Federal Railroad Administration
Office of Safety
Headquarters Assigned
Accident Investigation Report
HQ-2006-35

Allegheny Valley Railroad Company (AVR)/Amtrak (ATK)
Pittsburgh, Pennsylvania
May 25, 2006

Note that 49 U.S.C. §20903 provides that no part of an accident or incident report made by the Secretary of Transportation/Federal Railroad Administration under 49 U.S.C. §20902 may be used in a civil action for damages resulting from a matter mentioned in the report.

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

FRA FACTUAL RAILROAD ACCIDENT REPORT

FRA File # HQ-2006-35

1.Name of Railroad Operating Train #1 Allegheny Valley RR Co. [AVR]	1a. Alphabetic Code AVR	1b. Railroad Accident/Incident No. C06024
2.Name of Railroad Operating Train #2 Amtrak [ATK]	2a. Alphabetic Code ATK	2b. Railroad Accident/Incident 798400
3.Name of Railroad Responsible for Track Maintenance: Allegheny Valley RR Co. [AVR]	3a. Alphabetic Code AVR	3b. Railroad Accident/Incident No. C06024
4. U.S. DOT_AAR Grade Crossing Identification Number	5. Date of Accident/Incident Month 05 / Day 25 / Year 2006	6. Time of Accident/Incident 04:10:00 ☑ AM ☐ PM

7. Type of Accident/Indicent (single entry in code box): 1. Derailment; 2. Head on collision; 3. Rear end collision; 4. Side collision; 5. Raking collision; 6. Broken Train collision; 7. Hwy-rail crossing; 8. RR grade crossing; 9. Obstruction; 10. Explosion-detonation; 11. Fire/violent rupture; 12. Other impacts; 13. Other (describe in narrative) — **03**

8. Cars Carrying HAZMAT	9. HAZMAT Cars Damaged/Derailed	10. Cars Releasing HAZMAT	11. People Evacuated	12. Division
6	0	0	0	PITTSBURGH

13. Nearest City/Town	14. Milepost (to nearest tenth)	15. State Abbr	15. State Code	16. County
PITTSBURGH	PT353.2	N/A	PA	ALLEGHENY

17. Temperature (F) (specify if minus)	18. Visibility (single entry) 1. Dawn 2. Day 3.Dusk 4.Dark	Code	19. Weather (single entry) 1. Clear 2. Cloudy 3. Rain 4. Fog 5.Sleet 6.Snow	Code	20. Type of Track 1. Main 2. Yard 3. Siding 4. Industry	Code
55 F		4		1		1

21. Track Name/Number	22. FRA Track Class (1-9, X)	Code	23. Annual Track Density (gross tons in millions)	24. Time Table Direction 1. North 3. East	Code
PITTSBURGH/#1 MAINE		2	45.5		3

OPERATING TRAIN #1

25. Type of Equipment Consist (single entry): 1. Freight train; 2. Passenger train; 3. Commuter train; 4. Work train; 5. Single car; 6. Cut of cars; 7. Yard/switching; 8. Light loco(s).; 9. Maint./inspect.car; A. Spec. MoW Equip. — Code: 1

26. Was Equipment Attended? 1. Yes 2. No — Code: 1

27. Train Number/Symbol: KC33/C 22

28. Speed (recorded speed, if available) R - Recorded; E - Estimated: 10 MPH — Code: E

29. Trailing Tons (gross tonnage, excluding power units): 1572

30. Method(s) of Operation (enter code(s) that apply): a. ATCS; b. Auto train control; c. Auto train stop; d. Cab; e. Traffic; f. Interlocking; g. Automatic block; h. Current of traffic; i. Time table/train orders; j.Track warrant control; k. Direct traffic control; l.Yard limits; m.Special instructions; n. Other than main track; o. Positive train control; p. Other (Specify in narrative)

Code(s)				
e	N/A	N/A	N/A	N/A

30a. Remotely Controlled Locomotive? 0 = Not a remotely controlled; 1 = Remote control portable; 2 = Remote control tower; 3 = Remote control transmitter - more than one remote control transmitter: 0

