
# *Federal Railroad Administration*
# *Office of Safety*
# *Headquarters Assigned*
# *Accident Investigation Report*
# *HQ-2008-51*

## *Northern Southern (NS)*
## *Barry, IL*
## *June 3, 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-2008-51

| | | |
|---|---|---|
| 1.Name of Railroad Operating Train #1: Norfolk Southern Corp. [NS ] | 1a. Alphabetic Code: NS | 1b. Railroad Accident/Incident No.: 033113 |
| 2.Name of Railroad Operating Train #2: N/A | 2a. Alphabetic Code: N/A | 2b. Railroad Accident/Incident No.: N/A |
| 3.Name of Railroad Operating Train #3: N/A | 3a. Alphabetic Code: N/A | 3b. Railroad Accident/Incident No.: N/A |
| 4.Name of Railroad Responsible for Track Maintenance: Norfolk Southern Corp. [NS ] | 4a. Alphabetic Code: NS | 4b. Railroad Accident/Incident No.: 033113 |
| 5. U.S. DOT_AAR Grade Crossing Identification Number: | 6. Date of Accident/Incident: Month 06 \| Day 03 \| Year 2008 | 7. Time of Accident/Incident: 08:09:00 ☑ 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 | ILLINOIS |

| 14. Nearest City/Town | 15. Milepost *(to nearest tenth)* | 16. State Abbr | 16. State Code | 17. County |
|---|---|---|---|---|
| BARRY | DH500.0 | N/A | IL | PIKE |

| 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 |
|---|---|---|---|
| 73 F | 2 | 3 | 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 | 21 | 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 | 398D202 |

29. Speed *(recorded speed, if available)* — Code: R - Recorded; E - Estimated 47 MPH | R

30. Trailing Tons *(gross tonnage, excluding power units)*: 8202

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): e | 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 22362 | 35 | yes |
| (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 |
|---|---|
| 00 | 00 |

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 | 4 | 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 | 48 | 0 | 62 | 0 | 0 |
| (2) Total Derailed | 7 | 0 | 24 | 0 | 0 |

37. Equipment Damage — This Consist: $1,680,000.00

38. Track, Signal, Way, & Structure Damage: $60,000.00

39. Primary Cause Code: T001

40. Contributing Cause Code: H993

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: Hrs 6 Mi 4

46. Conductor: Hrs 6 Mi 4

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

| 63. 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 |

64. Equipment Damage This Consist N/A

65. Track, Signal, Way, & Structure Damage N/A

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 |
|---|---|---|---|
| N/A | N/A | N/A | N/A |

Length of Time on Duty

72. Engineer/Operator Hrs N/A Mi N/A

73. Conductor Hrs N/A Mi N/A

| Casualties to: | 74. Railroad Employees | 75. Train Passengers | 76. Other |
|---|---|---|---|
| Fatal | N/A | N/A | N/A |
| Nonfatal | N/A | N/A | N/A |

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. 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)*

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

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

## Rail Equipment Involved

111. 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)*

112. Position of Car Unit in N/A

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# FRA FACTUAL RAILROAD ACCIDENT REPORT

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| 110. Position<br>1.Stalled on Crossing 2.Stopped on Crossing 3.Moving Over Crossing<br>4. Trapped | Code<br>N/A | 113. Circumstance<br>1. Rail Equipment Struck Highway User<br>2. Rail Equipment Struck by Highway User | Code<br>N/A |
|---|---|---|---|
| 114a. Was the highway user and/or rail equipment involved in the impact transporting hazardous materials?<br>1. Highway User 2. Rail Equipment 3. Both 4. Neither | Code<br>N/A | 114b. Was there a hazardous materials release<br>1. Highway User 2. Rail Equipment 3. Both 4. Neither | Code<br>N/A |
| 114c. State here the name and quantity of the hazardous materials released, if any.<br>N/A | | | |

