



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

***Accident Investigation Report
HQ-2015-1025***

***Amtrak (ATK)
Halifax, NC
March 9, 2015***

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 Amtrak (National Railroad Passenger Corporation)	1a. Alphabetic Code ATK	1b. Railroad Accident/Incident No. 136580
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GENERAL INFORMATION

1. Name of Railroad or Other Entity Responsible for Track Maintenance CSX Transportation	1a. Alphabetic Code CSX	1b. Railroad Accident/Incident No. 000142731
2. U.S. DOT Grade Crossing Identification Number 629659J	3. Date of Accident/Incident 3/9/2015	4. Time of Accident/Incident 12:19 PM
5. Type of Accident/Incident Hwy-Rail Crossing		
6. Cars Carrying HAZMAT 0	7. HAZMAT Cars Damaged/Derailed 0	8. Cars Releasing HAZMAT 0
		9. People Evacuated 0
10. Subdivision North End		
11. Nearest City/Town Halifax	12. Milepost (to nearest tenth) A89.81	13. State Abbr. NC
		14. County HALIFAX
15. Temperature (F) 64 °F	16. Visibility Day	17. Weather Clear
18. Type of Track Main		
19. Track Name/Number Main Track	20. FRA Track Class Freight Trains-60, Passenger Trains-80	21. Annual Track Density (gross tons in millions) 46.6
		22. Time Table Direction North

OPERATING TRAIN #1

1. Type of Equipment Consist: Passenger Train-Pulling				2. Was Equipment Attended? Yes		3. Train Number/Symbol ATK P080-09				
4. Speed (recorded speed, if available) R - Recorded E - Estimated		Code R	5. Trailing Tons (gross excluding power units)		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				Code 0	
6. Type of Territory Signalization: <u>Signaled</u> Method of Operation/Authority for Movement: <u>Signal Indication</u> Supplemental/Adjunct Codes: <u>Q</u>										
7. Principal Car/Unit (1) First Involved (derailed, struck, etc.)		a. Initial and Number ATK 185	b. Position in Train 1		c. Loaded (yes/no) yes		8. If railroad employee(s) tested for drug/ alcohol use, enter the number that were positive in the appropriate box.		Alcohol 0	Drugs 0
(2) Causing (if mechanical, cause reported)		0	0		no		9. Was this consist transporting passengers? Yes			
10. Locomotive Units (Exclude EMU, DMU, and Cab Car Locomotives.)										
11. Cars (Include EMU, DMU, and Cab Car Locomotives.)										
12. Equipment Damage This Consist										
13. Track, Signal, Way & Structure Damage										
14. Primary Cause Code M303 - Highway user misjudgment under normal weather and traffic conditions										
15. Contributing Cause Code M399 - Other causes (Provide detailed description in narrative)										
16. Engineers/Operators										
17. Firemen										
18. Conductors										
19. Brakemen										
20. Engineer/Operator										
21. Conductor										
22. Railroad Employees										
23. Train Passengers										
24. Others										
25. EOT Device?										
26. Was EOT Device Properly Armed?										
27. Caboose Occupied by Crew?										
28. Latitude 36.330770000					29. Longitude -77.594127000					

