Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2008-67

Norfolk Southern (NS)
Shelby, VA
July 30, 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.

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

FRA FACTUAL RAILROAD ACCIDENT REPORT

FRA File # HQ-2008-67

1.Name of Railroad Operating Train #1	1a. Alphabetic Code	1b. Railroad Accident/Incident No.
Norfolk Southern Corp. [NS]	NS	033706
2.Name of Railroad Operating Train #2	2a. Alphabetic Code	2b. Railroad Accident/Incident No.
N/A	N/A	N/A
3.Name of Railroad Operating Train #3	3a. Alphabetic Code	3b. Railroad Accident/Incident No.
N/A	N/A	N/A
4.Name of Railroad Responsible for Track Maintenance:	4a. Alphabetic Code	4b. Railroad Accident/Incident No.
Norfolk Southern Corp. [NS]	NS	033706
5. U.S. DOT_AAR Grade Crossing Identification Number	6. Date of Accident/Incident: Month 07 | Day 29 | Year 2008	7. Time of Accident/Incident: 10:03:00 ☐ 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: 01

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	16. State Code	17. County
BLACKSBURG	V282.8	N/A	VA	MONTGOMERY

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
85 F	4	1	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
SIGNAL MAIN TRACK	2	42.1	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	824V427

29. Speed *(recorded speed, if available)* R - Recorded E - Estimated — Code	30. Trailing Tons *(gross tonnage, excluding power units)*	31. Method(s) of Operation *(enter code(s) that apply)*	31a. Remotely Controlled Locomotive?
7 MPH R	20590	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): e N/A N/A N/A N/A	0 = Not a remotely controlled; 1 = Remote control portable; 2 = Remote control tower; 3 = Remote control transmitter - more than one remote control transmitter: 0

32. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded *(yes/no)*
(1) First involved *(derailed, struck, etc)*	NS 041694	46	yes
(2) Causing *(if mechanical cause reported)*	NS 041694	46	yes

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	3	0	0	2	0
(2) Total Derailed	0	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	145	0	0	0	0
(2) Total Derailed	22	0	0	0	0

37. Equipment Damage This Consist	38. Track, Signal, Way, & Structure Damage	39. Primary Cause Code	40. Contributing Cause Code
$54,450.00	$135,000.00	E46C	N/A

Number of Crew Members

41. Engineer/ Operators	42. Firemen	43. Conductors	44. Brakemen
1	1	1	0

Length of Time on Duty

45. Engineer/Operator	46. Conductor
Hrs 4 Mi 43	Hrs 4 Mi 43

Casualties to:	47. Railroad Employees	48. Train Passengers	49. Other
Fatal	0	0	0
Nonfatal	0	0	0

50. EOT Device? 1. Yes 2. No	51. Was EOT Device Properly Armed? 1. Yes 2. No	52. Caboose Occupied by Crew? 1. Yes 2. No
1	1	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
N/A	N/A	N/A

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?
0 MPH N/A	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)* N/A

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): N/A N/A N/A N/A N/A

2 = Remote control tower
3 = Remote control transmitter - more than one remote control transmitter: N/A

59. 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

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/A

62. 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	0	0	0	0	0
(2) Total Derailed	0	0	0	0	0

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

64. Equipment Damage This Consist: $0.00

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

66. Primary Cause Code: N/A

67. Contributing Cause Code: N/A

Number of Crew Members

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

Length of Time on Duty

72. Engineer/Operator: Hrs 0 Mi 0

73. Conductor: Hrs 0 Mi 0

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

77. EOT Device? 1. Yes 2. No N/A

78. Was EOT Device Properly Armed? 1. Yes 2. No N/A

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 Code: 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
(1) Total in Train	0	0	0	0	0
(2) Total Derailed	0	0	0	0	0

90. Cars	Loaded a. Freight	Loaded b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Equipment Consist	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 0

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

113. Circumstance	Code
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?	Code
1. Highway User 2. Rail Equipment 3. Both 4. Neither	N/A

114b. Was there a hazardous materials release	Code
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	4.Wig Wags	7.Crossbucks	10.Flagged by crew
	2.Cantilever FLS	5.Hwy. traffic signals	8.Stop signs	11.Other *(spec. in narr.)*
	3.Standard FLS	6.Audible	9.Watchman	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
	N/A

