



***Federal Railroad Administration
Office of Railroad Safety
Accident and Analysis Branch***

***Accident Investigation Report
HQ-2013-09***

***Allegheny Valley Railroad Company (AVR)
Evans City, PA
April 26, 2013***

Note that 49 U.S.C. §20903 provides that no part of an accident or incident report, including this one, 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.

TRAIN SUMMARY

1. Name of Railroad Operating Train #1 Allegheny Valley Railroad Company	1a. Alphabetic Code AVR	1b. Railroad Accident/Incident No. AVR010426
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GENERAL INFORMATION

1. Name of Railroad or Other Entity Responsible for Track Maintenance Buffalo & Pittsburgh Railroad, Incorporated		1a. Alphabetic Code BPRR	1b. Railroad Accident/Incident No. BPR364713A	
2. U.S. DOT Grade Crossing Identification Number 145753H		3. Date of Accident/Incident 4/26/2013	4. Time of Accident/Incident 8:08 AM	
5. Type of Accident/Incident Hwy-Rail Crossing				
6. Cars Carrying HAZMAT 10	7. HAZMAT Cars Damaged/Derailed 0	8. Cars Releasing HAZMAT 0	9. People Evacuated 0	10. Subdivision PITTSBURGH & WESTERN
11. Nearest City/Town Evans City		12. Milepost (to nearest tenth) 27.8	13. State Abbr. PA	14. County BUTLER
15. Temperature (F) 32 °F	16. Visibility Day	17. Weather Fog		18. Type of Track Main
19. Track Name/Number MAIN		20. FRA Track Class Freight Trains-40, Passenger Trains-60		21. Annual Track Density (gross tons in millions) .3
				22. Time Table Direction East

OPERATING TRAIN #1

1. Type of Equipment Consist: N/A		2. Was Equipment Attended? N/A		3. Train Number/Symbol AVR-1	
4. Speed (recorded speed, if available) R - Recorded E - Estimated		Code R	5. Trailing Tons (gross excluding power units) 2371		6a. Remotely Controlled Locomotive? 0 = Not a remotely controlled operation 1 = Remote control portable transmitter 2 = Remote control tower operation 3 = Remote control portable transmitter - more than one remote control transmitter
26 MPH					Code 0

6. Type of Territory

Signalization:
N/A

Method of Operation/Authority for Movement:
N/A

Supplemental/Adjunct Codes:
P, N/A

7. Principal Car/Unit	a. Initial and Number	b. Position in Train	c. Loaded (yes/no)	8. 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.)	AVR 3002	1				
(2) Causing (if mechanical, cause reported)	0	0		9. Was this consist transporting passengers?		No

10. Locomotive Units (Exclude EMU, DMU, and Cab Car Locomotives.)	a. Head End	Mid Train		Rear End		11. Cars (Include EMU, DMU, and Cab Car Locomotives.)	Loaded		Empty		e. Caboose
		b. Manual	c. Remote	d. Manual	e. Remote		a. Freight	b. Pass.	c. Freight	d. Pass.	
(1) Total in Train	2	0	0	0	0	(1) Total in Equipment Consist	15	0	14	0	0
(2) Total Derailed	0	0	0	0	0	(2) Total Derailed	0	0	0	0	0

12. Equipment Damage This Consist 2057	13. Track, Signal, Way & Structure Damage 0
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14. Primary Cause Code
M304 - Highway user cited for violation of highway-rail grade crossing traffic laws

15. Contributing Cause Code

Number of Crew Members				Length of Time on Duty			
16. Engineers/Operators	17. Firemen	18. Conductors	19. Brakemen	20. Engineer/Operator		21. Conductor	
1	0	1	1	Hrs: 2	Mins: 8	Hrs: 2	Mins: 8
Casualties to:		22. Railroad Employees	23. Train Passengers	25. EOT Device?		26. Was EOT Device Properly Armed?	
Fatal		0	0	Yes		Yes	
Nonfatal		0	0	27. Caboose Occupied by Crew?			
				No			

