Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2005-89

Norfolk Southern (NS)
Davisboro, Georgia
October 13, 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 FACTUAL RAILROAD ACCIDENT REPORT

FRA File # HQ-2005-89

1.Name of Railroad Operating Train #1: Norfolk Southern Corp. [NS]	1a. Alphabetic Code: NS	1b. Railroad Accident/Incident No.: 022701
2.Name of Railroad Operating Train #2: N/A	2a. Alphabetic Code: N/A	2b. Railroad Accident/Incident: N/A
3.Name of Railroad Responsible for Track Maintenance: Norfolk Southern Corp. [NS]	3a. Alphabetic Code: NS	3b. Railroad Accident/Incident No.: 022701
4. U.S. DOT_AAR Grade Crossing Identification Number:	5. Date of Accident/Incident: Month 10 / Day 13 / Year 2005	6. Time of Accident/Incident: 02:25: ☑ 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)*: 01

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

13. Nearest City/Town	14. Milepost *(to nearest tenth)*	15. State Abbr	15. State Code	16. County
Davisboro	S124.5	N/A	GA	WASHINGTON

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
68 F		4		2		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
Savannah Main		4	32.9		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	1	192G512

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

29. Trailing Tons *(gross tonnage, excluding power units)*: 5710

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)				
j	N/A	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	13	yes
(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	0	0	0	0	0

35. Cars	Loaded a. Freight	Loaded b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Equipment Consist	41	0	13	0	0
(2) Total Derailed	21	0	3	0	0

36. Equipment Damage This Consist	37. Track, Signal, Way, & Structure Damage	38. Primary Cause Code	39. Contributing Cause Code
851900	18000	T207	N/A

Number of Crew Members

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

Length of Time on Duty

44. Engineer/Operator	45. Conductor
Hrs 4 Mi 55	Hrs 4 Mi 55

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: N/A

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
	N/A	N/A	N/A	N/A

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

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

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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
N/A			N/A N/A N/A N/A N/A	N/A

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

59. 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

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

61. 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	N/A	N/A	N/A	N/A	N/A
(2) Total Derailed	N/A	N/A	N/A	N/A	N/A

62. Cars	Loaded a. Freight	Loaded b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Equipment Consist	N/A	N/A	N/A	N/A	N/A
(2) Total Derailed	N/A	N/A	N/A	N/A	N/A

63. Equipment Damage This Consist: N/A

64. Track, Signal, Way, & Structure Damage: N/A

65. Primary Cause Code: N/A

66. Contributing Cause Code: N/A

Number of Crew Members

67. Engineer/ Operators	68. Firemen	69. Conductors	70. Brakemen
N/A	N/A	N/A	N/A

Length of Time on Duty

71. Engineer/Operator: Hrs N/A Mi N/A

72. Conductor: Hrs N/A Mi N/A

Casualties to:	73. Railroad Employees	74. Train Passengers	75. Other
Fatal	N/A	N/A	N/A
Nonfatal	N/A	N/A	N/A

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

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

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

Highway User Involved

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

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

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

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

86a. Was the highway user and/or rail equipment involved in the impact transporting hazardous materials? — Code: N/A
1. Highway User 2. Rail Equipment 3. Both 4. Neither

Rail Equipment Involved

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

84. Position of Car Unit in Train: N/A

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

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

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	N/A

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

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

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

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

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

93. Driver's Age: N/A

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

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

96. Driver — Code: N/A
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)*

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

98. View of Track Obscured by *(primary obstruction)* — Code: N/A
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

101. Casulties to Highway-Rail Crossing Users	Killed	Injured
	N/A	N/A

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

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

102. Highway Vehicle Property Damage *(est. dollar damage)*: N/A

103. Total Number of Highway-Rail Crossing Users *(include driver)*: N/A

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

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

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

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

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

109. SYNOPSIS OF THE ACCIDENT

On October 13, 2005, at 2:25, a.m. Eastern Daylight Time (EDT), eastbound Norfolk Southern (NS) freight Train No. 192G512 derailed at milepost (MP) S124.5 on the Georgia Division, Savannah Subdivision, near Davisboro, Georgia (GA). The three man crew consisted of an engineer, conductor, and brakeman. They reported for duty on October 12, 2005, at 9:30 p.m. in Macon, GA. Train No. 192G512 consisted of two locomotives, NS8459 in the lead and NS2518 trailing, with 41 loaded and 13 empty cars, a total of 5,710 tons. Train No. 192G512 was en route to Augusta, GA.
Train No. 192G512 was traveling at a recorded speed of 49 miles per hour (mph) prior to the derailment. The train crew felt a twisting or jarring motion shortly before an emergency brakes application occurred at 2:25 a.m. When their train stopped, the conductor and brakeman walked the train and found only 12 cars. They climbed the rear car and instructed the engineer to shove back. They found 24 cars derailed about a half mile back.
There was no hazardous material involved and no injuries to the train crew. Equipment damage was $851,900 and $18,000 in track damages.
At the time of the derailment, it was dark and cloudy with a slight breeze. The temperature was 68F.
The probable cause of the accident was a broken rail.

