
N/A

87. Type of 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)	88. Signaled Crossing Warning (See instructions for codes) Code	89. Whistle Ban (1. Yes 2. No 3. Unknown) Code
Code(s): N/A | N/A | N/A | N/A | N/A | N/A | N/A		N/A

90. Location of Warning (1. Both Sides 2. Side of Vehicle Approach 3. Opposite Side of Vehicle Approach) Code	91. Crossing Warning Interconnected with Highway Signals (1. Yes 2. No 3. Unknown) Code	92. Crossing Illuminated by Street Lights or Special Lights (1. Yes 2. No 3. Unknown) Code
N/A	N/A	N/A

93. Driver's Age	94. Driver's Gender (1. Male 2. Female) Code	95. Driver Drove Behind or in Front of Train and Struck or was Struck by Second Train (1. Yes 2. No 3. Unknown) Code	96. 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
0	N/A	N/A	N/A

97. Driver Passed Standing Highway Vehicle (1. Yes 2. No 3. Unknown) Code	98. 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

101. Casulties to Highway-Rail Crossing Users	Killed	Injured
	0	0

99. Driver Was (1. Killed 2.Injured 3. Uninjured) Code	100. Was Driver in the Vehicle? (1. Yes 2. No) Code
N/A	N/A
102. Highway Vehicle Property Damage (est. dollar damage): 0	103. Total Number of Highway-Rail Crossing Users (include driver): 0

104. Locomotive Auxiliary Lights? (1. Yes 2. No) Code	105. Locomotive Auxiliary Lights Operational? (1. Yes 2. No) Code
N/A	N/A
106. Locomotive Headlight Illuminated? (1. Yes 2. No) Code	107. Locomotive Audible Warning Sounded? (1. Yes 2. No) Code
N/A	N/A

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

109. SYNOPSIS OF THE ACCIDENT

An eastbound NS freight train 24VB119 collided with the rear car of another eastbound NS freight train, 20RB119, on June 20, 2005, at approximately 10:30 a.m. The accident occurred near New Galilee, PA, at NS Milepost PC 39.3, on the Fort Wayne Line of the Pittsburgh Division. Train 20R had stopped for traffic ahead to enter Conway Yard.

Both train crews consisted of an engineer and a conductor. There were no injuries and no hazardous cars were derailed or damaged. The collision caused the derailment of the rear car of train 20R and the lead locomotive of train 24V (NS9901). The fuel tank of NS 9901 was ruptured, spilling approximately 50 gallons of fuel. Estimated damage to the equipment was placed as follows:

$138,400.00 - AOK 54989 (rear car of train 20R)
95,000.00 - NS 9901 (lead locomotive of train 24V)
100.00 - NS 8372 (2nd locomotive of train 24V)

$233,500.00 - Total

At the time of the accident it was daylight and clear with calm skies. The temperature was 72 F.

The accident was caused by the failure of the crew on train 24VB119 to comply with restricted speed in connection with the cab signal displayed. The crew on train 24VB119 was drug tested under CFR 219, Subpart C, at Beaver Valley Medical Center in Beaver, PA. Both crew members tested negative.

110. NARRATIVE

The following information was obtained from an investigation that was conducted by the Federal Railroad Administration.

Circumstances Prior to the Accident

The Norfolk Southern (NS) crew on the 24VB119 reported at Toledo, OH, at 3:00 a.m. on Monday,
June 20, 2005 and consisted of an engineer and a conductor. The engineer was hired in 1998 and promoted to engineer in January 2002. The conductor was hired June 2004 and promoted to conductor in November 2004. Prior to being called to work on June 20th, both crew members received their statutory rest. The engineer had 12 hours and 10 minutes rest from his last off duty time on June 19th to his reporting for duty time on June 20th. The conductor had 16 hours and 11 minutes rest from his last off duty time on June 19th to his reporting for duty time on June 20th. The crew waited for their train to arrive, and NS records indicate that the train departed Toledo at 3:34 a.m. with two locomotives and 17 freight cars. The train had a Class 1 Initial Air Brake Inspection on June 19, 2005, with End of Train Device (EOTD) 41277, and a current cab signal test which had been performed at on June 19, 2005 at Chicago. There were no mechanical problems with the train according to the previous crew or the 24V crew, nor were any problems listed on the daily locomotive inspection form. Train 24V proceeded to set out 8 Cleveland cars at Maple Heights. They performed a full service brake test (set-up and release) before departing with 11 loads, 2522 feet long and with 2050 trailing tons.

Meanwhile, NS freight train 20RB119 was called out of Toledo at 4:00 a.m. and departed at 4:29 a.m. This train consisted of two locomotives and nine loads, 1977 feet long and 1390 trailing tons. The crew of train 20R heard the 24V just completing their work at Maple Heights as they came by. Train 20R proceeded to catch up with train 20Q which was being held at CP Wood while the dispatcher realigned traffic to get the 20Q train into Conway Yard. A few minutes after train 20R stopped around MP PC 39, between crossings, train 24V rounded a curve at MP PC 39.3, near New Galilee, PA, and impacted the rear of their train.