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

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

Alcohol	Drugs
0	0

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

34. Locomotive Units	a. Head End	Mid Train b. Manual	Mid Train c. Remote	Rear End d. Manual	Rear End c. Remote
(1) Total in Train	1	0	0	0	0
(2) Total Derailed	0	0	0	0	0

35. Cars	Loade a. Freight	Loade b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Equipment Consist	12	0	0	0	0
(2) Total Derailed	0	0	0	0	0

36. Equipment Damage This Consist	37. Track, Signal, Way, & Structure Damage	38. Primary Cause Code	39. Contributing Cause Code
0	0	H605	N/A

Number of Crew Members

40. Engineer/ Operators	41. Firemen	42. Conductors	43. Brakemen
N/A	0	1	0

Length of Time on Duty

44. Engineer/Operator	45. Conductor
Hrs 9 Mi 10	Hrs 9 Mi 10

Casualties to:	46. Railroad Employees	47. Train Passengers	48. Other
Fatal	0	0	0
Nonfatal	N/A	0	0

49. EOT Device? 1. Yes 2. No — 1

50. Was EOT Device Properly Armed? 1. Yes 2. No — 1

51. Caboose Occupied by Crew? 1. Yes 2. No — 2

OPERATING TRAIN #2

52. Type of Equipment Consist (single entry): 1. Freight train; 2. Passenger train; 3. Commuter train; 4. Work train; 5. Single car; 6. Cut of cars; 7. Yard/switching; 8. Light loco(s).; 9. Maint./inspect.car; A. Spec. MoW Equip. — Code: 2

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

54. Train Number/Symbol: 30/NS02 TB3

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

57. Method(s) of Operation (enter code(s) that apply): a. ATCS; b. Auto train control; g. Automatic block; h. Current of traffic; m.Special instructions; n. Other than main track

57a. Remotely Controlled Locomotive? 0 = Not a remotely controlled; 1 = Remote control portable

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56. Trailing Tons (gross tonnage, excluding power units)	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)	2 = Remote control tower 3 = Remote control transmitter - more than one remote control transmitter
1100			e N/A N/A N/A N/A	0

58. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded (yes/no)	59. If railroad employee(s) tested for drug/alcohol use, enter the number that were positive in the appropriate box.	Alcohol	Drugs
(1) First involved (derailed, struck, etc)	AMTK 74034	13	yes		N/A	N/A
(2) Causing (if mechanical cause reported)	0	N/A	N/A	60. Was this consist transporting passengers? (Y/N)		Y

61. Locomotive Units	a. Head End	Mid Train b. Manual	Mid Train c. Remote	Rear End d. Manual	Rear End c. Remote	62. Cars	Loade a. Freight	Loade 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	0	0	0	0	0	(2) Total Derailed	2	9	0	0	0

63. Equipment Damage This Consist	64. Track, Signal, Way, & Structure Damage	65. Primary Cause Code	66. Contributing Cause Code
500	0	H605	N/A

Number of Crew Members				Length of Time on Duty	
67. Engineer/ Operators	68. Firemen	69. Conductors	70. Brakemen	71. Engineer/Operator	72. Conductor
1	0	1	1	Hrs 0 Mi 55	Hrs 0 Mi 55

Casualties to:	73. Railroad Employees	74. Train Passengers	75. Other
Fatal	0	0	0
Nonfatal	2	5	0

76. EOT Device? (1. Yes 2. No)	77. Was EOT Device Properly Armed? (1. Yes 2. No)	78. Caboose Occupied by Crew? (1. Yes 2. No)
1	1	2

Highway User Involved

79. Type	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

80. Vehicle Speed (est. MPH at impact)	81. Direction geographical) 1.North 2.South 3.East 4.West	Code
N/A		N/A

82. Position	Code
1.Stalled on Crossing 2.Stopped on Crossing 3.Moving Over Crossing 4. Trapped	N/A

86a. 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

Rail Equipment Involved

83. 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

84. Position of Car Unit in Train
N/A

85. Circumstance	Code
1. Rail Equipment Struck Highway User 2. Rail Equipment Struck by Highway User	N/A

86b. Was there a hazardous materials release by (1. Highway User 2. Rail Equipment 3. Both 4. Neither)	Code
	N/A

86c. State here the name and quantity of the hazardous materials released, if any.
N/A