110. NARRATIVE

The following information was obtained from an investigation that was conducted by the Federal Railraod Administration.
Circumstances prior to the Accident

The crew of Train No. 192G512 included a locomotive engineer, conductor, and brakeman. They went on duty at 9:30 p.m. EDT, on October 12, 2005, at Brosnan Yard in Macon, Georgia, their home terminal. All crew members received more than their statutory time off period, 10 hours 38 minutes, prior to reporting for duty. The mixed freight train consisted of two locomotives, NS8459 in the lead with NS2518 trailing, 41 loaded cars, 13 empty cars for a total of 5,710 tons. The train, destined for Augusta, GA, received an initial terminal train air brake test at 10:55 p.m. and departed Macon, GA. The trip was uneventful for the next 55 miles where they arrived at Tennille, GA, MP S134. At 1:54 a.m., NS dispatcher issued track authority 5541, directing Train No. 192G512 to proceed on the Savannah Subdivision from Tennille East, MP S134 to Millen West, MP S79.6
As the eastbound train approached MP S121, the locomotive engineer was seated at the controls in lead Locomotive No. NS8459, the conductor was seated on the opposite side of the lead locomotive, and the brakeman was seated in the trailing Locomotive No. NS2518. Train No. 192G512 was traveling at a recorded speed of 49 mph, the maximum allowed as designated in the current NS Timetable. Approaching the accident site from the west, the main line is tangent for three and a half miles and remains tangent for one mile beyond. The grade of the main line is 0.22-percent descending in the direction of the movement.
The NS timetable direction of Train No. 192G512 was east. Timetable direction is used for this report.
The Accident
All three members of the train crew said they felt a twisting or jarring motion in the locomotives after they passed over a trailing switch at MP S124.5. At 2:25 a.m., the engineer said Train No. 192G512 had an undesired brake application. The conductor and brakeman walked back to inspect the train finding only 12 cars behind the locomotives. The conductor notified the dispatcher about the derailment. The conductor and brakeman climbed aboard the rear car and had the engineer reverse the train about one-half mile where they located the derailed cars. There were 21 loads and three empties derailed in accordion style. The first two cars resting on their sides, the other 22 cars remained upright. One additional car, a loaded hopper car was

damaged, but still on the track. The derailed and damaged cars were 14 tank cars of Kaolin Slurry, two covered hoppers carrying dry Kaolin, four open hoppers carrying Wood Chips, three asphalt residue cars, and one damaged tank car.
No injuries were sustained by the train crew, and no hazardous material was involved.
Analysis and Conclusions
After the derailment, Federal Railroad Administration (FRA) partnered with the NS maintenance of way department in conducting an inspection of the derailment site. The investigation revealed no defective conditions for surface, crossties, or drainage. The ballast was clean and there was no indication of either crosslevel or profile defects. During the site investigation, a 42-inch broken rail was found. The rail ends of the broken rail were battered and contained uncapped shells. Directly below these shelly marks is where the rail vertically broke. A walking inspection was conducted between MP S128 and MP S123.5 for additional rail defects, but none were found.
FRA reviewed the NS Savannah Subdivision rail reports for 2005. The Savannah Subdivision has 115 pound welded rail, which is inspected by NS for internal defects at four month intervals. On June 1, 2005, the main line was inspected with Detector Car No. RTC9. The report showed one defective weld was found by their detector car about five hundred feet west of this derailment. However, the defective weld was repaired with a replacement rail. NS 2005 Geometry Car reports were also reviewed. The last test on the Savannah Subdivision was September 15, 2005, and no defects were detected in the area of the derailment.
NS track inspections were also reviewed at NS Division Headquarters. Reports indicated track inspections were being performed according to regulations for the class of track on the Savannah Subdivision. The last three inspection reports dated October 4, October 6, and October 11, 2005, indicated no defects were noted by NS at the derailment site location.

The train crew was in compliance with NS Operating Rules and at operating within FRA allowable speed.

Probable Cause

Based upon the NS and FRA investigation a 42-inch piece of rail broke out vertically under load, underneath uncapped shells in the rail head. The missing piece of rail allowed the wheels to fall off one end and hit the other end at a speed which caused the cars to derail in the accordion style.