Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2006-52

Norfolk Southern
Sweet Water, TN
June 20, 2006

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-2006-52

1.Name of Railroad Operating Train #1: Norfolk Southern Corp. [NS]	1a. Alphabetic Code: NS	1b. Railroad Accident/Incident No.: 25538
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.: 25538
4. U.S. DOT_AAR Grade Crossing Identification Number:	5. Date of Accident/Incident: Month 06 / Day 20 / Year 2006	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
10	5	0	65	Central

13. Nearest City/Town	14. Milepost (to nearest tenth)	15. State Abbr	15. State Code	16. County
Sweetwater	168.6A	N/A	TN	MONROE

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
70 F		4		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
Main		4	20.8		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 — Code: 1

27. Train Number/Symbol: 166T519

28. Speed (recorded speed, if available) R - Recorded E - Estimated: 42 MPH — Code: R

29. Trailing Tons (gross tonnage, excluding power units): 8356

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): g | j | 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	14	no
(2) Causing (if mechanical cause reported)	E33C	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
N/A	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 c. Remote
(1) Total in Train	4	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	68	0	14	0	0
(2) Total Derailed	17	0	4	0	0

36. Equipment Damage — This Consist: 768727

37. Track, Signal, Way, & Structure Damage: 35000

38. Primary Cause Code: E33C

39. Contributing Cause Code: N/A

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 4 Mi 15

45. Conductor: Hrs 4 Mi 15

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: N/A

53. Was Equipment Attended? 1. Yes 2. No — Code: N/A

54. Train Number/Symbol: N/A

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

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
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)

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); 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)

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 — Code(s): N/A | N/A | N/A | N/A | N/A | N/A | N/A
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: 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.

HQ-2006-
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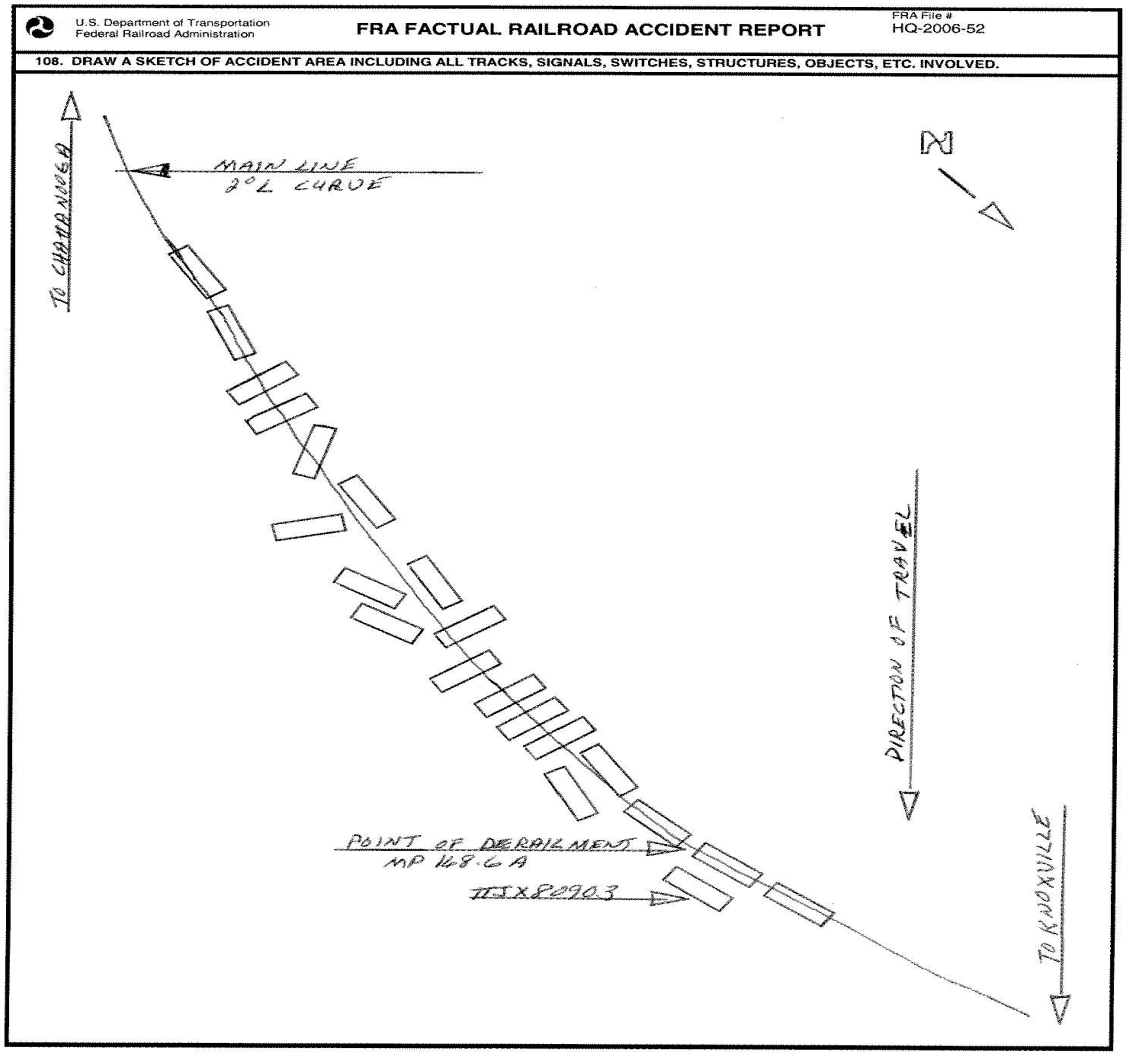
sketch.jpg