| 115. Type Crossing Warning<br>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 | 116. Signaled Crossing<br>*(See instructions for codes)* | Code | 117. Whistle Ban<br>1. Yes<br>2. No<br>3. Unknown | Code |
|---|---|---|---|---|
| Code(s) N/A N/A N/A N/A N/A N/A N/A | | N/A | | N/A |

| 118. Location of Warning<br>1. Both Sides<br>2. Side of Vehicle Approach<br>3. Opposite Side of Vehicle Approach | Code<br>N/A | 119. Crossing Warning with Highway Signals<br>1. Yes<br>2. No<br>3. Unknown | Code<br>N/A | 120. Crossing Illuminated by Street Lights or Special Lights<br>1. Yes<br>2. No<br>3. Unknown | Code<br>N/A |
|---|---|---|---|---|---|

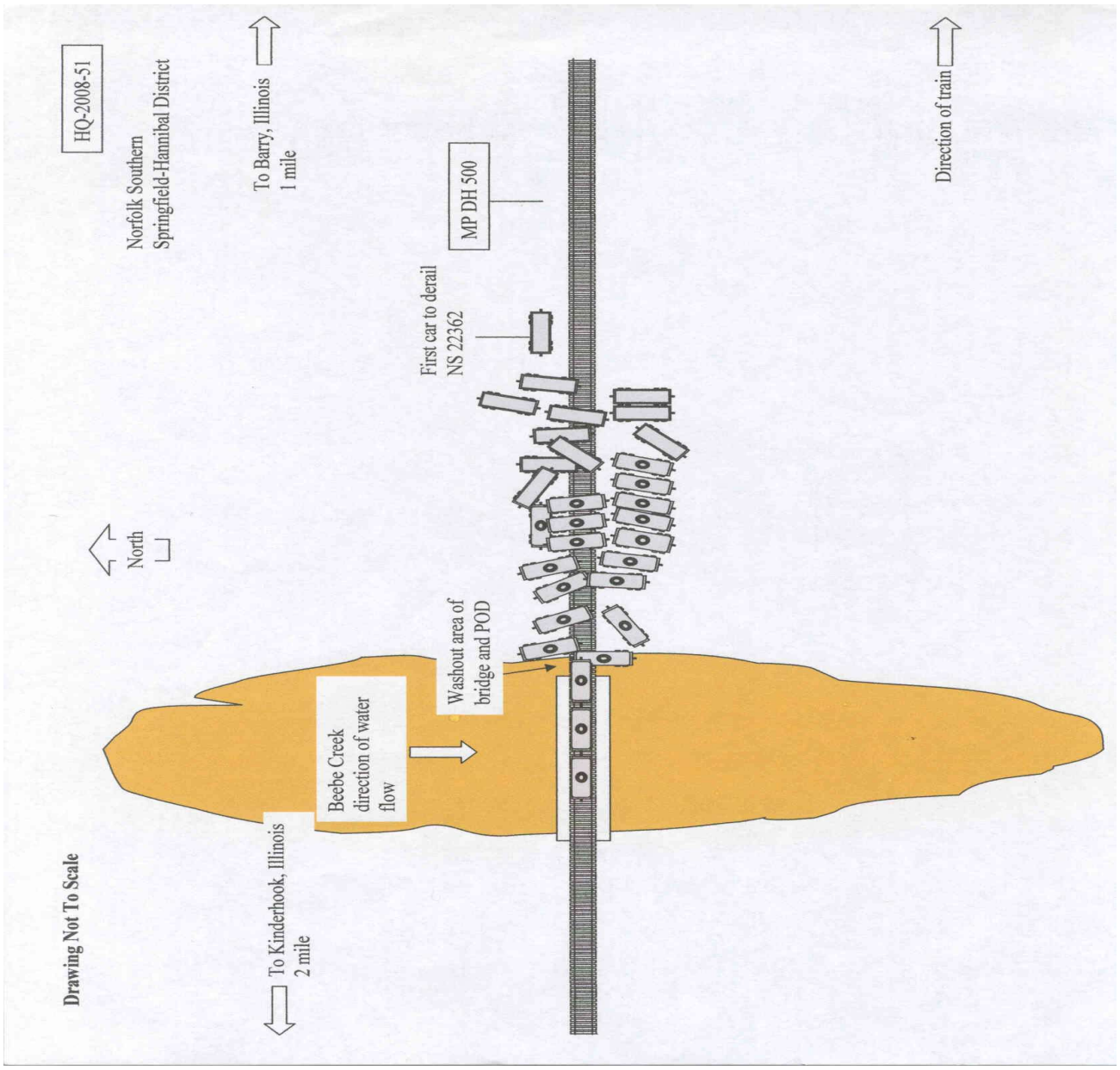
| 121. Age<br>N/A | 122. Driver's Gender<br>1. Male<br>2. Female | Code<br>N/A | 123. Driver Drove Behind or in Front of and Struck or was Struck by Second Train<br>1. Yes 2. No 3. Unknown | Code<br>N/A | 124. Driver<br>1. Drove around or thru the Gate 2. Stopped and then Proceeded 3. Did not Stop 4. Stopped on Crossing 5. Other *(specify in narrative)* | Code<br>N/A |
|---|---|---|---|---|---|---|