The geographic direction of train 24V was south east, but the timetable direction of all three trains was eastward. For the purpose of this report timetable directions will be used. The engineer on train 24V was operating from the south side of the engine (short hood forward) and the conductor was seated on the north side, front seat, as the train proceeded east.

Track movement authority is Traffic Control System (TCS) and the method of operation is Cab Signal System (CSS) with Rule 261 (track signaled in both directions). This portion of the Fort Wayne main line consists of double main tracks with dispatcher controlled, wayside signals at the interlockings (crossovers).

Track geography at the point of impact: full body of a 5.9 degree left hand curve with a .21 percent ascending grade.

The Accident

Train NS 24VB119 East
The 24V train was being operated at 44 mph on approach to the last wayside signal which was at CP Enon (MP PC 45.3). The signal displayed an approach indication and the engineer promptly reduced speed to the required 30 mph. Using locomotive tapes and post accident statements by the crew, the final cab signal indications were:

- Approach (1.09 miles/1 minute 57 seconds)
- Clear (.33 miles/.34 seconds - but crew reported the cab signal displaying this as restricting)
- Approach (1.41 mles/2 minutes 15 seconds), and
- Restricting (2.74 miles/5 minutes 48 seconds)

The train was traveling 37 mph when the cab signal dropped to the final approach. Train speed continued to range between 37 and 39 mph. When the cab signal again downgraded to the final restricting signal, the 24V engineer acknowledged the downgrade. At some point, the conductor told the engineer that he should slow down, and the speed was reduced to approximately 25 mph prior to impact. Sight distance for the 24V to the rear of train 20R was estimated at 430 feet and this was supported by evidence of sand on the rail and ties from where the engineer initiated the emergency brake application. The lead locomotive of train 24V (NS 9901) rode up onto the rear car of train 20R (AOK 54989), then tilted off to the right (south) side derailing both. According to event recorder information the speed of the train at the time of impact was approximately 24 mph.

There were no injuries to the crew. No hazardous cars were derailed or damaged. No evacuations were performed. The fuel tank of lead locomotive NS 9901 was ruptured, spilling approximately 50 gallons of fuel. Post accident crew statements indicated no problems with the train, track, or signal system. FRA interviewed the crew regarding actual rest/fatigue issues and noted that this collision occurred the day after Father's Day when family activities did in fact impact the normal rest period.

The crew on train 24V was transported to Beaver Valley Medical Center in Beaver, PA for drug testing under CFR 219, Subpart C. Damage to 24V locomotive NS 9901 was placed at $95,000, and $100 for the second locomotive, NS 8372.

Train NS 20RB119 East
Train 20R had stopped at MP PC 39, between road crossings, because train 20Q was stopped ahead of them at CP Wood (MP PC 34.8). They had been stopped for less than 10 minutes when they heard 20Q starting to move into Conway yard. 20R was preparing to move up when they felt the impact of 24V striking the rear of their train. The engineer noted that his train lost air on the rear, and the conductor headed back to inspect. Train 20R heard 24V announce the emergency over the radio, and proceeded to relay information between the dispatcher and 24V when the dispatcher was unable to communicate with the 24V conductor via his handset radio. Damage to 20R rear car, AOK 54989, was placed at $138,400.

NS reported total damages of $233,500 for the accident.

Analysis and Conclusions
Analysis
There was no evidence of mechanical, track or signal failure. The train carried documentation of a current Class I Brake test, current cab signal test, and daily locomotive inspection records. NS provided documentation of brake tests, speed indicator inspection and calibration records, and 60- and 92-day cab signal tests; additionally, they performed post accident testing.

Drug tests for both crew members were negative. Event recorder analysis revealed incidents of excessive speed between CP Rave, MP RD 85.9 and MP PC 39.3 between the hours of 8:50 a.m. and 10:30 a.m. The engineer's locomotive certificate was revoked for a period of 6 months per 49 CFR 240.117(e)(2).
NS records indicate that the 24V engineer was qualified between Toledo and Conway, but mainly worked between Toledo and Detroit, Toledo and Cleveland, and various yard jobs on the Dearborn Division. There is no evidence of a supervisor check ride with this engineer while on the Pittsburgh division. This engineer was banner checked for compliance with restricted speed on May 8, 2005, while on the Dearborn Division.

Conclusions
The railroad was in compliance with their own and all applicable Federal standards. Supervision initiated a plan to improve and increase efficiency testing in CSS territory with emphasis on restricted speed compliance testing.

Probable Cause & Contributing Factors

The FRA determined that the probable cause was the failure of the crew on train 24VB119 to comply with restricted speed in connection with the restrictive cab signal indication.

Possible contributing factors:
- Minimal efficiency testing for restricted speed
- Crew inexperience
- Fatigue