Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2007-75

Amtrak/Norfolk Southern
Chicago, IL
November 30, 2007

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

FRA FACTUAL RAILROAD ACCIDENT REPORT

FRA File # HQ-2007-75

1.Name of Railroad Operating Train #1: Amtrak [ATK]	1a. Alphabetic Code: ATK	1b. Railroad Accident/Incident No.: 106342
2.Name of Railroad Operating Train #2: Norfolk Southern Corp. [NS]	2a. Alphabetic Code: NS	2b. Railroad Accident/Incident No.: 031044
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.: 031044
5. U.S. DOT_AAR Grade Crossing Identification Number:	6. Date of Accident/Incident: Month 11 | Day 30 | Year 2007	7. Time of Accident/Incident: 11:23:00 ☑ 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: 03

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

14. Nearest City/Town	15. Milepost *(to nearest tenth)*	16. State Abbr	16. State Code	17. County
CHICAGO	517.3	N/A	IL	COOK

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
36 F	2	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
MAIN TRACK NO. 2	3	30	4

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
2	1	ATK 371

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

30. Trailing Tons *(gross tonnage, excluding power units)*: N/A

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)*	ATK 8	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
00	00

34. Was this consist transporting passengers? (Y/N): Y

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	1	0	0	0	0
(2) Total Derailed	1	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	3	0	0	0
(2) Total Derailed	0	0	0	0	0

37. Equipment Damage — This Consist: $1,700,000.00

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

39. Primary Cause Code: H222

40. Contributing Cause Code: H605

Number of Crew Members

41. Engineer/ Operators	42. Firemen	43. Conductors	44. Brakemen
2	0	1	1

Length of Time on Duty

45. Engineer/Operator: Hrs 11 Mi 50

46. Conductor: Hrs 11 Mi 50

Casualties to:	47. Railroad Employees	48. Train Passengers	49. Other
Fatal	0	0	0
Nonfatal	5	66	0

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

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

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
1	1	NS 23MB

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

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)*: 2145

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): e | N/A | N/A | N/A | N/A

2 = Remote control tower
3 = Remote control transmitter - more than one remote control transmitter: 0

59. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded *(yes/no)*
(1) First involved *(derailed, struck, etc)*	DTTX427287	96	yes
(2) Causing *(if mechanical cause reported)*	N/A	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
00	00

61. Was this consist transporting passengers? (Y/N): N

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	2	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	85	0	9	0	0
(2) Total Derailed	0	0	0	0	0

64. Equipment Damage This Consist: $19,000.00

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

66. Primary Cause Code: H222

67. Contributing Cause Code: H605

Number of Crew Members

68. Engineer/ Operators	69. Firemen	70. Conductors	71. Brakemen
1	0	1	1

Length of Time on Duty

72. Engineer/Operator: Hrs 9 Mi 48

73. Conductor: Hrs 9 Mi 48

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: 1

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

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

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: 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: 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)*: N/A

