Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2010-01

Norfolk Southern (NS)
Walker Springs, AL
January 12, 2010

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-2010-1

1.Name of Railroad Operating Train #1	1a. Alphabetic Code	1b. Railroad Accident/Incident No.
Norfolk Southern Corp. [NS]	NS	038081
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	038081
5. U.S. DOT_AAR Grade Crossing Identification Number	6. Date of Accident/Incident: Month 01 | Day 12 | Year 2010	7. Time of Accident/Incident: 09:15: ☐ 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: 11

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

14. Nearest City/Town	15. Milepost *(to nearest tenth)*	16. State Abbr / Code	17. County
WALKER SPRINGS	079.10	N/A / AL	CLARKE

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
25 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
SINGLE MAIN TRACK	4	11	1

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	75JQ412

29. Speed *(recorded speed, if available)* — Code: R - Recorded; E - Estimated 43 MPH | E

30. Trailing Tons *(gross tonnage, excluding power units)*: 2010

31. 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

31a. 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

32. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded *(yes/no)*
(1) First involved *(derailed, struck, etc)*	NS 009522	1	N/A
(2) Causing *(if mechanical cause reported)*	0	0	N/A

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

Alcohol	Drugs
0	1

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	0	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	0	0	67	0	0
(2) Total Derailed	0	0	0	0	0

37. Equipment Damage — This Consist: $3,084,506.00

38. Track, Signal, Way, & Structure Damage: $365,041.00

39. Primary Cause Code: M599

40. Contributing Cause Code: N/A

Number of Crew Members: 41. Engineer/ Operators	42. Firemen	43. Conductors	44. Brakemen
1	0	1	0

Length of Time on Duty: 45. Engineer/Operator	46. Conductor
Hrs 4 Mi 10	Hrs 4 Mi 10

Casualties to:	47. Railroad Employees	48. Train Passengers	49. Other
Fatal	1	0	0
Nonfatal	0	0	0

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

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

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

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)* — Code: R - Recorded; E - Estimated 0 MPH | N/A

58. 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

58a. Remotely Controlled Locomotive? 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 N/A

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)*	N/A	N/A	N/A
(2) Causing *(if mechanical cause reported)*	N/A	N/A	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	N/A	N/A	N/A	N/A	N/A
(2) Total Derailed	N/A	N/A	N/A	N/A	N/A

90. 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

91. Equipment Damage This Consist: N/A

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

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

Length of Time on Duty

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

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

Casualties to:	101. Railroad Employees	102. Train	103. Other
Fatal	N/A	N/A	N/A
Nonfatal	N/A	N/A	N/A

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

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

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

Highway User Involved

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

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

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

Rail Equipment Involved

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

112. Position of Car Unit in N/A

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
N/A	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	N/A	N/A

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)*	
	N/A

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

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.