28. Latitude	29. Longitude
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CROSSING INFORMATION

Highway User Involved

Rail Equipment Involved

1. Type		5. Equipment	
2. Vehicle Speed (<i>est. mph at impact</i>)	3. Direction (<i>geographical</i>)		6. Position of Car Unit in Train
4. Position of Involved Highway User		7. Circumstance	
8a. Was the highway user and/or rail equipment involved in the impact transporting hazardous materials? Rail Equipment		8b. Was there a hazardous materials release by Neither	
8c. State here the name and quantity of the hazardous material released, if any. N/A			
9. Type of Crossing Warning 1. Gates 4. Wig wags 7. Crossbucks 10. Flagged by crew 2. Cantilever FLS 5. Hwy. traffic signals 8. Stop signs 11. Other (<i>spec. in narr.</i>) 3. Standard FLS 6. Audible 9. Watchman 12. None 7, N/A		10. Signaled Crossing Warning	
12. Location of Warning Both Sides		11. Roadway Conditions N/A	
13. Crossing Warning Interconnected with Highway Signals No		14. Crossing Illuminated by Street Lights or Special Lights No	
15. Highway User's Age	16. Highway User's Gender	17. Highway User Went Behind or in Front of Train and Struck or was Struck by Second Train	18. Highway User
19. Driver Passed Standing Highway Vehicle		20. View of Track Obscured by (<i>primary obstruction</i>)	
Casualties to:	Killed	Injured	21. Driver was
23. Highway-Rail Crossing Users	2	8	22. Was Driver in the Vehicle?
24. Highway Vehicle Property Damage (<i>est. dollar damage</i>)		25. Total Number of Vehicle Occupants (<i>including driver</i>)	
26. Locomotive Auxiliary Lights? Yes		27. Locomotive Auxiliary Lights Operational? Yes	
28. Locomotive Headlight Illuminated? Yes		29. Locomotive Audible Warning Sounded? Yes	

SYNOPSIS

An eastbound Allegheny Valley (AVR-1) freight train collided with a rural transit mini bus at a highway-rail grade crossing on April 26, 2013 at 8:08 a.m. The accident occurred in Evans City, Pennsylvania at MP 27.83 on the Pittsburgh & Western Subdivision of the Buffalo & Pittsburgh Railroad. (BPRR) Two bus passengers died following the accident and eight other passengers sustained injuries. The mini-bus was destroyed. The 29 car train included 10 hazardous material tank cars. The leading locomotive sustained minor damage in the amount of \$2,057; there was no derailment and no car damage.

The accident occurred in daytime as a heavy morning fog was starting to dissipate. The wind was calm; the temperature was 32 degrees F.

The probable cause of the accident was the bus driver's failure to stop at the grade crossing, to listen, and look in both directions for an approaching train. In addition to a charge of failing to stop at the grade crossing the Evans City Police Department filed criminal complaints charging the bus driver with two counts each of homicide by vehicle and involuntary manslaughter. He has also been charged with 10 counts each of aggravated assault by vehicle, recklessly endangering another person, and reckless driving.

NARRATIVE

CIRCUMSTANCES PRIOR TO THE ACCIDENT

The crew of Train AVR-1 (AVR Engine 3002 lead) included a locomotive engineer and conductor plus a brakeman who was qualifying to work as a conductor in the territory. The employees first went on duty at 6:00 a.m. EST at the AVR Glenwood Yard near Pittsburgh, Pennsylvania. Glenwood is the home terminal for the employees; crew members received more than the statutory off-duty rest period prior to reporting for duty.