| 125. Driver Passed Highway Vehicle<br>1. Yes 2. No 3. Unknown | Code<br>N/A | 126. View of Track Obscured by *(primary obstruction)*<br>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<br>N/A |
|---|---|---|---|

| Casualties to: | Killed | Injured | 127. Driver<br>1. Killed 2.Injured 3. Uninjured | Code<br>N/A | 128. Was Driver in the Vehicle?<br>1. Yes 2. No | Code<br>N/A |
|---|---|---|---|---|---|---|
| 129. Highway-Rail Crossing Users | N/A | 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?<br>1. Yes 2. No | Code<br>N/A | 133. Locomotive Auxiliary Lights Operational?<br>1. Yes 2. No | Code<br>N/A |
|---|---|---|---|
| 134. Locomotive Headlight Illuminated?<br>1. Yes 2. No | Code<br>N/A | 135. Locomotive Audible Warning Sounded?<br>1. Yes 2. No | Code<br>N/A |

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



137. SYNOPSIS OF THE ACCIDENT

On June 3, 2008 at 8:09 a.m. CDT eastbound Norfolk Southern Railway Company (NS) mixed freight train NS 398D202 derailed 31 cars. The accident occurred near Barry, Illinois, at milepost DH500.0 on the Springfield-Hannibal District Subdivision single Main Track.

The conductor and locomotive engineer of NS Train 398D202 sustained no injuries. The first car to derail was a loaded hopper car of coal, NS 22362, the 35th car from the head end. This caused the 36th through the 65th cars to derail in a general pile for a distance of 400 feet. The derailed equipment consisted of seven loads (six coal hoppers and one box car loaded with rolls of paper) and 24 empty rail cars (four covered hoppers and 20 tank cars). There was no fire or evacuation and no hazardous materials involved.

The total estimated damages were $1,740,000. Equipment damage was $1,680,000, and track damage was $60,000.

At the time of the accident the weather was cloudy with rain, and the ambient temperature was 73 ºF. A flash flood warning had expired at 8:01 a.m.

The probable cause of the derailment was saturated roadbed on a bridge approach that collapsed under the train movement.

A contributing factor was the dispatcher not allowing the assistant track supervisor authority to inspect the track ahead of the train.

138. NARRATIVE

CIRCUMSTANCES PRIOR TO THE ACCIDENT

The crew of NS train 398D202 consisted of a locomotive engineer and a conductor. They went on duty at 2:00 a.m. June 3, 2008 at the NS Rail Yard in Moberly, Missouri. Moberly is the away from home terminal for both crew members and both received more than the required statutory off-duty rest period prior to reporting for duty. The engineer and conductor each had 18 hours and 45 minutes off duty rest.