109. SYNOPSIS OF THE ACCIDENT

On June 20, 2006, about 2:25 a.m. Eastern Standard Time (EST), Norfolk Southern Railway Company (NS) eastbound freight train 166T519 consisting of four locomotives, 68 loads, 14 empties and 8,356 tons, derailed 21 cars at milepost (MP) 168.6A at Sweetwater, Tennessee (TN). Train 166T519 was operating on the main track of the NS Central Division, West End District and originated at Chattanooga, TN where the train received a class 1 brake test and inspection. The train crew consisted of a locomotive engineer and conductor. They reported for duty at Chattanooga at 8:30 p.m. on June 19, 2006, after receiving the prescribed rest. The train departed Chattanooga at 10:25 p.m. on June 19, 2006, and was 5,323 feet in length.

Train 166T519 was traveling at a speed of 42 miles per hour (mph), 88 amps in no. 1 throttle, as recorded by the event recorder on the third locomotive (NS 8766) when an undesired train line induced emergency brake application occurred. Inspection of Train 166T519 by the conductor revealed the 14th through 34th head cars had derailed. The 21 derailed cars (17 loads and 4 empties) included five hazardous material loads with none leaking. As a precautionary measure, local emergency management officials evacuated a ½ mile radius affecting about 65 people.

The method of operation in the accident area is Traffic Control and Track Warrant. The class of track is class 4 and is a single main track consisting of 132 lb. continuous welded rail (CWR) and wood ties. About 625 feet of track was destroyed. NS reported $768,727 in equipment damage and $35,000 track damage.

At the time of the derailment, the weather was dark, the temperature was 70°F. There were no injuries.

The cause of the derailment was the coupler pin retainer bolt nut failed on the “A”(east) end of Car TTJX 80903 allowing the coupler to come out intact resulting in the derailment of TTJX 80903 and the following 20 cars.

110. NARRATIVE

Circumstances Prior to the Accident

The crew of Train 166T519 consisted of a locomotive engineer and conductor. They went on duty at Chattanooga, TN at 8:30 p.m. on June 19, 2006. Chattanooga is the originating terminal for Train 166T519. Both crew members received more than the required off duty period prior to reporting for duty. They were called to operate Train 166T519 eastbound to Knoxville, TN, a distance of about 115 miles.

Train 166T519 was called at 8:05 p.m. on June 19, 2006, and was in forwarding yard track no. 5. A class 1 train air brake test and inspection was performed by NS mechanical personnel at Chattanooga. The locomotives were coupled to the train by the crew at 10:10 p.m. and departed at 10:25 p.m.

The crew said they stopped at Brown and Jersey for signals and at Sanford siding to meet Train 15T. After Train 15T cleared the siding, Train 166T519 proceeded to Sweetwater, TN when an undesired train line emergency brake application occurred. No other incidents were reported. As the eastbound train approached the accident area, MP 168.6A, the crew was seated in their normal operating positions in the cab of the lead locomotive.

At the accident location, trains operate on a single main track. The method of operation is Traffic Control and Track Warrant. The track consists of 132 lb. CWR and wood ties. Approaching the derailment site there is a 2°;curve to the left to the point of derailment (POD) and beyond. The grade in the accident area is practically level. The maximum authorized speed at this location is 50 mph.

The railroad timetable direction of this train is east and is used throughout this report.

The Accident

The train was being operated at 42 mph in no. 1 throttle position approaching the accident area when an undesired train line emergency brake application occurred.At the time of the derailment, the train was also traveling at 42 mph. Both speeds were recorded by the event recorder on the third locomotive (NS 8766).

Train 166T519 came to a stop at MP 168.6A, and the engineer notified the train dispatcher of the emergency brake application. The conductor exited the lead locomotive to inspect the train and found the 14th through 34th head cars had derailed. The Sweetwater police also notified the engineer that the train had derailed.

The NS mechanical general foreman from Knoxville and Chattanooga investigated the derailment. They discovered an empty bulk head flat car, TTJX 80903, was the first to derail. They also noted the coupler pin retainer bolt nut failed, allowing the coupler on the “A” (east) end of this car to come out intact resulting in the derailment of this car and 20 other cars.

R.J. Corman, Hulcher, and B&P Enterprises arrived at the accident scene to re-rail the derailed equipment. Hapaco provided environmental cleanup service. Monroe County Emergency Management Agency and Sweetwater Police Department were the emergency response units.

Analysis and Conclusion

The railroad and Federal Railroad Administration took no exception as to how the train was operated based on the event recorder download. NS track records indicate the track in the accident area had been properly inspected and was last inspected on June 18, 2006. No exceptions were noted.

The POD was MP 168.6A, which was in a left hand 2°;curve.

The 14th head car, TTJX 80903, which was the first to derail, was an empty bulk head flat car. The coupler pin retainer bolt nut fell off, allowing the coupler on the "A" (east) end of this car to come out intact. The coupler pin and retainer bolt were found about 1/4 mile west of the POD.

FRA obtained fatige related information, including a 10-day work history, for all of the employees involved in this incident. FRA reviewed the work history of the crew members involved and noted that the employees may have been working at a diminished level of effectiveness due to fatigue, which may have contributed to the cause of the accident.

The derailment was cleared and the main line opened for traffic about 11:30 p.m. on June 20, 2006.

Probable Cause

The probable cause, as determined by the Federal Railroad Administration, was the coupler pin retainer bolt nut failed, which allowed the coupler on the "A" (east) end of car TTJX 80903 to come out intact.