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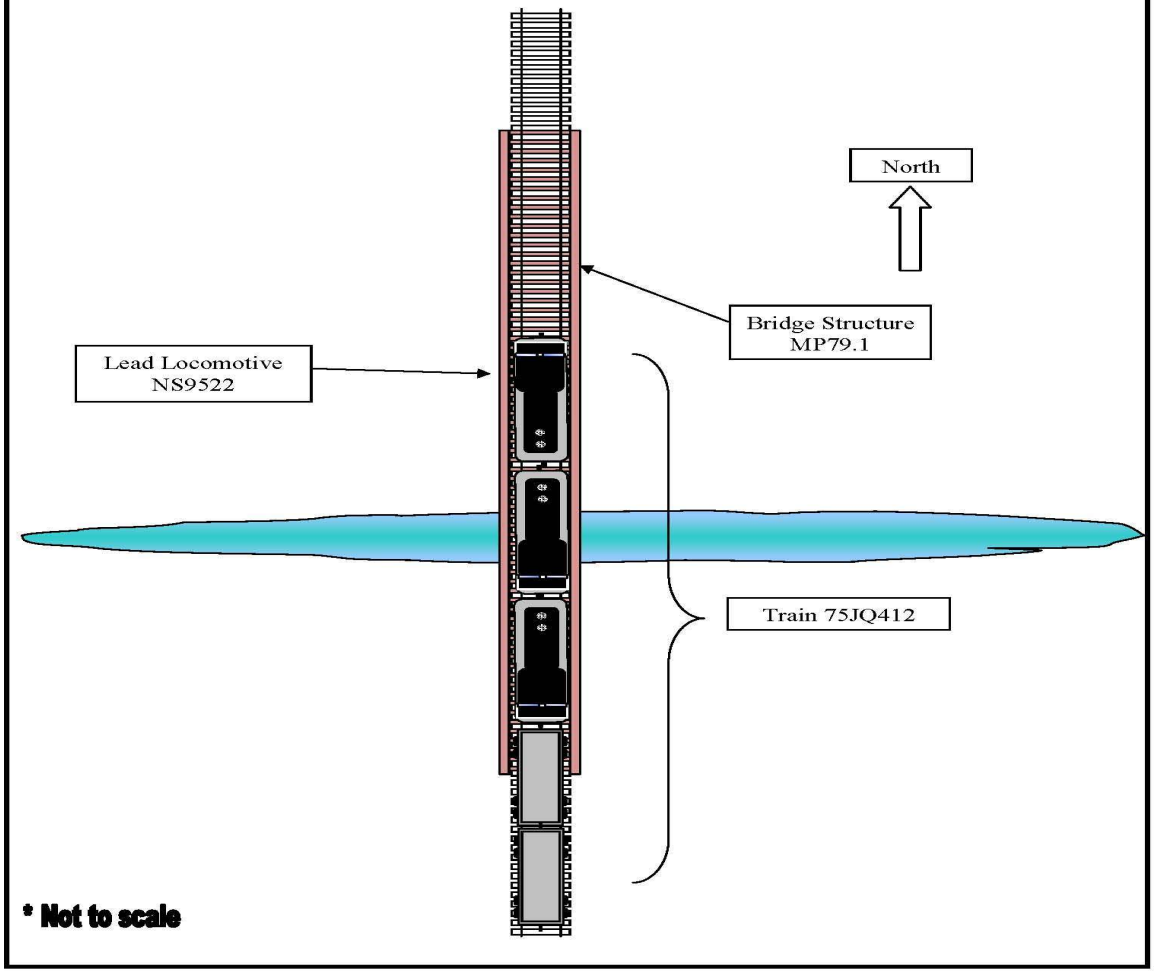
108. DRAW A SKETCH OF ACCIDENT AREA INCLUDING ALL TRACKS, SIGNALS, SWITCHES, STRUCTURES, OBJECTS, ETC. INVOLVED.



137. SYNOPSIS OF THE ACCIDENT

On Tuesday January 12, 2010, at about 9:15 p.m. Central Standard Time (CST), northbound Norfolk Southern empty coal Train NS75JQ412 (75J) encountered a bridge on fire in route to their destination. The crew of train 75J consisted of a locomotive engineer and conductor. Train 75J consisted of three (3) locomotives and 66 empty coal hoppers and End-of-Train (EOT) telemetry devise. As they approached the bridge, the engineer initiated a normal brake application stopping the train with the three (3) lead locomotives and lead end of the first coal hopper directly on the bridge. Within seconds the locomotives were consumed by fire as the crew attempted to exit the lead locomotive and get to safety. Both crew members sustained severe burns and bone fractures as they jumped from the locomotive. They were later found on the west embankment near the rear of the first coal hopper. Both crew members were taken to the South Alabama Medical Center in Mobile, Alabama (AL). The locomotive engineer did not survive the accident. The conductor remained in intensive care for several weeks before being released from the hospital. He sustained severe burns over 30 percent of his body.

