Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2007-61

Burlington Northern Santa Fe
Houston, TX
October 18, 2007

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

FRA FACTUAL RAILROAD ACCIDENT REPORT

FRA File # HQ-2007-61

1.Name of Railroad Operating Train #1: Port Term. RR Association [PTRA]	1a. Alphabetic Code: PTRA	1b. Railroad Accident/Incident No.: 2007000082
2.Name of Railroad Operating Train #2: BNSF Rwy Co. [BNSF]	2a. Alphabetic Code: BNSF	2b. Railroad Accident/Incident No.: GC1007112
3.Name of Railroad Operating Train #3: N/A	3a. Alphabetic Code: N/A	3b. Railroad Accident/Incident No.: na
4.Name of Railroad Responsible for Track Maintenance: Port Term. RR Association [PTRA]	4a. Alphabetic Code: PTRA	4b. Railroad Accident/Incident No.: 2007000082
5. U.S. DOT_AAR Grade Crossing Identification Number:	6. Date of Accident/Incident: Month 10 | Day 18 | Year 2007	7. Time of Accident/Incident: 10:30: ☑ 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: 04

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

14. Nearest City/Town	15. Milepost *(to nearest tenth)*	16. State Abbr	16. State Code	17. County
Houston	5.2	N/A	TX	HARRIS

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
85 F	2	2	3

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
Booth Siding	1	36.5	2

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
8	1	JOB 153

29. Speed *(recorded speed, if available)* R - Recorded E - Estimated — Code	31. Method(s) of Operation *(enter code(s) that apply)*	31a. Remotely Controlled Locomotive?
7 MPH | R	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)*	0 = Not a remotely controlled; 1 = Remote control portable; 2 = Remote control tower; 3 = Remote control transmitter - more than one remote control transmitter
30. Trailing Tons *(gross tonnage, excluding power units)*: 0	Code(s): e | i | N/A | N/A | N/A	0

32. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded *(yes/no)*
(1) First involved *(derailed, struck, etc)*	BNSF 966	2	no
(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	0

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	36. Cars	Loaded a. Freight	Loaded b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Train	2	0	0	0	0	(1) Total in Equipment Consist	0	0	0	0	0
(2) Total Derailed	1	0	0	0	0	(2) Total Derailed	0	0	0	0	0

37. Equipment Damage This Consist	38. Track, Signal, Way, & Structure Damage	39. Primary Cause Code	40. Contributing Cause Code
$27,213.00	$2,000.00	H210	H220

Number of Crew Members				Length of Time on Duty	
41. Engineer/ Operators	42. Firemen	43. Conductors	44. Brakemen	45. Engineer/Operator	46. Conductor
1	0	1	0	Hrs 2 Mi 31	Hrs 2 Mi 31

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 — N/A

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

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

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
7	1	YHOU901118

56. Speed *(recorded speed, if available)* R - Recorded E - Estimated — Code	58. Method(s) of Operation *(enter code(s) that apply)*	58a. Remotely Controlled Locomotive?
0 MPH | R	a. ATCS; b. Auto train control; g. Automatic block; h. Current of traffic; m.Special instructions; n. Other than main track	0 = Not a remotely controlled; 1 = Remote control portable

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57. Trailing Tons *(gross tonnage, excluding power units)*: 7754

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)*	ACFX 40366	37	yes
(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

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	3	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	43	0	70	0	0
(2) Total Derailed	0	0	0	0	0

64. Equipment Damage This Consist: $4,000.00

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

66. Primary Cause Code: H210

67. Contributing Cause Code: H220

Number of Crew Members

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

Length of Time on Duty

72. Engineer/Operator: Hrs 2 Mi 34

73. Conductor: Hrs 2 Mi 34

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 | 0

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)*	0	0	N/A
(2) Causing *(if mechanical cause reported)*	0	0	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	0	0	0	0	0
(2) Total Derailed	0	0	0	0	0

90. 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

91. Equipment Damage This Consist: $0.00

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

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
0	0	0	0

Length of Time on Duty

99. Engineer/Operator: Hrs 0 Mi 0

100. Conductor: Hrs 0 Mi 0

Casualties to:	101. Railroad Employees	102. Train	103. Other
Fatal	0	0	0
Nonfatal	0	0	0