117. Whistle Ban	Code
1. Yes 2. No 3. Unknown	N/A

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

119. Crossing Warning with Highway Signals	Code
1. Yes 2. No 3. Unknown	N/A

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

121. Age	122. Driver's Gender	Code
0	1. Male 2. Female	N/A

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

124. Driver	Code
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)*	N/A

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

126. View of Track Obscured by *(primary obstruction)*	Code
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	N/A

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

127. Driver	Code
1. Killed 2.Injured 3. Uninjured	N/A

128. Was Driver in the Vehicle?	Code
1. Yes 2. No	N/A

130. Highway Vehicle Property Damage *(est. dollar damage)*
0

131. Total Number of Highway-Rail Crossing Users *(include driver)*
0

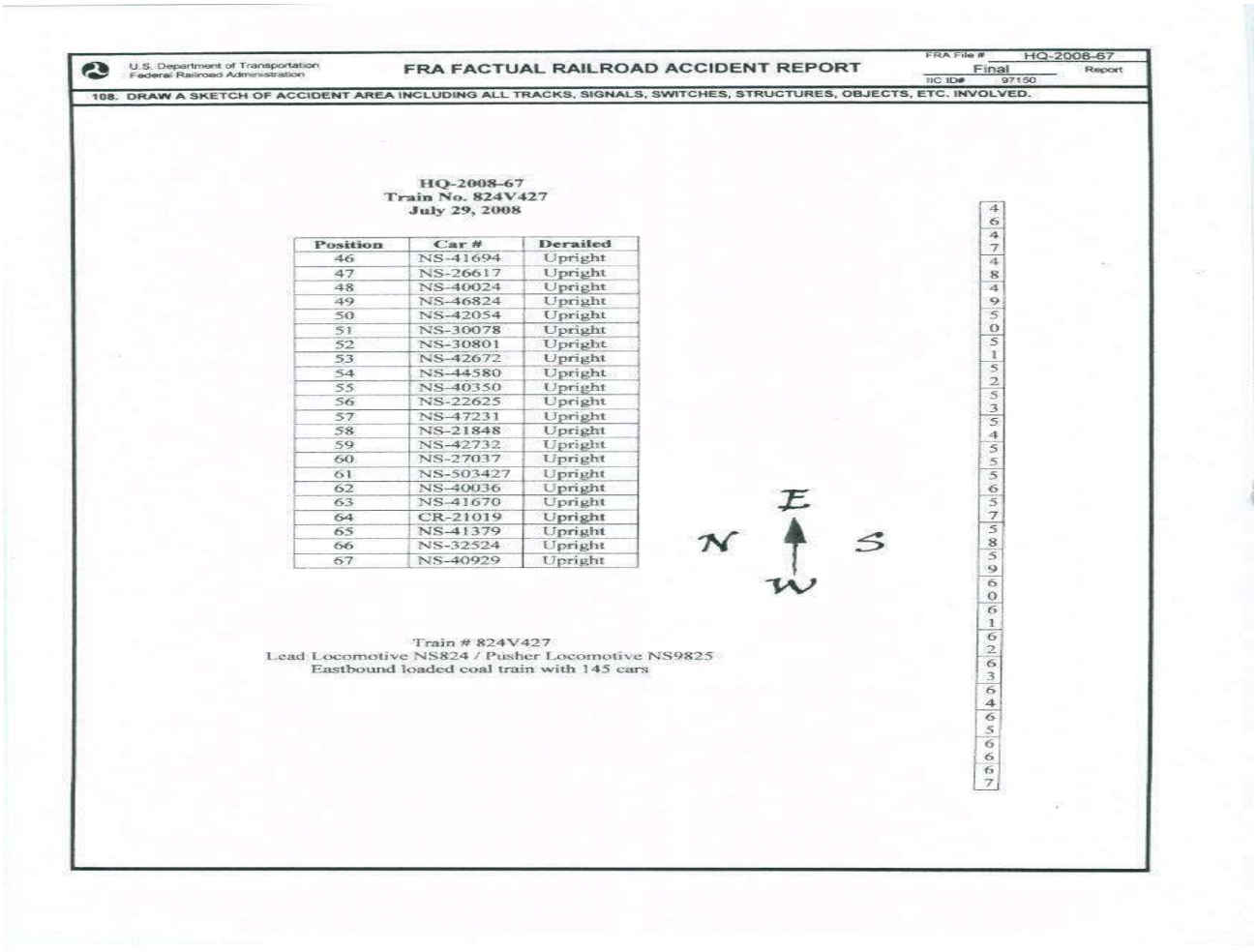
132. Locomotive Auxiliary Lights?	Code
1. Yes 2. No	N/A