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

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

Rail Equipment Involved

111. Equipment Code: 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)*: N/A

112. Position of Car Unit in: N/A

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

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

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

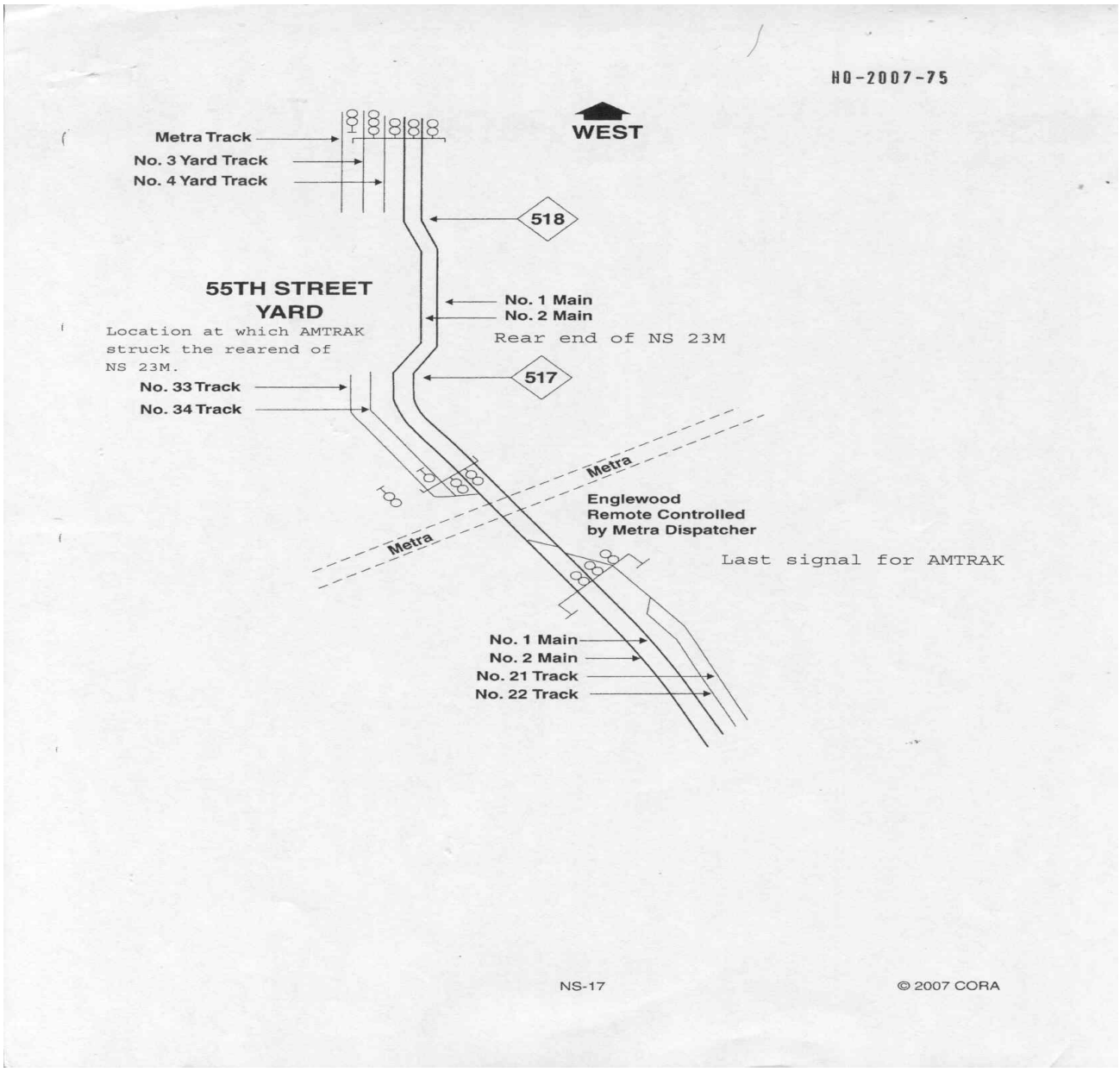
121. Age N/A	122. Driver's Gender 1. Male 2. Female	Code N/A	123. Driver Drove Behind or in Front of and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown	Code N/A	124. Driver 1. Drove around or thru the Gate 2. Stopped and then Proceeded 3. Did not Stop 4. Stopped on Crossing 5. Other *(specify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

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

Casualties to:	Killed	Injured	127. Driver 1. Killed 2.Injured 3. Uninjured	Code N/A	128. Was Driver in the Vehicle? 1. Yes 2. No	Code 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? 1. Yes 2. No	Code N/A	133. Locomotive Auxiliary Lights Operational? 1. Yes 2. No	Code N/A
134. Locomotive Headlight Illuminated? 1. Yes 2. No	Code N/A	135. Locomotive Audible Warning Sounded? 1. Yes 2. No	Code N/A

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



137. SYNOPSIS OF THE ACCIDENT

On November 30, 2007, at 11:23 a.m. CST, westbound Amtrak (ATK) Passenger Train 371 struck the rear of standing Norfolk Southern Corporation (NS) Intermodal Train 23MB.
The accident occurred on NS Main Track No. 2, Dearborn Division, Chicago District, at milepost 517.32, approximately five miles from Union Station in Chicago, Illinois. There were 187 passengers and six crew members, including one Amtrak lead service attendant onboard ATK 371. The Chicago Fire Department (CFD) responded to the accident.