CROSSING INFORMATION

Highway User Involved				Rail Equipment Involved			
1. Type Truck-Trailer				5. Equipment Train (Units Pulling)			
2. Vehicle Speed (<i>est. mph at impact</i>) 2		3. Direction (<i>geographical</i>) East		6. Position of Car Unit in Train 1			
4. Position of Involved Highway User Moved over Crossing				7. Circumstance Rail Equipment Struck Highway User			
8a. Was the highway user and/or rail equipment involved in the impact transporting hazardous materials? Neither				8b. Was there a hazardous materials release by N/A			
8c. State here the name and quantity of the hazardous material released, if any. NA							
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 1, 2, 3, 6, 7				10. Signaled Crossing Warning 1, 1, 1, 1		11. Roadway Conditions Dry	
12. Location of Warning Both Sides			13. Crossing Warning Interconnected with Highway Signals Yes			14. Crossing Illuminated by Street Lights or Special Lights N/A	
15. Highway User's Age 43		16. Highway User's Gender Male		17. Highway User Went Behind or in Front of Train and Struck or was Struck by Second Train No		18. Highway User Stopped and then proceeded	
19. Driver Passed Standing Highway Vehicle No			20. View of Track Obscured by (<i>primary obstruction</i>) Not Obstructed				
Casualties to:		Killed	Injured	21. Driver was Uninjured		22. Was Driver in the Vehicle? Yes	
23. Highway-Rail Crossing Users 0		0	24. Highway Vehicle Property Damage (<i>est. dollar damage</i>) 500000		25. Total Number of Vehicle Occupants (<i>including driver</i>) 1		
26. Locomotive Auxiliary Lights? Yes				27. Locomotive Auxiliary Lights Operational? Yes			
28. Locomotive Headlight Illuminated? Yes				29. Locomotive Audible Warning Sounded? Yes			

10. Signaled Crossing Warning

- 1 - Provided minimum 20-second warning
- 2 - Alleged warning time greater than 60 seconds
- 3 - Alleged warning time less than 20 seconds
- 4 - Alleged no warning
- 5 - Confirmed warning time greater than 60 seconds
- 6 - Confirmed warning time less than 20 seconds
- 7 - Confirmed no warning
- N/A - N/A

Explanation Code

- A - Insulated rail vehicle
- B - Storm/lightning damage
- C - Vandalism
- D - No power/batteries dead
- E - Devices down for repair
- F - Devices out of service
- G - Warning time greater than 60 seconds attributed to accident-involved train stopping short of the crossing, but within track circuit limits, while warning devices remain continuously active with no other in-motion train present
- H - Warning time greater than 60 seconds attributed to track circuit failure (e.g., insulated rail joint or rail bonding failure, track or ballast fouled)
- J - Warning time greater than 60 seconds attributed to other train/equipment within track circuit limits
- K - Warning time less than 20 seconds attributed to signals timing out before train's arrival at the crossing/island circuit
- L - Warning time less than 20 seconds attributed to train operating counter to track circuit design direction
- M - Warning time less than 20 seconds attributed to train speed in excess of track circuit's design speed
- N - Warning time less than 20 seconds attributed to signal system's failure to detect train approach
- O - Warning time less than 20 seconds attributed to violation of special train operating instructions
- P - No warning attributed to signal systems failure to detect the train
- R - Other cause(s). Explain in Narrative Description

SYNOPSIS

On March 9, 2015, at 12:19 p.m., EDT, northbound Amtrak Carolinian Passenger Train PO80-09 struck a semi tractor-trailer near Halifax, North Carolina. The truck, pulling an oversized load, was attempting to maneuver over the highway-rail grade crossing on State Route 903 East to turn left onto Highway 301 North. The U.S. DOT Crossing Number is 629659J. The subject highway-rail grade crossing is located on the CSX Transportation (CSX) Florence Division, North End Subdivision, Milepost A89.81.

Amtrak PO80-09 was operating northbound with one locomotive, one baggage car, one business coach, one dinette car, and four passenger coaches. The train operating crew consisted of one engineer, one conductor, two assistant conductors, and one trainee conductor making his qualifying trip on the head-end. There were three Amtrak on-board service persons and 213 passengers on-board. One person sustained serious injury, requiring surgery and multi-day hospitalization. Sixty-five other passengers and 8 Amtrak employees reported minor injuries, bringing the total injury count to 74 people. The driver of the truck was not injured.

The Amtrak locomotive, ATK 185, derailed and turned over onto its left side. The first car's, (ATK 1755) baggage car also derailed. It stopped upright and angled to west side of the track. The remaining passenger cars remained upright and did not derail. The locomotive had extensive damage and lost an estimated 1,800 gallons of diesel fuel account being turned over. There was no fire involved.