All three (3) locomotives were completely destroyed by the fire along with the track structure. The bridge did remain intact with the locomotives on top.

The accident occurred on the NS Alabama Division, 3B-South subdivision, single main track at milepost (MP) 79.1 near Walker Springs, AL. Timetable speed at this location is 49 miles per hour (MPH), FRA Class 4 Track.

This is not an Amtrak route. There were no hazardous materials involved. Equipment damages totaled $3,084,506 with Track and Structure damages of $365,041.

At the time of the accident it was dark with clear conditions and a temperature of 25° F.

The probable cause of the accident is the bridge fire.

138. NARRATIVE

Circumstances Prior to the Accident:
On January 12, 2010, a Norfolk Southern (NS) train crew consisting of a locomotive engineer and a conductor reported for duty at 5:05 p.m. (CST) at the NS Yard Office in Selma, AL. The crew was assigned to train 75J, an empty coal train scheduled to depart Jackson, AL, and destined for Selma, AL. The crew of 75J had worked this assignment in the Past from the extra board. They received proper rest according to the Hour of Service Records prior to going on duty.

The crew received their train documents and departed the Selma Yard Office via taxi. They were transported to the Alabama Electric Co-op facility in Jackson, AL. Upon arrival at the Co-op facility, they took charge of train 75J. They reviewed the dispatcher's bulletin, conducted their initial job briefing, and began building their train. Train 75J consisted of three (3) locomotives (NS 9522, NS 9632, NS 9874) and 66 empty coal hoppers. The train was 3,588 feet long and weighed 2,010 tons. The conductor walked the train as the crew completed a Class 1 air brake test. No exceptions were taken. Upon completion, they moved train 75J to the Alabama Electric Co-op switch located just short of the main track new MP 88.5 and contacted the NS dispatcher. At 7:56 p.m., they received track authority No. 7051 from the dispatcher with permission to occupy the main track and proceed north. The conductor contacted the Tombigbee River Bridge tender and received permission to occupy the Tombigbee River drawbridge at MP 88.2.

Train 75J departed the Alabama Electric Co-op facility and cleared the Tombigbee River drawbridge at 8:58 p.m. At 9:07 p.m., while passing MP 83.0, they received track authority No. 7114 from the NS dispatcher with permission to proceed north toward Suggsville, MP 75.0. At 9:11 p.m., Train 75J passed the equipment defect detector at MP 80.3 at a recorded speed of 38 mph with no exceptions noted. The trip, to this point, was uneventful.

Traveling north approaching the accident scene from the defect detector, the track is tangent leading into a 328 foot shallow one degree right-hand curve at MP 79.6. The curve is about 2,600 feet south of the bridge at MP 79.1. Following the curve is tangent track on a 0.66 descending grade approaching the bridge. The

track structure consists of 132 lb. Continuous Welded Rail (CWR) milled in 1979, laid in double shoulder tie plates and fastened to wood crossties with conventional track spikes and rail anchors. All track components were the same on the bridge except composite plastic crossties were used in lieu of wood, concrete, or steel.

As the northbound train approached the bridge at MP 79.1, the locomotive engineer was seated at the controls on the east side and the conductor seated on the west side of lead locomotive NS 9522.

The railroad timetable direction of the train is north; the geographic direction is northeast. Timetable direction is used throughout this report.

The Accident:
While traveling through the curve at MP 79.6 at about 9:15 p.m., the engineer asked the conductor to look up; the conductor was in the process of copying orders received from the dispatcher. The conductor looked up and saw a very low fire in the distance about one to two feet high off the rail. As they traveled out of the curve, the crew realized the fire was in the track on the bridge ahead. The conductor stood up and put his hand on the emergency brake and looked at the engineer. The engineer replied, “I got this.” The conductor looked at the engineer a second time and again the engineer replied, “I got this.” The engineer initiated a normal brake application bringing the train to a controlled stop. All three (3) locomotives and the front half of the first car stopped directly on the bridge.