Seventy-one individuals, including five crew members, were transported to nine local hospitals. Two passengers and one crew member were admitted to a hospital. All three were released the next day. There were no reported injuries to the crew of NS 23MB.

Amtrak Locomotive No. 8 (ATK Loco. 8) was the only equipment derailed, there was not a hazardous material release or a fire, and there was no evacuation. The total monetary damages were $1,700,000 to ATK equipment and $19,000 to the rear intermodal car of NS 23MB. A fuel tank on ATK Loco. 8 was damaged during the collision and leaked approximately 300 gallons of diesel fuel. There was no track damage, other than minor wheel marks on wood cross ties, made by the derailed rail car trucks. Hulcher Inc. and Sun Pro Environmental responded to the accident for rerailing and environmental cleanup.

The weather was clear and it was 36 °F.

The probable cause of the accident was the failure of the locomotive engineer of ATK 371 to comply with an interlocking signal displaying other than a stop indication. A contributing factor was the failure of the locomotive engineer to comply with restricted speed in connection with an interlocking signal.

An additional contributing factor was the failure of the relief locomotive engineer, who was on duty and in the operating cab of ATK Loco. 8, to bring the train to a stop when the locomotive engineer failed to call the correct signal indication and when he exceeded the maximum speed indicated by the signal aspect.

138. NARRATIVE

CIRCUMSTANCES PRIOR TO THE ACCIDENT

The method of operation on NS's Main Tracks is by signal indication of a Traffic Controlled System (TCS). Control Point (CP) 515 (CP 515), also known as CP Englewood, was the last signal location that ATK 371 operated through prior to colliding with NS 23MB. CP 515 is controlled by a Northeast Illinois Regional Commuter Rail Corporation (NIRC) dispatcher located in NIRC's Consolidated Control Facility in Chicago. For movements on the NS main tracks at CP 515, the NS Dearborn Division dispatcher in Dearborn, Michigan, makes requests to the NIRC dispatcher who controls CP 515.

Maximum authorized speed is 40 mph per NS Dearborn Division Timetable No. 4, effective 12:01 a.m., Friday, June 23, 2006. Operation of the railroad is governed by Northeast Operating Rules Advisory Committee (a.k.a. NORAC), 8th Edition, effective January 1, 2003. Maximum allowable speed through the curves prior to the derailment is 35 mph.

Approaching the accident area; from milepost 516.4 to milepost 516.9 the track is tangent. Beginning at milepost 516.9 there is a right hand 3-degree 18-minute curve, then a 32 minute left hand curve at milepost 517.1. At milepost 517.2 there is a 2-degree 42-minute left hand curve. The curve extends to milepost 517.3, just prior to the location of the accident at 517.32. The grade is relatively level from milepost 516.4 to the area of the accident.

There are two main tracks at this location. On the north side of Main Track No. 2 is NS's 47th Street Intermodal Yard. At the time and location of the accident there was a NS mixed freight train operating eastward on Main Track No.1, and standing intermodal cars on the adjacent yard track.

The timetable direction of ATK 371 was west. At the location of the accident, the geographical direction was north. Timetable directions are used in this report.

ATK TRAIN No. 371:

An Amtrak locomotive engineer, conductor and assistant conductor reported for duty at 6:50 a.m. EST, at Grand Rapids Eastern Railroad's (GR) Ann Street Yard in Grand Rapids, Michigan. The crew was assigned to ATK 371, which operates from Grand Rapids to Chicago's Union Station. All members of the crew received the required statutory off duty rest period (more than 12 hours) prior to reporting for the assignment. Grand Rapids is the away from home terminal for the crew.

This assignment was a "split" assignment. The first assignment was Amtrak Passenger Train 370, Chicago to Grand Rapids on November 29, 2007. Then, a Federally required, more than four hours rest (interim release), and then, Grand Rapids to Chicago as ATK 371. The crew may not exceed, by Federal regulation, 12 hours worked in the two work periods. Normal running time from Grand Rapids to Chicago is 3 hours and 55 minutes, and Chicago to Grand Rapids is 3 hours and 50 minutes.