87. Type of 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)	88. Signaled Crossing Warning (See instructions for codes)	Code	89. 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

90. Location of Warning (1. Both Sides 2. Side of Vehicle Approach 3. Opposite Side of Vehicle Approach)	Code	91. Crossing Warning Interconnected with Highway Signals (1. Yes 2. No 3. Unknown)	Code	92. Crossing Illuminated by Street Lights or Special Lights (1. Yes 2. No 3. Unknown)	Code
	N/A		N/A		N/A

93. Driver's Age	94. Driver's Gender (1. Male 2. Female)	Code	95. Driver Drove Behind or in Front of Train and Struck or was Struck by Second Train (1. Yes 2. No 3. Unknown)	Code	96. 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
0		N/A		N/A		N/A

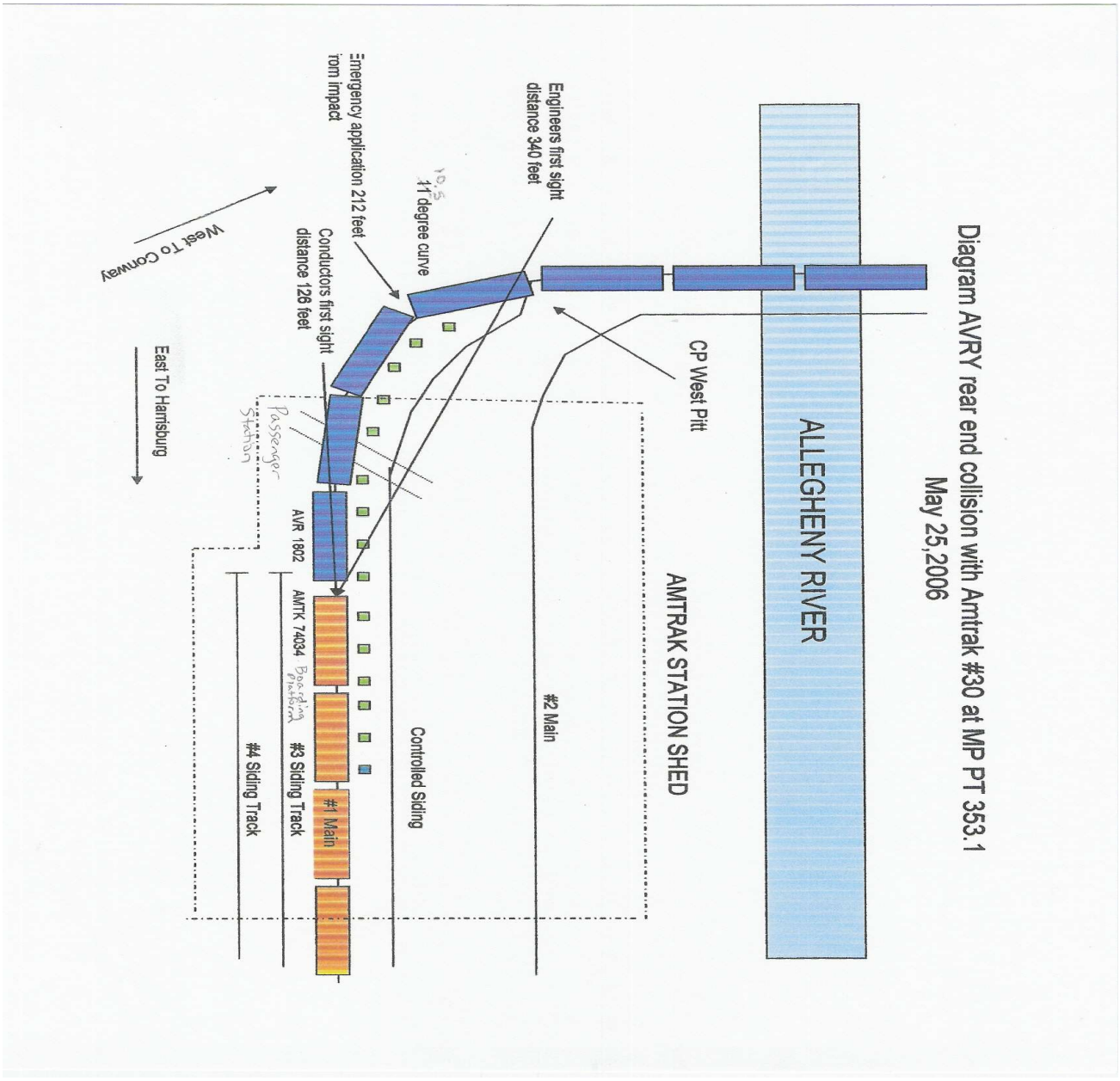
97. Driver Passed Standing Highway Vehicle (1. Yes 2. No 3. Unknown)	Code	98. View of Track Obscured by (primary obstruction) (1. Permanent Structure 2. Standing Railroad Equipment 3. Passing Train 4. Topography 5. Vegetation 6. Highway Vehicle 7. Other (specify in narrative) 8. Not obstructed)	Code
	N/A		N/A