The flames were low at first when the locomotives entered the bridge but flamed up above the locomotive cab when the train stopped. The crew thought they could back the train off the bridge but the locomotive suddenly dropped a short distance. The weight of the train crushed the burning plastic ties, dropping the rail and locomotives to the deck of the bridge--not considered a derailment. At that point the train became unmovable and the crew began to abandon the train. The conductor grabbed a fire extinguisher as he and the engineer attempted to exit the locomotive through the front door. When they opened the front door they encountered flames and smoke and were unsuccessful at extinguishing the fire. They closed the door and went back into the cab of the locomotive to discuss an escape plan. As smoke filled the cab of the locomotive, they decided to exit it through the door behind the engineer’s seat. They grabbed their backpacks and equipment, kicked the door open, and ran down the walkway along the outside of the locomotive. Forgetting about the two (2) steps midway down on the walkway, the conductor lost his footing and fell off the locomotive and bridge. Realizing he fell to the ground, he began yelling out for the engineer. He located his radio and attempted to call the train at Suggsville for help but the radio had sustained heat damage and was not operational. He continued to look for the engineer and heard a scream but could only see flames. The engineer finally called out to the conductor and the conductor helped him to safety. The engineer asked the conductor if he had his cell phone. Remembering he did, he called for help.

At 9:45 p.m., the conductor called the NS Yard Office in Selma, AL and spoke with an NS switch foreman from yard job AS-20. The foreman immediately notified the NS 3B-South Train dispatcher of the accident and also contacted the NS trainmaster. At 9:55 p.m. the trainmaster contacted the NS track supervisor informing him of the accident. The track supervisor called his local track surfacing foreman, who lived near the scene, and told him to get to the accident scene as soon as possible. The foreman was the first to arrive at the accident scene and found the locomotives burning on the bridge. He located the injured crew members on the west side embankment near the south end of the bridge. He called his grandfather who lived near the bridge and asked that he assist in directing emergency personnel to the bridge.

At 10:07 p.m., the Clarke County Emergency Operations Center dispatched emergency personnel to the scene after receiving the emergency call from the NS Train Dispatcher. The Jackson Volunteer Fire Department Assistance Fire Chief and a fireman were the first emergency responders to arrive on the scene at 10:24 p.m. With limited access and no road crossings within a mile and half from the south end of the train, emergency responders had to transport the injured crew members on foot to four-wheel drive trucks, then, to awaiting Life Flight helicopters which arrived near the scene at 11:22 p.m. At 12:34 a.m. on January 13, 2010, Life-Flight Air Services transported the injured crew members to South Alabama Medical Center, in Mobile, AL. NS officials, United States Environmental Services, State of Alabama Fire Marshal, and Hulcher Services also responded to the accident scene.

The locomotive engineer sustained third-degree burns throughout his body and passed away later that week. The conductor also sustained burns throughout his body and remained in the hospital for several weeks following the accident, and was eventually released. There were no other injuries reported.

All three (3) locomotives and the first car remained upright on the bridge receiving fire damage. No equipment derailed. The three (3) locomotives were completely destroyed by the fire and an undetermined amount of diesel fuel also burned in the fire.

At the time of the accident it was dark with clear conditions with a temperature of 25° F, according to the Hot Box Detector at MP 80.3.

Analysis and Conclusion:

Analysis:
The event recorders from all three (3) locomotives were destroyed by the fire; no usable data could be recovered for analysis. On January 12, 2010, at 9:11 p.m., the NS Equipment Defect Detector at MP 80.3 recorded Train 75J traveling at 38 mph with no exceptions reported. The previous train, NS 384 north, with lead locomotive NS 2645, cleared the same defect detector at 5:12 p.m. with no exceptions reported. The crew of NS Train 384 did not report anything unusual at or around the NS bridge at MP 79.1 when they passed over it at 5:15 p.m.