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

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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 N/A	117. Whistle 1. Yes 2. No 3. Unknown	Code N/A
Code(s)	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

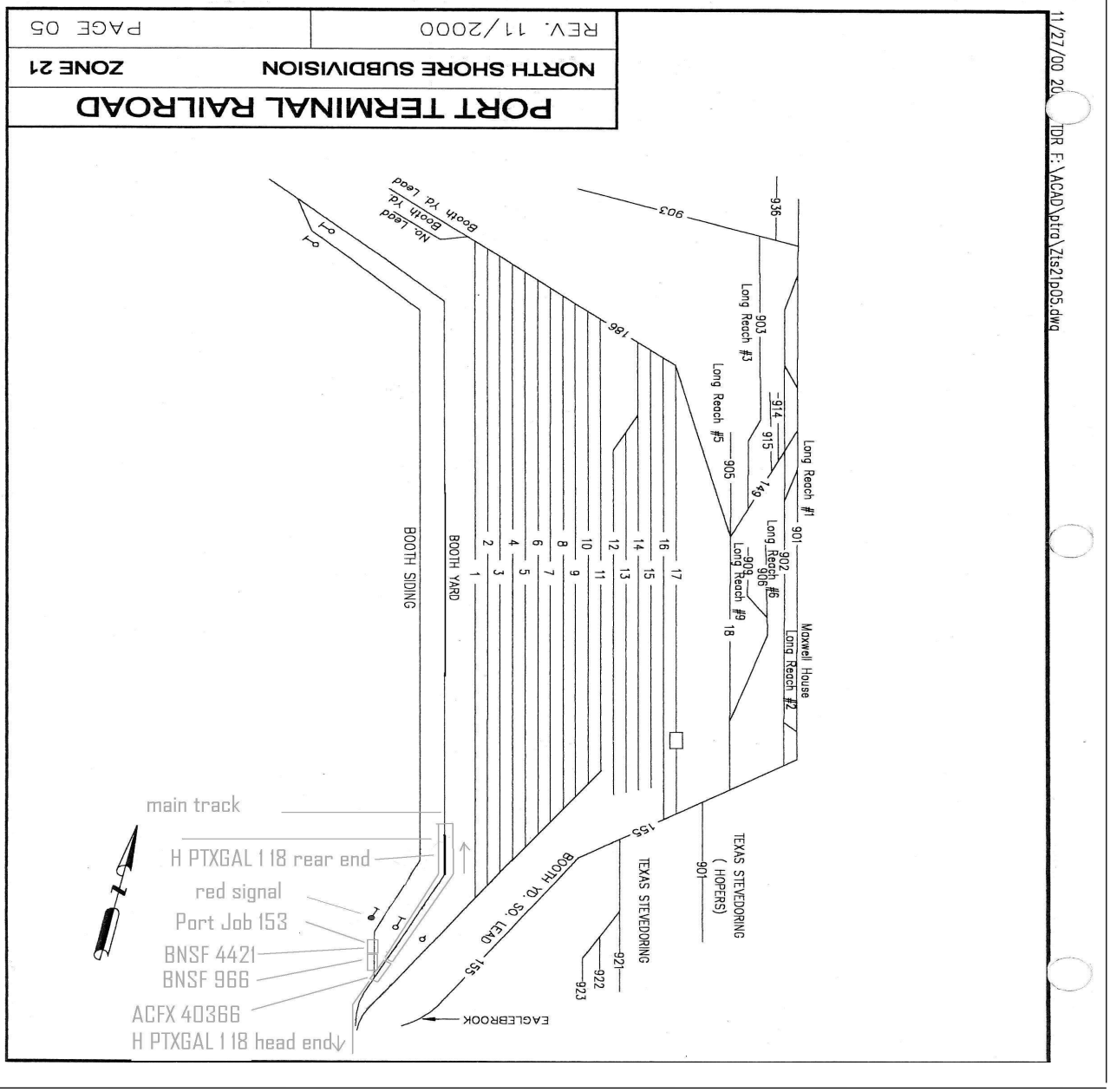
121. Age N/A	122. Driver's Gender 1. Male 2. Female	Code N/A	123. Driver Drove Behind or in Front of and Struck or was Struck by Second Train 1. Yes 2. No 3. Unknown	Code N/A	124. Driver 1. Drove around or thru the Gate 4. Stopped on Crossing 2. Stopped and then Proceeded 5. Other *(specify in narrative)* 3. Did not Stop	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 3. Passing Train 5. Vegetation 7. Other *(specify in narrative)* 2. Standing Railroad Equipment 4. Topography 6. Highway Vehicle 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