101. Casulties to Highway-Rail Crossing Users	Killed	Injured	99. Driver Was (1. Killed 2.Injured 3. Uninjured)	Code	100. Was Driver in the Vehicle? (1. Yes 2. No)	Code
	0	0		N/A		N/A
			102. Highway Vehicle Property Damage (est. dollar damage)	0	103. Total Number of Highway-Rail Crossing Users (include driver)	0

104. Locomotive Auxiliary Lights? (1. Yes 2. No)	Code	105. Locomotive Auxiliary Lights Operational? (1. Yes 2. No)	Code
	N/A		N/A
106. Locomotive Headlight Illuminated? (1. Yes 2. No)	Code	107. Locomotive Audible Warning Sounded? (1. Yes 2. No)	Code
	N/A		N/A

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

HQ-35-
2006
sketch.jpg



109. SYNOPSIS OF THE ACCIDENT

An eastbound Allegheny Valley Railroad (AVR) freight train collided with the rear of a standing Amtrak (ATK) passenger train at the Pittsburgh Station (Pittsburgh, PA) on May 25, 2006, at 4:10 a.m., EDST. The eastbound ATK train had stopped to board/de-board passengers and change operating crew. The accident occurred at NS Milepost PT 353.2, on the NS Pittsburgh Division, Pittsburgh Line and no cars were derailed.

The AVR train entered the main track 1.9 miles prior to the point of impact, following the passenger train eastward. The AVR train entered Pittsburgh Station on a restricted signal, traveling at an estimated 10 miles per hour. The bell was ringing and the engineer was sounding the horn. On sight of the Amtrak train ahead, the engineer initiated an emergency brake application but was unable to stop the train before impact. The Amtrak train consisted of 2 locomotives, 9 passenger cars and 2 loaded express cars on the rear. Event recorder information from the Amtrak locomotives indicate that the Amtrak train was shoved a distance of 12 feet.

At the time of the incident, 3 passengers were transported to local hospitals. As a result of the collision, two railroad employee injuries have been reported and 5 passenger injuries. A total of 10 (various) passenger claims have been submitted.

The AVR train consisted of a locomotive and 12 loaded cars, including 6 cars containing hazardous material on the rear. There was neither damage nor release of any hazardous material. All shipping papers were in order. There was no evacuation; no damage to track, signals or structures; and equipment damages were set at $500. Post accident testing indicates no evidence of mechanical or signal failure.

At the time of the collision it was dark, and the weather was 55°F and clear.

The AVR crew was taken to Allegheny General Hospital for Post Accident Subpart C Drug and Alcohol Testing. Both the engineer and the conductor had 24 hours rest prior to reporting for duty.

The accident was caused by failure of the AVR crew to comply with requirements of restricted speed. The AVR engineer and conductor have been dismissed.

110. NARRATIVE

Circumstances Prior to the Accident

Operating Train #1 – AVR 1802 East (KC33)
The crew of train AVR 1802 East (NS Symbol KC33C22) consisted of a locomotive engineer and a conductor. They first went on duty at 7:00 p.m., EDST, May 24, 2006, at the AVR Lawrenceville Yard in Lawrenceville, Pennsylvania (PA). This was the home terminal of both crew members, and all received more than the statutory off duty period, prior to reporting for duty, having just completed two rest days. The engineer was hired 12/20/04 and promoted to engineer 9/17/06. The conductor was hired 11/7/05 and qualified as a conductor on 1/5/06.