GR employees conducted the air brake inspection and air brake test of ATK 371 at Ann Street Yard. ATK 371 is routinely a single locomotive and three Superliner coaches consist, as it was this day. After the air brake test was completed, ATK 371 departed Ann Street Yard in a westward direction en route to ATK's passenger station at Pleasant Street. It is approximately three miles from Ann Street Yard to the Amtrak passenger depot.

ATK 371 was scheduled to depart Grand Rapids at 7:35 a.m. EST. On the day of the incident ATK 371 departed Grand Rapids approximately 20 minutes late due to a signal delay.

ATK 371 operates over approximately 138 miles of the CSX Detroit Subdivision. Passenger stops are at Holland, Bangor, St. Joseph, and New Buffalo, Michigan. At Porter, Indiana, ATK 371 transfers to the NS Dearborn Division main tracks to complete the trip to Chicago. It is approximately 40 route miles from Porter to ATK 371's final destination at Union Station, Chicago.

At Hammond, Indiana an ATK relief locomotive engineer and a conductor boarded ATK 371. Hammond is approximately 15 route miles from Union Station. ATK had a concern that the crew of ATK 371 may exceed the maximum allowable hours of service before arriving at Union Station. When the relief locomotive engineer boarded ATK 8, the regular locomotive engineer decided to keep operating into Chicago, as he felt there was adequate time left before he would exceed his maximum hours of service. The relief conductor boarded the rear passenger car.

Westward ATK 371 approached CP 515 on NS Main Track No. 1. CP 515 is a railroad at grade crossing. The NS dispatcher had lined an eastward freight train on Main Track No. 1 at CP 518. Because Main Track No. 1 was occupied west of CP 515, the NIRC dispatcher was requested to line ATK 371 to Main Track No. 2 at CP 515. When ATK 371 entered Main Track No. 2 it was following NS 23MB in the same signal block.

Approaching the location of the accident, the regular locomotive engineer was seated at the control stand on the right (north) side of the locomotive, the relief locomotive engineer was seated on the left (south) side of the locomotive in the conductor's seat. The conductor was in the rear passenger car preparing to deboard passengers.

As ATK 371 approached CP 515 the regular locomotive engineer of ATK 371 called a "slow approach" signal. The relief locomotive engineer recognized that the signal aspect was a "restricting" indication and she started reviewing in her mind her knowledge of the signal she had observed. She did not question the locomotive engineer at this time. The conductor stated that he heard the locomotive engineer call the "slow approach" signal indication over the radio.

When ATK 371 cleared CP 515 at about 12:12:00 it encountered a 25 mph curve, and after exiting that curve the locomotive engineer started to increase the train speed. The relief engineer recognized that they were operating to fast.

The relief engineer told the engineer that he had called a "slow approach" when approaching CP 515. The engineer replied he had called a "slow clear." There was additional conversation concerning signals and working on the extra board until they approached the accident site.

NS INTERMODAL TRAIN No. 23 MB:

On November 30, 2007, at 2:35 a.m., EST, the crew of NS Train 23MB reported for duty at the NS Toledo Yard, in Toledo, Ohio. The crew consisted of a locomotive engineer, a conductor and a student conductor. All members received the required statutory off duty rest period prior to reporting for this assignment, and all members had been off duty for over 24 hours. Toledo is the home terminal for all members of the crew.

NS Train 23MB had an uneventful trip prior to the accident. NS Train 23MB, an intermodal train consisted of 17 articulated 5-pack rail cars and three articulated 3-pack rail cars.

The NIRC dispatcher lined NS Train 23MB from Main Track No. 1 to Main Track No. 2 at CP 515. NS Train 23MB cleared CP 515 at 10:52 a.m, CST and proceeded to CP 518 where it encountered a stop signal indication.