NS train 398D202 was scheduled to operate east from Moberly en route to Decatur, Illinois with 110 cars of mixed freight (48 loads and 62 empties) and four locomotives on the head end. NS train 398D202 was 6,517 feet long with 8,202 trailing tons. The train received a Class I air brake test and a satisfactory End of Train Device (EOTD) test at Kansas City, Missouri on June 2, 2008. When the train arrived at Moberly it was tied down in the NS Moberly Yard with the locomotives still attached and connected to yard air. The engineer acknowledged that the train had the proper air test slip and NS train 398D202 departed Moberly at 3:00 a.m. on June 3, 2008 controlled by signal indication.

The method of operation was Centralized Traffic Control, controlled by the NS train dispatcher at Decatur. The maximum authorized speed was 50 mph. NS Illinois Division Timetable No. 3 effective 12:01 a.m., Thursday, January 1, 2004, was in effect. The timetable and geographic direction of the train was east. Timetable directions are used throughout this report.

While stopped in a siding east of Moberly to meet an opposing train, the crew of NS train 398D202 was informed by the third shift dispatcher that there was a flash flood warning in effect until 8:00 a.m. between Hannibal, Missouri and Bluffs, Illinois the area over which they would be operating. This warning required the engineer to reduce the train's speed to 40 mph. While stopped again in the siding at Hull, Illinois to meet two more opposing trains, the first shift dispatcher informed them again of the flash flood warning still in effect until 8:00 a.m. The crew members of NS train 398D202 acknowledged the dispatcher's instruction. After the second train passed, the crew received a clear signal and departed Hull Siding. The crew said that after the flash flood warning expired at 8:00 a.m. they received no further instructions to restrict the train's movement.

The engineer increased the train's speed toward the maximum authorized speed of 50 mph.

As NS train 398D202 approached the accident area the engineer was seated at the controls on the north side of the leading locomotive. The conductor was seated on the south side of the same locomotive viewing approaching signals.

THE ACCIDENT

As NS train 398D202 approached the point of derailment (POD) the engineer was operating the locomotive in throttle position eight at a recorded speed of 47 mph with no air brakes applied. The train was stretched. The crew said they felt a small bump as the lead locomotive passed over the bridge but they had not seen anything in the track. The engineer said the train's air brakes went into emergency shortly after feeling the bump and the train came to a gradual stop. Both the engineer and conductor said that when the unintentional emergency application of the air brakes occurred, the head end of NS train 398D202 came to a stop less than one mile east of the bridge. After notifying the dispatcher that their train was stopped in emergency near milepost DH500 the conductor walked toward the rear of the train to determine the cause of the emergency application. He radioed back to the engineer that there were about 30 cars still attached to the head end. He could not see the rest of the train so he continued walking back and discovered derailed cars east of the bridge. After the conductor communicated again with the engineer the NS dispatcher was notified of the derailment and informed that neither of them had been injured. The conductor remained near the derailed cars and explained what happened to local emergency personnel and NS track employees that arrived at the site.

No hazardous materials were involved in the derailment and no evacuation was ordered. There was no official response by emergency personnel; however, an officer from the Pike County Sheriff's Department was present for traffic control on the adjacent highway.

ANALYSIS AND CONCLUSIONS

ANALYSIS - TOXICALOGICAL TESTING:

This accident did not meet the criteria for 49 CFR Part 219 Subpart C Post Accident Toxicological Testing. The NS elected to test the first shift dispatcher under their post accident toxicological testing authority since this accident did meet their prescribed testing criteria. The test results were negative.

ANALYSIS - TRACK:

In the area of derailment the NS single Main Track was tangent with 0.45 percent ascending grade in the direction of train movement. The track structure was constructed of wood crossties with 132 lb continuous welded rail (CWR) laid in 1980. The maximum timetable freight train speed for this location was 50 mph, FRA Class 4 track. The rail was ultrasonically tested by Sperry Rail Service on February 28, 2008 and no defective rails were found. The NS Track Geometry Car (NS-31) found no exceptions during a survey on May 6, 2008.

The railroad bridge near the POD was approximately 200 feet long. It was a pre-stressed concrete ballast deck with steel driven piling. There were no CWR joints near the derailment area. No defects were noted during the last NS track inspection conducted on June 2, 2008. Track geometry measurements were not taken at the scene because it was evident the track across the ballast deck bridge complied with the FRA Track Safety Standards for the intended class. Track surface and gage were not causal factors in the derailment.