A southbound Port Terminal Railroad Association (PTRA) lite locomotive consist collided with the side a standing Burlington Northern Santa Fe (BNSF) train on October 18, 2007 at 10:30 a.m. The accident occurred in Houston, Texas at thew Union Pacific (UP) mile post 5.2 on the Houston Service Unit of the Strang Subdivision. The incident was classified as a side collision.

There were no injuries reported to any crew members involved. The lite locomotive consist sustained damages of $27,213.21.and car damage of $4,000.00 with no equipment derailded.

At the time of the accident it was daylight and cloudy. The temperature was 85 degrees F.

The accident was caused by failure of the PTRA crew menbers to comply with 49 CFR Rule 220.49; "When radio communication is used in connection with the shoving, backing or pushing of a train, locomotive, car, or on-track equipment, the employee directing the movement shall specify the distance of the movement, and the movement shall stop in one-half the remaining distance unless additional instructions are received. If the instructions are not understood, the movement shall be stopped immediately and may not be resumed until the misunderstanding has been resolved, radio contact has been restored, or communication has been achieved by hand signals or other procedures in accordance with the operating rules of the railroad." and failure to stop at a stop signal indication as required in 49 CFR Rule 240.11 7E1 which states: "Failure to control a locomotive or train in accordance with a signal indication, excluding a hand or a radio signal indication or a switch, that requires a complete stop before passing it."

138. NARRATIVE

CIRCUMSTANCES PRIOR TO THE ACCIDENT

The crew of the Port Terminal Railroad Association (PTRA) Job #153 included a locomotive engineer and switchman. They first went on duty at 7:59 a.m., CST on October 18, 2007, at the PTRA North Yard office in Houston, Texas. This is the home terminal for the crew members. The crew members all received more than the required statutory off duty rest period prior to reporting for duty.

The crew of the BNSF Train Y HOU 9011-18A included a locomotive engineer and a conductor. They first went on duty at 8:00 a.m. CST, on October 18, 2007, at the BNSF South Yard in Houston, Texas. This is the home terminal for the crew members. The crew members all received more than the required statutory off duty rest period prior to reporting for duty.

The PTRA train consisted of two locomotives, BNSF 966 trailing and BNSF 4421 leading. After conducting a job briefing and talking to the PTRA Yard Master, the crew of PTRA Job #153 was traveling from PTRA North Yard to Bridge 5A, with instructions to enter Booth Siding in order to turn the lite locomotive consist around.

The BNSF train consisted of three locomotives, 113 freight cars (43 loads of various commodities and 70 empties); it was 6962 feet long and weighed 7754 tons. The train was scheduled to travel to Galveston, Texas.

As the southward PTRA Train #153 approached the accident area, they were executing a shoving movement using the provided railroad radios to communicate and control the movement. The locomotive engineer was seated behind the control stand in the north most locomotive on the west side. The switchman was standing by the radio in the cab of the south locomotive.

As the PTRA train approached the accident area, the BNSF train was standing stopped on the Main Track.

In this area of the railroad there are three tracks in succession named; Booth North Lead, Main Track, and the

Booth Siding. These tracks run timetable north and south. The north yard lead, the most eastern track, was empty. BNSF Train YHOU9011-18A was standing on the Main Track, and PTRA Train Job #153, was traveling southward on Booth Siding, the western most track.

The railroad timetable and geographic direction of the PTRA train was south. Timetable directions are used through out this report.

THE ACCIDENT:

PTRA JOB #153 SOUTH:

At the time of the accident PTRA Train Job #153 was being operated at a recorded speed of 7 MPH. The maximum authorized speed on Booth Siding for mixed freight trains is 10 mph, as designated in the current UP Timetable Number 4.