At 11:23 a.m., CST, crew of NS Train 23MB received a signal indication allowing them to proceed northward. The dispatchers intention was to have NS Train 23MB clear by CP 518 and then make a reverse move into the NS 47th Street Intermodal Yard. After the freight train operating eastward on Main Track No. 1 had cleared CP 518, the dispatcher intended to cross ATK Passenger Train 371 over from Main Track No. 2 to Main Track No. 1 at CP 518.

THE ACCIDENT:

ATK Passenger Train 371 was operating through a right hand curve when the locomotive engineers observed the End Of Train Device (EOTD) on the rear of NS Train 23MB. The locomotive engineer first reduced the train's throttle to idle. He then moved the brake handle from release to a minimum reduction and then to a full service reduction, and then he placed the train into emergency. One second after the emergency brake application the event recorder data ended. The engineer-induced emergency brake application was made when ATK Passenger Train 371 was operating at a recorded speed of 38 mph.

Locomotive ATK Passenger Train No. 8 struck the rear intermodal car of NS Train 23MB at approximately 36 mph. The locomotive ramped up on the rear car of NS Train 23MB and came to rest on top of the rear container. Both trucks of locomotive ATK Passenger Train No. 8 derailed. Locomotive ATK Passenger Train No. 8 stayed in line with the main track. None of ATK Passenger Train 371 passenger cars derailed nor did the rear car of NS Intermodal Train 23MB.

Prior to the crew of NS Train 23MB accepting the signal at CP 518, ATK Passenger Train 371 struck NS Intermodal Train 23MB and caused it to have an emergency application of the train air brakes. There were no injuries reported of the crew of NS Train 23MB.

The NTSB took charge of the investigation. Investigative teams led by an NTSB investigator, included representatives from ATK, NS, Federal Railroad Administration (FRA), Illinois Commerce Commission (ICC), United Transportation Union (UTU) and the Brotherhood of Locomotive Engineers (BLE).

EMERGENCY RESPONSE:

The initial Chicago Fire Department (CFD) dispatch of emergency equipment was at 11:33 a.m. CFD committed the following resources: 15 engine companies, 10 truck companies, 22 ambulances, three mass casualty units, a helicopter, and various other specialty equipment. There were 215 CFD personnel that responded to the accident scene. The 22 ambulances transported 71 individuals to nine seperate local hospitals.

The two locomotive engineers of ATK 371 were temporarily trapped in the locomotive. The collision caused the floor of locomotive ATK No. 8 to be pushed up approximately 18 inches. The two forward doors were jammed. The relief engineer elected to climb through a locomotive window that the CFD broke out. She climbed out the window onto a ladder and was assisted by CFD personnel to the ground. The regular engineer walked to the rear of locomotive ATK No. 8 and exited with assistance by CFD personnel. Both locomotive engineers, both conductors and the assistant conductor were transported to a local hospital.

ANALYSIS AND CONCLUSIONS:

ANALYSIS - TOXICOLOGICAL TEST:

Toxicological testing was conducted on the locomotive engineer, conductor and assistant conductor the relief locomotive engineer and relief conductor of Passenger Train ATK 371. The accident met the criteria for 49 CFR, part 219, subpart C Post Accident Toxicological testing. Tests were negative for all employees.

The NS elected to not test the crew of NS 23MB.

CONCLUSION:

Impairment was not a causal factor to the accident.

ANALYSIS - SIGNAL:

FRA and NIRC conducted a signal diagnostics log analysis of the signal system from CP 515 to CP 518. CP 518 is the next controlled signal location west of CP 515. The Harmon Logic Controller (HLC) diagnostic log indicated that the track circuit west of CP 515 on Main Track No. 2 was occupied (de energized) by some type of on track equipment. Track circuit indications, switch and signal requests, switch and signal controls, and switch and signal indication circuits were reviewed. The 2W-1 signal aspect could not be determined by reviewing the HLC diagnostic logs. The review of the HLC diagnostic log determined the sequence of events for the operation of the 2W-1 signal at CP 515 was consistent with the design of the signal system and that ATK Passenger Train 371 had been given a valid route from CP 515 to CP 518. After reviewing the signal control circuits and signal lighting circuits it was determined that the 2W-1 signal should have been displaying a restricting signal indication (red over yellow), which states, per NORAC Rule No. 290, that when movement of a train is governed by a restricting signal indication, the train must proceed at restricted speed until the entire train has cleared by all interlocking and spring switches or passed a more favorable fixed signal indication or entered non-signaled territory in which movement of trains outside of yard limits is authorized by a Form D.