The crew was first assigned to move a westbound freight train, consisting of two locomotives and 17 cars, from Glenwood, PA to the BPRR Interchange at Evans City, PA. The crew arrived at Evans City at 7:35 a.m. and placed the westbound cars on Evans City Siding. The AVR-1 crew next picked-up their eastbound cars from the adjacent Textor Siding (MP 29.4) for the 30 mile return trip to Glenwood. Train movement on the BPRR main track is authorized by Track Warrant per General Code of Operating Rules. (GCOR 14.1)

The eastbound AVR-1 train consisted of two locomotives, AVR 3002 & 3001, and 15 loaded & 14 empty cars with trailing tonnage of 2371 tons. Train length was 1738 feet. Ten of the cars were loaded with hazardous material. (One Class 3 Flammable and nine Class 9 Elevated Temperature NOS products) The crew installed an end of train device and walked the application of train's air brakes for a Class 1 air brake test. All car air brakes were operative. The AVR-1 train started to move east at 8:05 a.m. The locomotive engineer was seated at the controls on the east end /south side of the lead locomotive and the conductor was located on the north side conductor's seat of the lead engine facing east. The brakeman was sitting on the conductor's seat, facing west, on the south side of the trailing locomotive.

The BART Mini-Bus (Butler Area Rural Transit) was a 2012 Ford F-450; it was occupied by the driver and 10 passengers. The bus was operated by the Alliance for Nonprofit Resources. The bus was destroyed with damage estimated at \$ 25,000. The bus was traveling from south to north (right to left) and failed to stop for the crossing.

In this area of the railroad the train moved through a series of curves ranging from 2 degrees 5 minutes to 8 degrees 15 minutes. The engineer had just accelerated his train to the allowed track speed of 25 MPH as the train started to cross over Main Street. (MP 28.2) The train navigated reverse curves of 7 degrees 55 minutes to 8 degrees as it approached the collision site midway through the entry spiral of a 6 degree 15 minute right hand curve at Maple Street Crossing. (MP 27.83) The train was ascending a .35 percent grade.

Three narrow roadways merge together on the south side of the crossing. The railroad timetable direction of the train was east. The geographic direction was southeast. Timetable directions are used throughout this report.

THE ACCIDENT

Train AVR-1 (AVR 3002 East):

The train was being operated at 26 MPH approaching the accident area on single main line. The engineer was operating in the Run 6 throttle position when he caught vision of the white bus as his lead locomotive came out of an S-curve 450 to 500 feet from the crossing. Visibility to the crossing was about 500 feet. The bus was moving north toward the crossing. (Right to left) The bus slowed but continued to move onto the crossing, the engineer, who had been sounding his horn, placed the train into emergency 75 to 100 feet prior to reaching the crossing. A heavy morning fog started to lift prior the accident. The engineer said visibility was 30 to 40 car lengths. The event recording function for the lead engine of the train was not working but the engineer said the speed indicator was at 25 MPH. Maximum allowable track speed in the area is 25 MPH. The event recorder from the trailing engine showed train speed at 26 MPH just prior to, and at the time of the collision. The lead engine stopped 541 feet east of the crossing. No rail equipment derailed. The conductor did not see the bus until impact and the brakeman, who was in the trailing unit, was not aware of the accident until the train came to a stop.

Mini Bus

The bus was traveling from south to north and failed to stop at Maple Street crossing (DOT # 145753H). The train struck the left side passenger compartment of the bus at midpoint. The bus was spun 180 degrees and shoved 46 feet east of the crossing stopping about 10 feet clear of the train on the north (opposite) side of the tracks. The bus did not roll over.

After the train stopped, the engineer stayed on the locomotive as the conductor and brakeman started west to assist the bus occupants. The conductor called 911 via a company cell phone moments after the accident and afterward contacted the B & P train dispatcher. Emergency responders arrived about 5 minutes after the call. Crew members attempted to calm those injured and assisted responders.

Evans City Police arrived at 8:13 a.m.; Pennsylvania State Police and several other police departments also responded. An AVR rail manager was on-site 20 minutes following the collision.

All passengers were taken to area hospitals. Two of those were life-flighted. One passenger died at the hospital following the accident a second person died ten days later. The majority of the passengers were elderly with varying degrees of physical disabilities and mobility issues. Three persons sustained internal injuries, one passenger sustained a leg fracture, and other occupants sustained bruises to either the head, back, or legs.