133. Locomotive Auxiliary Lights Operational?	Code
1. Yes 2. No	N/A

134. Locomotive Headlight Illuminated?	Code
1. Yes 2. No	N/A

135. Locomotive Audible Warning Sounded?	Code
1. Yes 2. No	N/A

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



U.S. Department of Transportation
Federal Railroad Administration

FRA FACTUAL RAILROAD ACCIDENT REPORT

FRA File # HQ-2008-67
Final Report
IIC ID# 97150

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

HQ-2008-67
Train No. 824V427
July 29, 2008

Position	Car #	Derailed
46	NS-41694	Upright
47	NS-26617	Upright
48	NS-40024	Upright
49	NS-46824	Upright
50	NS-42054	Upright
51	NS-30078	Upright
52	NS-30801	Upright
53	NS-42672	Upright
54	NS-44580	Upright
55	NS-40350	Upright
56	NS-22625	Upright
57	NS-47231	Upright
58	NS-21848	Upright
59	NS-42732	Upright
60	NS-27037	Upright
61	NS-503427	Upright
62	NS-40036	Upright
63	NS-41670	Upright
64	CR-21019	Upright
65	NS-41379	Upright
66	NS-32524	Upright
67	NS-40929	Upright

Train # 824V427
Lead Locomotive NS824 / Pusher Locomotive NS9825
Eastbound loaded coal train with 145 cars

137. SYNOPSIS OF THE ACCIDENT

On July 29, 2008 at 10:03 p.m. EST Norfolk Southern Railway Company (NS) Unit Coal Train # 824V4-27 was traveling eastbound on single Main Track and derailed. The accident occurred on the NS Whitethorn District, Virginia Division in Whitethorn, VA at mile post (MP) V 282.2. The accident occurred approximately 10 miles west of the City of Blacksburg, VA in Montgomery County. NS Officials reported that the damages for the accident totaled $54,450 for equipment; $135,000 for track structures; for a grand total of $189,450.

At the time of the accident it was dark and clear. The temperature was 85 F.

The probable cause of the derailment was determined to be the failure of the A-end truck bolster and center plate on gondola rail car # NS 41694. The lack of lubrication on the bolster bowl and center plate prevented the truck from swiveling freely.

138. NARRATIVE

CIRCUMSTANCES PRIOR TO THE ACCIDENT

The crew of eastward NS Unit Coal Train # 824V4-27 included a locomotive engineer and a conductor. The crew went on duty at Bluefield, WV at 5:20 p.m. The crew was taxied to Narrows, VA to get the train. This is the home terminal for the crew members and all received the required statutory off-duty rest period prior to reporting for duty.

The assigned coal train consisted of two locomotives and 145 loaded coal hopper cars. The train was 7,406 feet long and weighed 2,0571 tons when it departed Narrows, VA.

The Crew stopped at Whitethorn, VA to add two distributive power locomotives (pusher) to the rear of the train. The pusher was operated by one engineer and was designated as NS Train # V52V4-29. The crews performed intermediate train air brake test at both locations prior to proceeding toward Roanoke, VA.

As the eastbound train approached the accident area the locomotive engineer of NS train 824V4-27 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 and the locomotive engineer of train (pusher) V52V4-29 was seated at the controls on the south side of the pusher locomotive.

The direction of the train was eastward toward Roanoke, VA negotiating through a left hand curve as seen by the train crew. The NS timetable identifies the curve as a right hand 8.6 degree curve. The point of the derailment is a spiral of the leaving end (east) of the curve at MP V282.8.

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

THE ACCIDENT

NS Train # 824V4-27 along with pusher consist NS V52V4-29 was being operated at 19 mph approaching the accident area. The crews proceeded along the Whitethorn District with no indication of a pending problem. After passing way-side signal 282.2 the engineer of the lead locomotive noticed the train was slowly starting to lose speed. The engineer of the lead locomotive radioed to the engineer of the pusher locomotive to ask him if he had lost power to a locomotive. The pusher engineer responded that he did not know what was going on and the pusher still had normal air pressure. The two engineers began to notch down their locomotives together until the train went into emergency. The maximum authorized speed for the train was 25 mph as designated in the former NS Timetable that was in effect at the time of the accident.