Verification of the 2W-1 signal aspect at CP 515 was conducted. The switch position and track circuits at the control point were arranged so that the 2W-1 signal would display the proper signal aspect to re-create the movement of ATK Passenger Train 371. The aspect displayed was a restricting signal indication in accordance with the signal system design. A .06 ohm shunt was then used to verify each track circuit. All track circuits functioned as intended. The .06 ohm shunt was then used to re-create the movement of ATK Passenger Train 371.

CONCLUSION:

The signal system functioned as designed and was not a causal factor in the accident.

ANALYSIS - TRACK:

The NS has designated Main Track No. 2 as FRA Class 3 track. The maximum allowable speeds for FRA Class 3 track is 60 mph-for passenger trains and 40 mph-for freight trains. The NS has designated the maximum speed for the track at the site of the derailment as 40 mph for both passenger and freight trains.

Representatives from the NS, NTSB, and FRA inspected the track at the site of the derailment and approximately 300 feet eastward. The track met all the requirements of FRA's Track Safety Standards (49 CFR, part 213).

FRA also reviewed NS track inspection records for the track at the site of the derailment. The FRA requires the track in this area to be inspected twice weekly, with at least one day between inspections. There were no defects noted for proper frequency of inspection.

CONCLUSION:

NS Main Track No. 2 was not a causal factor in the accident.

ANALYSIS - MECHANICAL:

PRE DEPARTURE TESTS:

ATK 371 was mechanically inspected and the air brakes were given an initial terminal test at Grand Rapids. Records on the locomotive indicated that the air brake test was completed successfully. No exceptions were taken to the pre departure condition of the train.

All periodic inspections were within the prescribed limits.

POST ACCIDENT TESTS:

The ATK Locomotive No. 8 was damaged to the extent that no meaningful air brake test could be performed. After the accident the three passenger cars of ATK 371 were air tested using an NS locomotive. The air brakes applied and released as intended in both service and emergency applications. All wheels were within allowable tolerances. The locomotive engineer had taken no exception to the performance of ATK Passenger Train 371 during the trip from Grand Rapids to the accident site.

CONCLUSION:

The mechanical condition of ATK Passenger Train 371 was not a causal factor in the accident.

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 information FRA concluded fatigue was not probable for any of the employees.

ANALYSIS - FORENSICS:

SYNOPSIS:

FRA dispatched a separate team to analyze damaged passenger cars, to interview seriously injured passengers, and make a correlation between the nature and extent of the injuries with the equipment involved. During this investigation, the team focused on three passenger cars.

The inspection revealed that external damage to the passenger cars (Amtrak Superliner coach cars numbered: 35008, 34054 and 34002) was negligible. Internal loss of occupant space of these cars was non-existent. Several seats were tipped due to fastener failures.

Blood was found as designated below:

35008 (First car next to Engine)

Seats 5/6: Small blood Spot on front table; bloody napkin on window seat
Seats 7/8: Bloody handkerchief on seat
Seats 9/10: Blood on back of tray table
Seats 15/16: Many bloody towels on floor
Seats 47/48: First Aid Kit Used
Seats 21/22 and 45/46: Emergency Exit Windows Pulled

34054 (Second car back from Engine)

Lower Lever Handicap Seats: First Aid Kit Used
Seats 3/4: Seats Turned

Seats 15/16: Bloody napkins
Seats 19/20: Seat Dislodged, pulled forward
Seats 33/34: Blood on Tray Table
Seats 37/38: First Aid Kits Used
Seats 49/50: Emergency Exit Window Pulled

34002 (Third Car from Engine; Car reversed in comparison to others; B end forward)