Amtrak reports equipment damages at \$2,013,371.00. CSX estimates track and signal damages at \$30,713.00.

The weather at the time of the accident was daylight and clear, with a temperature of 64 degrees F.

Probable cause is highway user misjudgment under normal weather and traffic conditions.

NARRATIVE

Circumstances Prior To the Accident

On March 9, 2015, Amtrak Train PO80-09 originated in Charlotte, North Carolina, and received a crew change upon arrival at Raleigh, North Carolina. The train crew consisted of an engineer, one conductor, two assistant conductors, and one trainee conductor making his qualifying trip. All train crew members went on duty at Raleigh, at 9:40 a.m. Train PO80 runs from Charlotte to Boston, Massachusetts, daily.

The train consisted of one passenger locomotive, one baggage car, one business coach, one dinette car, and four coach cars. The required mechanical inspection and Class 1 train air brake test was completed in Charlotte at 1:48 a.m., on March 9, 2015. Amtrak Train PO80-09 departed Charlotte on time, at 7:00 a.m. It departed Rocky Mount, North Carolina, the last station prior to the accident, at 11:53 a.m., 1-minute behind schedule.

The train approached the Halifax highway-rail grade crossing, U.S. DOT Crossing Number 629659J, at a recorded speed of 70 mph. Maximum authorized passenger train speed for this location is 70 mph. The Engineer was seated at the controls of the locomotive and the Trainee Conductor was seated on the fireman's side. Both were facing the direction of travel. One conductor, two assistant conductors, and three on-board service persons were located throughout the train. The train was hauling 213 passengers at the time of the accident. CSX Transportation (CSX) timetable direction for PO80-09 is north and will be used throughout this report.

The subject motor vehicle was a 2015 Peterbuilt truck with a sleeper cab. It was pulling a Trail King trailer used to haul large loads and is made up of four sections. The trailer is comprised of a jeep, deck, deck extension and rear steer. The trailer has a 75-ton load capacity and is equipped with three triple-axle trucks. The truck and trailer are owned and operated by Guy M. Turner, Inc. headquartered in Greensboro, North Carolina.

The loaded tractor trailer had originated at Clayton, North Carolina, the morning of March 9. It was moving under North Carolina DOT Division of Highways, Single Trip Permit Number 503042K0011. The load, an electrical building unit, had a final destination of Trenton, New Jersey. As described in the permit, it was being escorted by two certified escorts and the North Carolina Highway Patrol. The tractor trailer was following the route as indicated on the permit.

This move was considered a "Super Load" by the North Carolina Department of Transportation (NCDOT). NCDOT defines super loads as loads with weights in excess of 132,000 pounds gross weight, a width in excess of 15 feet, and weights on axles/axle groupings that exceed permit policy. The actual permit lists the vehicle as being 162 feet in total length, a trailer length of 139 feet, a width 15 feet and 9 inches and a height of 15 feet and 9 inches.

The tractor trailer approached the crossing by traveling east on Highway 903. The posted speed for motor vehicle traffic is 35 mph. The road is slightly descending approaching the crossing with about a 930-foot sight distance. Before attempting to cross the railroad tracks the tractor trailer stopped in the right hand lane of Highway 903. The driver and rear escort unpinned the rear axles to allow them to be steered remotely by the rear escort driver. The State Patrol escort went across the tracks and blocked traffic moving north of Highway 301. The front escort also went across the tracks and blocked traffic coming south on Highway 301. The rear escort remained behind the trailer and attempted to steer the rear axles of the trailer. The driver states that before he went across the tracks, he went to the crossing, looked both ways, and saw nothing (train) coming. He then got back in the truck and pulled forward.

Highway-rail grade crossing U.S. DOT Number 629659J is located in Halifax, and is on CSX's Florence Division North End subdivision. It is located at CSX Milepost A89.81. It intersects with North Carolina State Highway 903, which is a two-lane paved road. Highway 903 intersects with North Carolina Highway 301 about 48 feet to the east of the highway-rail grade crossing.