Police and rail supervisors conducted a reconstruction of the accident after the injured persons were removed from the site.

Allegheny Valley Railroad (AVR) is part of the Carload Express Rail Group. AVR is a Class 3 railroad with 4 to 5 crew starts daily. AVR, in addition to its own rail lines, operates over portions of CSX, NS, and BPRR in or near the Pittsburgh area for purposes of interchanging cars.

POST ACCIDENT INVESTIGATION

Post-Accident Testing / Analysis & Conclusion

Train crew

Train crew employees did not undergo post-accident drug & alcohol testing. The grade crossing accident did not meet testing requirements.

Bus Driver

The bus driver underwent post-accident testing at a near-by hospital. Police reports indicate the tests were negative.

Highway-Rail Grade Crossing / Analysis

The highway-rail crossing at grade, Maple Street, is the only access to three narrow roadways that provide entry to 11 private homes and one small auto repair garage. The crossing is equipped with standard cross bucks. There are no lights, bells, or gates. No advance warning discs or pavement markings are located in advance of or at the paved asphalt crossing. The condition of the crossing is fair. Motorist vision is unobstructed 400 feet before the crossing. Medium vegetation is visible 450 feet in advance of the crossing. Police estimated engineer visibility to the crossing at 508 feet. Event recorder downloads and site reconstruction indicates the engineer started to sound the horn 481 feet prior to reaching the crossing. A whistle post is located 1608 feet in advance (west) of the crossing.

Conclusion

The crossing is in fair condition with clear visibility of the rail line up to 400 feet in advance of the crossing. The site distance and general condition of the crossing should

The crossing is in fair condition with clear visibility of the rail line up to 400 feet in advance of the crossing. The site distance and general condition of the crossing should not have been a factor.

Operation of BART Bus / Analysis

The BART Mini-bus was traveling from south to north and failed to stop for the crossing as verified by on-board bus video & sound recordings. The estimated bus speed was 2 to 3 MPH. Police reports indicate the driver did not stop or look both directions to check for train movement at the time of the accident. The video also showed the driver had failed to stop and observe the track for train movement before he drove south over the crossing to pick-up a passenger at a near-by home located about 70 yards from the crossing. Bus passengers could be heard warning the driver of the oncoming train and pending collision. A heavy fog had started to lift prior to the accident. The bus driver was wearing sunglasses.

Conclusion

The driver of the bus failed to stop, listen, and look both ways before moving over the Highway-rail grade crossing, which contributed to the cause of the accident.

Fatigue / Analysis

Train crew employee hours of service documents for two weeks prior to the accident were reviewed and train crew members were interviewed. All employees worked daylight jobs during the review period. The engineer worked 10 days, the conductor 9 days, and the brakeman 10 days.

Conclusion

The FRA study indicated fatigue was not probable for crew members.

Engineer Certification and Employee Rules Training / Analysis

The engineer was recertified 11-2-12. He has been a locomotive engineer for 20 years. He received a score of 100% on his recertification test 10-13-12. His most recent check ride/monitoring event was 10-29-12. He underwent hearing & vision testing 7-18-12 and driver background checks 7-23-12 and 4-30-13. The engineer successfully passed AVR, BPRR, Norfolk Southern and CSX operating rule classes during the 3rd quarter 2012.

The conductor attended & successfully passed AVR, BPRR, Norfolk Southern, and CSX operating rule classes during the 3rd quarter 2012. He has worked as a conductor for AVR 1 year and 11 months.

The brakeman successfully passed AVR, BPRR, and Norfolk Southern classed in September 2012. He has been working to qualify on BPRR. He has 9 months of railroad service.

Conclusion

Engineer Certification and employee training records do not indicate a qualification issue.

Locomotive Safety Devices and Equipment / Analysis

The leading locomotive was equipped with a headlight, auxiliary lights, and operable horn & bell. The engineer indicated the warning devices and lights were operating as required. The devices were inspected by mechanical personnel, in the presence of a FRA Motive Power and Equipment inspector following the accident. No exceptions were taken. The lead engine had damage to the hand rails, front ladder, snow plow and ditch lights. The speed function of the event recorder on the lead engine did not log train speed but the function was working on the trailing unit. FRA MPE and OP Inspectors reviewed event recorder information with railroad management.