The maximum speed at this location is 49 mph, FRA Class 4 Track. A twice-weekly track inspection is required over this segment of track. The NS track inspector conducted a track inspection over the accident area on January 11, 2010 and took no exceptions. The NS conducted an annual bridge inspection at the bridge on October 6, 2009 and no exceptions were noted. On October 6, 2009 Sperry Rail Services conducted an internal rail test on the 3B-South Subdivision and did not identify any rail defects through the accident location.

The bridge at MP 79.1 is a four (4) pile steel structure, 285 feet long with 16 bents including the dump bents. The #132 rail was installed in 1979 by the Former Southern Railway. The bridge ties were made of a plastic composite material and installed in 2007. A similar bridge at MP 40.7 on the 3B-South is also constructed with plastic composite bridge ties and was inspected as comparison to the bridge at MP 79.1. The plastic ties were acceptable and no exceptions were observed.

On Monday, January 11, 2010, a contract welding crew started working on the bridge at MP 79.1. They were in the process of stabilizing the bridge deck by welding horizontal braces on the stringers, and completing other minor repairs. The horizontal braces were custom cut and trimmed using acetylene torches and electric handheld grinders. The cutting was completed on the ground away from the bridge. The horizontal braces were welded in place with an electric arc welder and welding rod. On Monday they began working the north end of the bridge proceeding southward. On Tuesday, January 12, 2010, they continued welding on the bridge and working southward. The contract welders worked under the supervision of an NS Bridge Foreman who also acted as the Roadway Worker in Charge (RWIC) for their on-track safety.

Conclusion:
The remains of the plastic composite bridge ties were removed from the bridge deck and appeared to be the only flammable material on the bridge. The only known source of a spark or ignition was the welding repairs being completed at the bridge earlier that day.

Analysis:
The Federal Railroad Administration (FRA) Post-Accident Forensic Toxicology test results indicate that metabolites from two (2) benzodiazepines were present in low concentrations in the NS locomotive engineer. While the treating hospital's records did not specifically list these two benzodiazepines as being administered prior to death, FRA has not been able to rule out medical administration of these sedating controlled substances by emergency responders or hospital personnel, nor can they be ruled out as either authorized or unauthorized use by the employee. The other railroad employee tested had negative test results.

Conclusion:
Even if one or both of the benzodiazepines were tied to use before the accident, absent additional evidence, the presence of low concentrations could not, alone, be tied to any impact on performance or judgment.

Fatigue Analysis:
FRA obtained fatigue related information, including a 10-day work history, for the NS engineer and conductor

of Train 75J, involved in this accident. FRA uses an overall effectiveness rate of 77.5 percent as a baseline for fatigue analysis, which is equivalent to blood alcohol content (BAC) of 0.05. At or above this baseline, FRA does not consider fatigue as probable.

Fatigue Conclusions:
The results of their fatigue analysis follows:

1. Locomotive Engineer of Train 75J
Sleep setting Excellent
Overall effectiveness = 86.68%
Lapse Index = 1.9
Reaction Time = 114%
Chronic Sleep Debt = 6.24
Hours of Continuous Wakefulness = 16.52
Time of Day (military) 21:30
BAC Equivalent = <0.05
Conclusion: Fatigue was not evident for this employee.

2. Conductor assigned to Train 75J
Sleep setting Excellent
Overall effectiveness = 96.54%
Lapse Index = 0.5
Reaction time = 103%
Chronic Sleep Debt = 5.22
Hours of Continuous Wakefulness = 13.18
Time of Day (military) 21:30
BAC Equivalent = <0.05
Conclusion: Fatigue was not evident for this employee.

Probable Cause:
The cause of this accident was the locomotive stopping on Bridge 79.1 while it was on fire. With the added weight of the locomotives, the ties were crushed and the ties on fire ignited the underneath of the locomotives.