The crew used locomotive AVR 1802 to spot cars at the Lawrenceville warehouse and switch local customers. They proceeded to Island Avenue with 12 empty cars which were delivered to Track 41. The crew used Track 43 to build their train of 12 loads and 0 empty time freight (including 6 hazardous material cars on the rear). The train was 710 feet long and weighed 1495 tons. The crew attempted a Class 1 brake test, using the end-of-train device, but all brakes did not apply on the first test. They started the test again and achieved 100 percent application and release. While pulling down #15 track at Island Avenue, the engineer made a running test of the train brakes. The engineer contacted the dispatcher to request a signal to return to Lawrenceville Yard via the NS main track. This crew makes the interchange move from Island Avenue to the AVR at Lawrenceville through Bloom four times a week.

The crew observed eastbound Amtrak 30 train, and AVR 1802 received a restricting signal to follow him east. The AVR engineer was seated on the north side of the locomotive and the conductor was seated on the south side of the locomotive. At Federal Street they had an approach signal. The signal at West Pitt was in a stop position (the engineer said he applied about 10 pounds of brake in preparation to stop), but the signal changed to a restricting position about 10 car lengths before AVR 1802 reached it. The engineer said he released the brake and then reapplied the brake to keep moving. (Due to curvature of the track and the high nose on the locomotive, the conductor said his first view of the West Pitt signal was in the restricting position.) The AVR 1802 engineer called the restricting signal and turned the bell on. Estimated speed approaching the station was 10 miles per hour. Both the engineer and conductor saw people on the platform, the engineer began sounding the whistle, and they saw the rear of an Amtrak train on #3 track. (Comments following the accident indicate that the AVR crew believed that the Amtrak train on #3 was the train they had been following.) As they proceeded around the left hand curve the engineer saw the Amtrak Train 30 ahead on #1 track and heard "AVR stop your train" on the radio. The engineer immediately initiated an emergency brake application. The conductor said his first sight of the train ahead was after the emergency brake application. The time of impact was 4:10 a.m. on May 25, 1006.

Operating Train #2 – ATK Train 30 (02TB325)
The inbound operating crew of Amtrak Train 30 (NS Symbol 02TB325) reported at 10:15 p.m., May 24, 2006 at Toledo, Ohio and consisted of an Engineer, a Conductor, and an Assistant Conductor. The outbound operating crew of Amtrak Train 30 reported at 3:15 a.m., May 25, 2006 at Pittsburgh, PA and also consisted of an Engineer, a Conductor, and an Assistant Conductor. Additionally, at the time of the collision, there were 163 passengers and 8 On-Board Service (OBS) employees on the train.

While changing crews and boarding passengers, the Pittsburgh Mechanical Foreman established blue flag procedures to replace a defective marker light on the rear of the train. Upon completion of this operation, he removed his blue flag protection and remained trackside near the rear of the train. He observed the AVR train approaching and initiated radio communication for AVR to stop their train.

At the time of the incident the inbound crew was leaving the platform and the outbound crew was taking charge of the train, entraining passengers. Most passengers and OBS employees were asleep, or were just waking up.

The train consisted of locomotives ATK 205 and 123, 9 Superliner passenger cars (1 baggage car, 3 sleeper cars, 1 dining car, 1 lounge car, 3 coaches) and 2

loaded (refrigerated, box) express cars. The train was 1248 feet long and weighed 1100 tons. Amtrak Train 30 runs between Chicago, Pittsburgh, Washington DC, and New York. The train was in possession of brake test, cab signal test, and all required safety documentation.

Track geography
Track #1 consists of 132 lb. Continuous welded rail (CWR), wood ties, common plates, and ballast subgrade. The collision was in the west spiral of a 10 degree 30 minute right hand curve with 1 inch superelevation and has a .08% ascending grade. This is Class 2 Track. Tie, surface, track geometry and ballast conditions were in compliance with their own and Federal standards. (Note: From the AVR crew perspective, it would be a left hand curve and a descending grade.)