The crossing is equipped with active signal warning devices controlled by a Harmon PMD3R unit. The crossing has gates, flashing lights, bells, cross-bucks, highway advance warning signs and road markings. The crossing also had signage for CSX's Emergency Notification System (ENS) posted displaying CSX's 1-800-232-0144 telephone number to report problems or emergencies. "Do Not Stop on Tracks" signs are also posted at the crossing. The 903/301 intersection is equipped with highway traffic signals that are preemptive for train traffic.

The section of track where the crossing is located is a -0.39 ascending grade northbound and a 3.5-degree left hand curve. Sight distance northbound from the main track to the crossing is just over 1,000 feet.

The Accident

Train PO80-09

Amtrak Train PO80-09 departed Rocky Mount, its last station stop prior to the accident, at 11:53 a.m. Prior to this accident the train had no other reported incidents or issues. The train approached the Halifax Road highway-rail grade crossing on the Main Track at a recorded speed of 70 mph. As the train approached the subject crossing, the Engineer noted it was obstructed. At 12:19:39 p.m., the Engineer placed the train's air brakes into an engineer-initiated emergency brake application. He sounded the locomotive horn and notified the rest of the crew by radio of the impending collision. Just before impact, he and the Conductor Trainee got in the floor of the cab and braced against the center cab seat pedestal.

The train continued to the crossing and struck the trailer carrying an electrical housing unit. The nose of the locomotive struck the trailer near mid-point, knocking the load to the east side of the Main Track just north of the crossing with the rear portion of the trailer stopping on the west side of the tracks. Impact also severed the trailer from the truck. Event recorder information shows the train had slowed to 32 mph upon impact.

The locomotive, ATK 185, turned over onto its left side and stopped about 627 feet north of the point of impact. It came to rest across the Main Track with the front of the locomotive pointed in an eastward direction. The locomotive lost an estimated 1,800 gallons of diesel fuel on account of being turned on its side. The first car in the train, ATK Baggage Car 1755, derailed upright, but angled toward a northwest direction with the trailing truck near the Main Track. The remaining cars did not derail.

Highway Vehicle

When the tractor trailer arrived at the crossing, it stopped and the driver and rear escort unpinned the steerable rear truck. The driver then attempted to negotiate from Highway 903 East onto Highway 301 North; a left hand turn. It made at least three attempts to make the turn, pulling forward and backing up each time. During the first attempt, the load became fouled against the crossing post on the northeast corner of the crossing. At least one other unsuccessful attempt was made with either the load fouling or the truck not being able to make the turn. During both unsuccessful attempts, the truck backed up in order to reposition the trailer. The tractor trailer would have obstructed the crossing during this entire time. According to witnesses and drivers, the crossing was obstructed for a period of time from 4 to 20 minutes with estimates varying greatly between these times. At no time was the truck actually stuck, the driver was able to move the rig either forward or backward.

As they were making at least their third attempt at negotiating the turn, both the driver of the truck and the rear escort driver, reported seeing the crossing gates come down. The truck began to pull forward in an attempt to get off of the crossing but was struck by the oncoming train. The truck driver remained in the cab of the truck, which was severed from the trailer in the collision. The truck remained upright and was not damaged. It stopped west of the tracks, in line with its last movement. The trailer and load were extensively damaged. Both the trailer and load were knocked off of the pavement to the east side of the tracks and north of the crossing about 42 feet. The rear section of the trailer stopped on the west side of the tracks just north of the crossing.

A CSX Transportation ENS sign was posted on each side of the crossing. Interviews with the truck driver, front escort and highway patrolman found that no one called the 1-800 number to advise CSX of the obstructed crossing. CSX Transportation also advised that they had received no calls pertaining to that location or crossing. There were unfounded news reports that CSX's ENS number was called but not answered. The number posted was tested by the Federal Railroad Administration (FRA) on the day following the accident. It was answered immediately.