PTRA Job #153 operated southward from Bridge 5A controled by signal indication. The switchman informed the locomotive engineer that they had a yellow signal and instructed him to back the train approximately 50 car lenghts into Booth Siding.

The switchman of PTRA Job #153 located in the cab of locomotive BNSF 966, was sounding the locomotive horn as the consist transversed the public road crossing located at the north end of Booth Yard at mile post 4.2. The switchman was unable to communicate clearly with the locomotive engineer via radio.

After the locomotive engineer, sitting behind the control stand of locomotive BNSF 4421, shoved a distance of 25 cars, he radioed the switchman and asked the switchman if he was still with him. The engineer was unable to recieve radio communication with the switchman.

The switchman, in the cab of locomotive BNSF 966 long hood forward, stated that he did not see the signal at the south end of Booth Siding. PTRA Job #153 proceeded by the signal and struck the side of the 37th car, ACFX 40366, of BNSF Train Y-HOU9011-18A at a recorded speed of 7 MPH.

BNSF TRAIN Y-HOU9011-18A:

BNSF Train YHOU9011-18A was stopped on the Main Track adjacent to Booth Siding with the engineer and conductor in the cab of the controling locomotive. The BNSF train was facing timetable south when the 37th car was stuck by the PTRA locomotive.

ANALYSIS AND CONCLUSIONS:

FRA reviewed the dispatching tapes and interviewed the engineer and switchman of PTRA job #153. FRA interviewed the local Train Master of the PTRA. FRA reviewed event recorder data of BNSF 4421 with the local PTRA Train Master. FRA conducted on site accident investigation.

PTRA Job #153, performing a shove move, entered Booth Siding on a restricted signal indication. The switchman informed the engineer that they had 50 car lengths to travel into the siding.

PTRA Job #153 traveled approximately 4,800 feet with out any communications between switchman and engineer.

CONCLUSION:

PTRA Job #153 passed the red signal at ST006 (MP 5.2) without stopping. After striking the 37 car, ACFX 40366 of BNSF Train YHOU9011-18A, the switchman communicated to the engineer to stop.

The locomotive engineer failed to stop within half the distance previously specified.

Booth Siding is 4,900 feet long which would accomodate 61-80 foot long cars. Upon entering the north end of Booth Siding, the switchman gave a car count of 50 cars lengths to the engineer. Absent further communication with the switchman, the engineer would be required to stop the train movement at 25 car

lenghts.

The switchman failed to be alert and attentive, protect the point of a shove, and failed to give the locomotive engineer further instructions as needed to communicate the distance to be traveled.

The crew of PTRA job #153 failed to comply with a stop signal indication and began to shove into Booth Siding and traveled almost to the signal located at the South end of Booth Siding before the engineer contacted the switchman on the radio. The lite locomotive consist then passed signal ST006 and the switchman realized that he had gotten by the signal and shortly afterwards the conductor contacted the engineer by radio and instructed him to stop because they had collided into the side of the 37th car (ACFX 40366) of BNSF Train YHOU9011-18A.

The crew of PTRA job #153 was administered a toxicological test for reasonable suspicion under the railroad authority. The results were negative.

ANALYSIS:

FRA obtained fatigue related information for the 10-day period preceding the 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.

PROBABLE CAUSE AND CONTRIBUTING FACTORS:

The cause of the accident was failure of PTRA Job #153 crew to comply with 49 CFR Rule 220.49, which states, "When radio communication is used in connection with the shoving, backing or pushing of a train, locomotive, car, or on-track equipment, the employee directing the movement shall specify the distance of the movement, and the movement shall stop in one-half the remaining distance unless additional instructions are received. If the instructions are not understood, the movement shall be stopped immediately and may not be resumed until the misunderstanding has been resolved, radio contact has been restored, or communication has been achieved by hand signals or other procedures in accordance with the operating rules of the railroad." Contributing factors include the crews failure to comply with General Code of Operating Rules (GCOR) 9.1 Signal Indication, "Stop in half the distance given", and GCOR 5.3.7 Radio Response. Also a contributing factor would be 49 CFR 140.117E1 "Failure to control a locomotive or train in accordance with a signal indication, excluding a hand or a radio signal indication or a switch, that requires a complete stop before passing it."