Seats 57/58: Bloody Paper Towels
Seats 55/56: Bloody Paper Towels
Seats 51/52: Most blood evidence of all three cars. Blood on towels, arm rest of chair, first aid kit used, bandages, blood on Dr. Pepper can.
Seats 37/38: Blood on window sill and heater fender, seat cushion loose
Seats 19/20: Bloody paper towels
Seats 17/18: Emergency Exit Window Pulled
Seats 13/14: Bloody paper towels
Seats 11/12: Bloody paper towels
Seats 9/10: Bloody paper towels
Seats 5/6: Bloody paper towels

The team conducted a telephonic interview with the operating engineer and the relief engineer due to the deformation within the locomotive. Totals passengers transported by Chicago Fire Department, Division of Emergency Management Services (CFD-EMS) were:

71 patients transported to area hospitals,
182 patients seen by CFD/EMS,
5 people not seen by CFD,
7 patients coded RED,
11 coded YELLOW,
53 coded GREEN,
111 patients refused service.
3 patients admitted overnight.

As of December 2, 2007, all patients were released from the hospitals. One seriously injured passenger as reported by NTSB (a 63 year-old female) sustained fractures of the left orbital wall, orbital rim, zygomatic/frontal suture, and anterior maxillary wall. Due to logistical problems, the team was unable to gain access to the seriously injured patient while on site.

ANALYSIS - LOCOMOTIVE ENGINEERS OPERATING PERFORMANCE:

REGULAR ENGINEER:

The regular locomotive engineer of ATK Passenger Train 371, a 50 year old male, was a certified locomotive engineer. He was in possession of a valid certification card at the time of the accident. He was promoted to locomotive engineer on September 6, 2007.

The regular locomotive engineer called the wrong signal indication at CP 515. He called the signal at CP 515 as a “slow approach,” when it was actually a “restricting” indication. When questioned by the relief engineer concerning the speed after they had cleared by CP 515, the regular engineer stated that he had called a “slow clear” at CP 515.

If the regular locomotive engineer was operating on a “slow approach” indication the maximum train speed at the accident site would have been 30 mph, if he was operating on a “slow clear” indication the maximum train speed speed would have been track speed after clearing the interlocker.

The event recorder data indicated that the ATK Passenger Train 371 was operated at 44 mph. The signal indication should have restricted the train’s speed to “restricted speed”, a maximum 15 mph with the ability to stop within one half the range of vision.

RELIEF ENGINEER:

The relief locomotive engineer of ATK Passenger Train 371, a 43 year old female, was a certified locomotive engineer. She was in possession of a valid certification card at the time of the accident. She was promoted to locomotive engineer on June 12, 2007.

The relief locomotive engineer observed the signal indication at CP 515 as a “restricting” indication. When the regular locomotive engineer of ATK Passenger Train 371 initially called the signal aspect, red over yellow, a “slow approach” indication, she should have insisted they stop the train and review what the proper operating speed should have been. If the locomotive engineer failed to bring the train to a stop when she questioned his actions, she should have initiated an emergency brake application.

CONCLUSION:

The regular locomotive engineer of ATK Passenger Train371 failed to properly interpret the signal aspect, resulting in operating ATK Passenger Train 371 more than 25 mph over what the maximum speed should have been.

The relief engineer violated 49 CFR Part 240 when she failed to initiate an emergency brake application when she recognized that the locomotive engineer had called the wrong signal indication and was exceeding the train speed he was authorized to operate.

OVERALL CONCLUSIONS:

The accident occurred because the regular locomotive engineer and the relief locomotive engineer failed to comply with Federal Standards and railroad rules.

PROBABLE CAUSE AND CONTRIBUTING FACTORS:

The probable cause of the accident was the failure of the regular locomotive engineer of ATK Passenger Train No. 371 to comply with an interlocking signal displaying other than a stop indication. A contributing factor was the failure of the regular locomotive engineer to comply with restricted speed instructiions in connection with an interlocking signal.

An additional contributing factor was the failure of the relief locomotive engineer, who was on duty and in the operating cab of ATK Locomotive No. 8 on ATK Passenger Train 371, to bring the train to a stop when the locomotive engineer failed to call the correct signal indication and when ATK Passenger Train 371 exceeded the maximum speed indicated by the signal aspect.

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