At approximately 10:03 p.m. July 29, 2008, NS Train # 824V4-27 experienced an undesired emergency application of the train air brake system. The train was in the 8th notch running 19 mph when the train began to slow. The Engineer had notched the train throttle down to the 3rd notch at 7 mph, 614 amps when the train went into emergency. Once the train came to a complete stop the conductor dismounted the lead locomotive and began inspecting the train. The conductor discovered the 46th through the 67th loaded coal hopper cars had derailed and were all still in an upright position.

Norfolk Southern Management was dispatched to the scene. The managers concluded that there were no hazardous materials involved and the damages were well below the threshold for mandatory drug testing of the crew. One division of Hulcher Railroad Contractors from Barboursville, WV was dispatched to the scene and arrived at 4:35 am on July 30th. One division of Corman Railroad Construction Co. from Huntington, WV also arrived at 4:35 am on July 30th. Crane-masters Inc. was also dispatched to the scene with one crew arriving from Richmond, VA and another from Toney Town, MD. Both Crane-masters crews arrived at 4:35 am on July 30th. All of the derailed cars were re-railed at 11:00 pm on July 30th. The track was repaired and returned to service at 6:30 am on July 31st. NS Officials reported eleven freight train delays on the Whitethorn district due to this accident.

FRA inspections revealed no exceptions with the track conditions or train handling for this accident.

ANALYSIS AND CONCLUSIONS

ANALYSIS - TOXICOLOGICAL TESTING:

The three employees involved in the accident were not tested due to the accident damage dollar amounts did not meet the threshold for mandatory testing.

CONCLUSION:

Intoxication was not a causal factor in this accident.

ANALYSIS - LOCOMOTIVE SAFETY DEVICES:

The leading locomotive was equipped with a headlight, the auxiliary lights and the audible warning device required by Federal regulations. These devices were retested in the presence of an FRA Motive Power and Equipment Inspector (MP&E). No exceptions were noted.

CONCLUSION:

The locomotive safety devices were in full compliance with Federal requirements.

ANALYSIS - LOCOMOTIVE ENGINEER OPERATING PERFORMANCE:

The locomotive was also equipped with a speed indicator and an event recorder as required. The relevant event recorder data was downloaded by the trainmaster and analyzed. The findings were released to Federal inspectors.

CONCLUSION:

The locomotive engineer was in compliance with all applicable railroad operating and train handling requirements and Federal Standards.

ANALYSIS FATIGUE:

FRA uses an overall effectiveness rate of 77.5 percent as the baseline for fatigue analysis which is equivalent to blood alcohol content (BAC) of 0.05. At or above this baseline we do not consider fatigue as probable for any employee. Software sleep settings vary according to information obtained from each employee. If an employee does not provide sleep information FRA uses the default software settings. FRA obtained fatigue related information including a 10-day work history for three employees involved in this accident.

CONCLUSION:

FRA concluded fatigue of the train crew was not a factor in this accident.

ANALYSIS - MECHANICAL:

An inspection in the field of all of the freight cars involved in the accident did not yield any apparent or obvious defects. At the time of the inspection no deficiencies were noted. A more detailed scientific analysis report was submitted that analyzed both the evidence from the track and the lead car in the derailment. This testing was completed by the Norfolk Southern (NS) Tests and research department.

CONCLUSION:

FRA reviewed the report carefully and agrees with its findings that the lack of lubrication on the bolster bowl and center plate prevented the truck from swiveling freely which caused the car to climb the rail resulting in the derailment.

OVERALL CONCLUSIONS:

The download data from the event recorder indicated that the engineer was operating the train in compliance with the NS Timetable and Operating Rules and Federal Standards. No exceptions were noted in the handling of the train.

The FRA conclusion was determined by lab analysis and the discovery of a failed truck on gondola car NS 41694 at the accident site. The car was moved to Shaffers Crossing Car Shop at Roanoke, VA for further inspection. The A-end truck was removed from the car. Further inspection revealed that the truck bolster bowl and center plate were binding due to the absence of lubrication.
In accordance with the FRA Guide for Preparing Accident / Incident Reports the primary cause code is FRA E46C. (E46C - truck bolster stiff, improper swiveling).

PROBABLE CAUSE & CONTRIBUTING FACTORS:

The derailment occurred when the center plate and bolster bowl of Gondola Car NS # 41694 experienced excessive binding due to a lack of lubrication which prohibited the truck from traveling with the curvature of the track. No contributing factors were found.