The track disturbed by the derailment began approximately 80 feet onto the east end of the bridge approach and continued eastward for approximately 400 feet. A large accumulation of drift on north side of bridge located at milepost DH500.10 blocked the water flow and raised the water level to saturate the roadbed on the east bridge approach. This caused the roadbed to collapse under the 35th head car.

The track supervisor said the storm awoke him early on the morning of the derailment. He said he made a decision to inspect the track and called his assistant to assist with the inspection. Just before leaving his home the dispatcher called and notified him of the flash flood warning issued on his territory. When the

supervisor arrived at his office in Jacksonville, Illinois he requested and received track and time authority to occupy and inspect the track from the dispatcher and started inspecting the main track eastward. He told his assistant to start at Jacksonville and inspect westward. When the assistant arrived at Jacksonville the dispatcher told him there were trains in the area where he requested track authority. The assistant decided to drive west to Hannibal and inspect the track in an eastward direction. The dispatcher said he had an eastbound train to run before the assistant could begin his inspection. NS train 398D202 was the eastbound train the assistant would have followed.

The bridge at milepost DH500.10 was one of 11 bridges on the Springfield-Hannibal District listed in the NS Illinois Division list of bridges on Class 4 or greater track subject to flooding. These 11 bridges were identified as vulnerable during heavy rainfall or a flash flood warning. On September 4, 1997 FRA published Notice of Safety Advisory 97-1 containing ten recommendations designed to reduce accidents caused by severe weather conditions. NS adopted these measures and developed a policy to implement the advisory. NS rules concerning flash flood warnings require trains to operate not exceeding 40 mph through the affected area until the track is inspected. This rule was not followed correctly by the dispatchers or the train crew. The slow order required for the flash flood warning was not to be released until both the warning had expired and the track was inspected.

CONCLUSION:

The point of derailment was determined to be at the east end bridge approach where the washout occurred. FRA agrees with the cause determined by the railroad. The saturated roadbed failed under the 35th head car. This derailment may have been prevented if the railroad required a special inspection to be conducted before train operations through the affected area.

ANALYSIS - MECHANICAL:

The NS investigating team determined that the first car to derail was NS 22362. A mechanical inspection of rail car NS 22362 was conducted and no exceptions were taken. The other 30 derailed cars were also inspected on site at the derailment with no evidence of defects other than the damage associated with the derailment.

CONCLUSION:

The inspections of the 31 derailed cars with no mechanical defects other than the damage sustained during the derailment eliminated the equipment as a causal factor in the derailment.

ANALYSIS - EVENT RECORDER:

FRA analyzed event recorder data provided by NS Officials for lead locomotive NS 6628. This data suggested that the emergency application of the air brakes was induced by the train line, probably caused by the train separation. The data indicated that speed, amperage, throttle, and air brake pressure was constant until the unintentional emergency brake application occurred. The engineer was operating NS train 398D202 at 47 mph in throttle position 8 when he experienced an emergency brake application of the train brake system. The speed was reduced from 47 mph to zero in less than one-half mile. The data indicates there were no exceptions to the engineer's handing characteristics prior to the emergency brake application.

CONCLUSION:

Train speed and handling were not causal factors in this derailment.

ANALYSIS: - FATIGUE

FRA obtained fatigue related information for the 10-day period preceding this incident including the 10-day work history (on duty/off duty cycles) for all of the employees involved.

CONCLUSION:

Upon analysis of that data information FRA concluded that one or more of the employees may have been

working at a diminished level of safety (effectiveness) due to mental and/or physical attributes associated with fatigue however that would not have contributed to the cause of the accident.

PROBABLE CAUSE & CONTRIBUTING FACTORS

The probable cause of the derailment was saturated roadbed on a bridge approach that collapsed under the train movement.

The dispatcher not allowing the assistant track supervisor authority to inspect the track ahead of the train was a contributing factor.