A Class 1 Brake Test was performed on the train by rail supervisors starting at 12:30 p.m. at the accident site. All brakes applied & released. Brake pipe leakage was 3 pounds. Train crew employees conducted a brake test fifteen minutes before the collision after picking-up the 29 eastbound cars in Textor Siding at Evans City; all car air brakes applied. A note was added to the train consist indicating the test had been performed but the document could not be located the day following the accident. The conductor, during an interview with FRA, said he and the brakeman did a roll-by inspection to check the release of train brakes when pulling the cars from the siding. Employees placed the end of train device on the rear of the train, charged the train air system, applied the brakes, and both men walked the application of the car air brakes on the main track. The employees did not repeat the release procedure by walking or performing a pull-by inspection following the application test. FRA met with a rail manager and discussed the crew's failure to properly test the release of the air brakes during the Class 1 Brake Test. AVR has subsequently retrained all employees on proper procedures for air brakes tests.

Conclusion

Rail equipment defects were not a factor in the crossing accident.

Locomotive Engineer Operating Performance / Analysis

FRA reviewed locomotive event recorder train operational data and compared the information with engineer and train crew statements. The relevant event recorder data downloaded by an AVR training consultant at the accident site was analyzed by the carrier and FRA at the railroad's Glenwood, PA offices. The engineer said his lead unit speed indicator showed 25 MPH prior to the collision. The engineer started to sound his train's horn 13 seconds before the collision. He placed the train into emergency 75 to 100 feet before the crossing when the bus failed to stop. At 25 MPH the train was moving at 37 feet per second indicating the horn started to sound 481 feet prior to reaching the crossing.

FRA took an exception to AVR's operating rule (Sounding of warning) for failing to indicate how long in advance the horn should be engaged prior to reaching a crossing. Federal regulations require the horn to be sounded at least 15 seconds before but no more than 20 seconds in advance of a crossing. The AVR issued System Notice 4 on May 1, 2013 requiring the locomotive horn to be sounded at least 15 seconds prior to the locomotive entering a crossing.

Conclusion

The engineer was in compliance with applicable AVR operating and train handling requirements at the time of the accident. Although the locomotive horn was sounded 2 seconds less than the required 15 seconds listed in the federal regulation the length of the horn sequence does not appear to have been a factor in the accident.

Operational Testing / Analysis

The AVR/Carload Express Operational Testing plan and records were reviewed beginning January 2013.

The engineer's most recent banner test was 5-16-12. He was checked for sounding of the train's horn three times since January 2013. He was also monitored conducting an air brake test, job briefings, use of radios, operation of hand brakes, and use of personal protective equipment. No failures were recorded.

The conductor was observed four times during the first four months of 2013. He was observed conducting job briefings, getting on & off equipment, operating hand brakes, fouling of tracks & equipment, operating knuckles, conducting an air brake test & inspection, positioning of placarded cars, use of radios, securing three step protection, and use of personal protective equipment. No exceptions were noted.

The brakeman was also observed four times since January 2013. He was observed participating in job briefings, getting on & off equipment, operating hand brakes, fouling of track or equipment, use of radios, securing of three step protection, and use of personal protective equipment. Not failures were recorded.

Conclusion

Employee operational testing was not a factor.

PROBABLE CAUSE OF THE ACCIDENT

Overall Conclusion: The probable cause of the accident was the bus driver's failure to stop at the grade crossing, to listen, and look in both directions for an approaching train. In addition to a charge of failing to stop at the grade crossing the Evans City Police Department filed criminal complaints charging the bus driver with two counts each of homicide by vehicle and involuntary manslaughter. He has also been charged with 10 counts each of aggravated assault by vehicle, recklessly endangering another person, and reckless driving.