The Accident
Operating Train #1 – Train AVR 1802 East (KC33)
The train was estimated to be traveling at 10 mph approaching the site of the collision, on a restricting signal indication. The event recorder, not required for the AVR operation, had inadvertently been cut off on a prior date when the locomotive was shut down. The estimated speed was calculated using Amtrak surveillance camera recordings and was consistent with witness reports.

The engineer view was obscured by steel columns supporting the roof of the station on the north side of number one main between the main and the controlled siding, as well as a concrete structure in the center of the north platform near the crossing just west of the impact location. Additionally, the conductor view, from a seated position, was obstructed by the high nose of the locomotive. Measurements of the accident site places engineer's first sight distance at 340 feet, emergency brake application at 212 feet prior to impact, and conductor's first sight distance at 126 feet. The emergency brake application did not appear to measurably reduce the train's speed prior to impact.

An inspection of the AVR train indicated that there was neither damage nor release of hazardous materials from the tank cars, and they were observed to be in proper condition for transportation. The crew was in possession of the proper shipping papers, including position of the hazardous material cars, and was found to be in compliance with applicable regulations.

The AVR crew was taken to Allegheny General Hospital for Post Accident Subpart C Drug and Alcohol Testing (blood and urine).

Operating Train #2 – Train ATK 30 East
ATK Train 30 was stopped at the station at the time of impact. Event recorder data from the lead locomotive indicates that the train was standing with a 22 lb. brake pipe application and a 72 lb. independent brake reading. The recorder indicates that the train was shoved 12 feet east at a speed of 3 mph. This is consistent with witness reports.

Pittsburgh Police and Emergency Medical responded immediately. Amtrak crewmembers began to compile passenger lists and attempted to record injured passenger information. Initial reports indicate that one passenger was transported to Shadyside Hospital and two passengers were transported to Mercy Hospital to be evaluated, treated and released. Latest injury information indicates reportable injuries to 2 employees and 5 passengers:
- 1 employee on duty (neck sprain/strain),
- 1 worker on duty (stress related),
- 1 passenger (lower back sprain/strain),
- 1 passenger (head/face cut/abrasion),
- 1 passenger (neck bruise/contusion),
- 1 passenger (ankle sprain/strain),
- 1 passenger (neck/throat sprain/strain).

Note: A total of ten (various) passenger claims have been submitted.

There was no evacuation. Amtrak Train 30 was terminated at Pittsburgh and passengers were re-routed via Amtrak Train 42 (northeast corridor) and buses (Washington, DC).

Authorized speed
Maximum authorized passenger speed is 20 mph and freight speed is 15 mph at the collision site, as designated in the current NS Pittsburgh Division Timetable No. 4.

Analysis and Conclusions
Analysis
- Tests by both railroad employees and FRA employees indicate no evidence of mechanical, signal or track defects that could have contributed to the accident.
- Amtrak surveillance video corroborates investigation evidence.
- Event recorder information from ATK locomotive support investigation findings.
- AVR crew toxicological test results were negative (testing was properly conducted and submitted)
- NS, ATK and AVR investigations support FRA investigation results.
- Engineer was awake – supported by dispatcher transcripts and witness reports of bell and whistle.
- All Hours of Service Employees were properly rested.
- There is no evidence of inadequate training or testing, but additional training of new employees should be considered.
- FRA is issuing a violation (AMS Report #69) for failure to properly announce the emergency over the radio (49 CFR 220.47(1).

The AVR crew failed to follow the following rules (NORAC – Eighth Edition, Effective Jan. 1, 2003).
- 80 Movement at Restricted Speed.
- 94 Responsibilities of Employees: Signals and Restrictions
- 707 Emergency Communications [also 49 CFR 220.47(1)]
- 941 Conductors: Authority and Responsibilities
- 956 Observing Signals: Moving Engine
- 958 Visiblity Compromised: Regulating Speed

As a result of the accident, the AVR engineer and conductor have been dismissed. Additionally, ATK initiated discipline against an inbound crew member who failed to render assistance following the event.

Conclusions
Visibility was limited by track-side structures, curvature of track, and high-nose style of locomotive. Crew speed was excessive for the visual limitations.

Probable Cause and Contributing Factors
An investigation conducted by the Federal Railroad Administration concluded that the collision occurred because the AVR crew failed to comply with the requirements of restricted speed, as required by NORAC Operating Rule 80.