Passenger and Crew Injuries

There were 213 passengers aboard the train at the time of the accident. Halifax EMS reports that 20 passengers were transported to the local hospital by ambulance. Another 40 passengers were transported to the hospital by bus. Of the injured passengers, one sustained serious injuries requiring surgery and hospitalization. All others were treated and released. All of the train crew members, including the service attendants, later reported injuries. None were serious and all were treated and released. The truck driver,

and released. All of the train crew members, including the service attendants, later reported injuries. None were serious and all were treated and released. The truck driver, escort drivers, and NC Highway Patrolman were uninjured

The first call to Halifax County Ventral Communications (911) came in at 12:20:92. The first emergency responders arrived on scene at 12:22:00, a response time of less than 2 minutes. Halifax EMS, Fire/Rescue, Sheriff's Department, and North Carolina Highway Patrol responded to the accident. HEPACO, CSX, and Amtrak also responded.

There were two videos taken of the collision by persons in traffic. They are available on the web at: <http://www.nbcnews.com/news/us-news/video-emerges-collision-between-train-tractor-trailer-north-carolina-n320751> and https://www.youtube.com/watch?v=5lt_X1gNXBA

Analysis and Conclusion

Analysis – Signal

Time table speed through the area is 70 mph passenger and 60 mph freight governed by a traffic control signal system.

Approach lengths are as follows:

- Northbound Approach 3816' (field measured)
- Southbound Approach 3822' (field measured)

All tests, downloads, photographs, and documentation showed that the highway-rail grade crossing warning system was working as intended at the time of the accident. A download of the PMD3R showed the unit detected P08009 and provided 36 seconds of warning time. (Federal regulation requires a minimum of 20 seconds.)

The ENS Sign (Emergency Notification System) was in place at the time of the accident and was called for test purposes, on March 10, 2015, after rumors that the number was inoperable. It was promptly answered by a CSX emergency response employee in Jacksonville, Florida, and is manned 24 hours per day, 7 days per week.

The gated flasher pole in the north east quadrant of the crossing was demolished during the accident. The gate on the south side of the crossing was also damaged. The demolished gated flasher pole was replaced by CSX signal forces and the crossing was placed back in service at 10:28 a.m., on March 10, 2015.

Conclusion – Signal

All pertinent tests were performed and the results documented by a FRA Signal and Train Control Inspector. No exceptions were taken to the operation of the warning devices.

Analysis – Locomotive Safety Devices

The locomotive headlight and auxiliary (ditch) lights were observed in both video and photographs taken at the scene prior to the collision. The event recorder data from locomotive Amtrak 185 was reviewed by both Amtrak managers and FRA. There were no train handling issues or exceptions noted. Witnesses from the scene describe hearing the locomotive horn sound and the locomotive event recorder shows two instances of the horn being sounded.

The locomotive air brakes also show as operable on the locomotive event recorder. The recorded speed prior to the Engineer taking action was 70 mph and the speed at impact is shown at 32 mph. This is indicative of operational brakes.

Conclusion – Locomotive Safety Devices

Collision damage to locomotive Amtrak 185 prevented inspection of the locomotive safety devices post-accident. However, other resources show the locomotive safety devices were operating as intended.

Overall Conclusion

The railroad was in compliance with its own and all applicable Federal regulations. The highway-rail grade crossing equipment and locomotive safety devices functioned as intended. There were no exceptions to the train's operation.

The vehicle driver misjudged the crossing while attempting to turn from Highway 903 onto Highway 301 fouling the tracks for an extended period of time. There was no communication to CSX notifying them of the obstructed crossing. Currently, there is no Federal or State regulation that requires a highway user to notify a railroad before occupying or using a crossing.

Probable Cause

The probable cause of this accident is highway user misjudgment under normal weather and traffic conditions.