



***Federal Railroad Administration
Office of Railroad Safety***

***Accident Investigation Report
HQ-2021-1459***

***National Railroad Passenger Corporation (ATK) Hwy-rail GX
Collision
North Charleston, SC
October 30, 2021***

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.

SYNOPSIS

Synopsis

On October 30, 2021, at approximately 2:36 a.m., EDT, National Railroad Passenger Corporation (ATK) passenger train P-053-29 (Train 1), operating on the CSX Transportation's (CSX) Charleston Subdivision, collided with an automobile at a highway rail grade crossing.

The accident occurred at Milepost (MP) A385.8, U.S. Department of Transportation (DOT) crossing inventory number 631980D (Remount Road) located in North Charleston, South Carolina. At the time of the accident, Train 1 was traveling southbound when a motor vehicle went around the activated crossing gates and was struck on the passenger side. The motor vehicle contained four occupants with one sustaining injuries, and three being fatally injured.

The method of operation where the incident occurred on the Charleston Subdivision is Signal Indication, Centralized Traffic Control (CTC) with a Positive Train Control (PTC) overlay. The track layout is double main track with a maximum authorized speed of 79 mph for passenger service per the CSX Charleston Subdivision Timetable No. 3, effective January 1, 2021. Train 1 was traveling at an estimated speed of 69 mph at the time of collision. There were no reported injuries to the train crew or the passengers.

U.S. DOT crossing number 631980D is equipped with gate arms, crossbucks, bells, cantilever, and standard flashing lights.

Total estimated damages were \$35,102 (\$26,422 equipment and \$8,680 structures).

Weather at time of the accident was 50° F, nighttime, with clear skies.

This accident was not PTC preventable.

The probable cause of the accident is M308 -- Highway user deliberately disregarded crossing warning devices.

TRAIN SUMMARY

1. Name of Railroad Operating Train #1 Amtrak (National Railroad Passenger Corporation)	1a. Alphabetic Code ATK	1b. Railroad Accident/Incident No. 168851
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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. 000200999
2. U.S. DOT Grade Crossing Identification Number 631980D	3. Date of Accident/Incident 10/30/2021	4. Time of Accident/Incident 2:36 AM
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 CSX TRANSPORTATION - CHARLESTON		
11. Nearest City/Town NORTH CHARLESTON	12. Milepost (to nearest tenth) A385.8	13. State Abbr. SC
14. County CHARLESTON		
15. Temperature (F) 50 °F	16. Visibility Dark	17. Weather Clear
18. Type of Track Main		
19. Track Name/Number # 1 Main Track	20. FRA Track Class Freight Trains-60, Passenger Trains-80	21. Annual Track Density (gross tons in millions) 36
22. Time Table Direction South		
23. PTC Preventable No	24. Primary Cause Code [M308] Highway user deliberately dis	25. Contributing Cause Code(s)

OPERATING TRAIN #1

1. Type of Equipment Consist: Passenger Train-Pulling					2. Was Equipment Attended? Yes			3. Train Number/Symbol P053-29			
4. Speed (recorded speed, if available) R - Recorded 69.0 MPH E - Estimated		Code E	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>J, Q</u>											
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 <i>(derailed, struck, etc.)</i>		AMT 835	1	no				0	0		
(2) Causing <i>(if mechanical, cause reported)</i>					9. Was this consist transporting passengers?			Yes			
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	30	15	0	0	0
(2) Total Derailed	0	0	0	0	0	(2) Total Derailed	0	0	0	0	0
12. Equipment Damage This Consist 26422		13. Track, Signal, Way & Structure Damage 8680									
Number of Crew Members						Length of Time on Duty					
14. Engineers/Operators 2		15. Firemen		16. Conductors 2		17. Brakemen	18. Engineer/Operator Hrs: 4 Mins: 11		19. Conductor Hrs: 4 Mins: 11		
Casualties to:		20. Railroad Employees		21. Train Passengers		22. Others		23. EOT Device? Yes		24. Was EOT Device Properly Armed? Yes	
Fatal		0		0		3		25. Caboose Occupied by Crew?		N/A	
Nonfatal		0		0		1					
26. Latitude 32.899892000				27. Longitude -80.011778000							

CROSSING INFORMATION

Highway User Involved			Rail Equipment Involved		
1. Type Auto			5. Equipment Train (Units Pulling)		
2. Vehicle Speed (<i>est. mph at impact</i>) 40		3. Direction (<i>geographical</i>) West	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 Neither		
8c. State here the name and quantity of the hazardous material released, if any. N/A					
9. Type of Crossing 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 No	
15. Highway User's Age 24	16. Highway User's Gender Female	17. Highway User Went Behind or in Front of Train and Struck or was Struck by Second Train No		18. Highway User Went around the gate	
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 Injured		22. Was Driver in the Vehicle? Yes
23. Highway-Rail Crossing Users	3	1	24. Highway Vehicle Property Damage (<i>est. dollar damage</i>) 30000		25. Total Number of Vehicle Occupants (<i>including driver</i>) 4
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

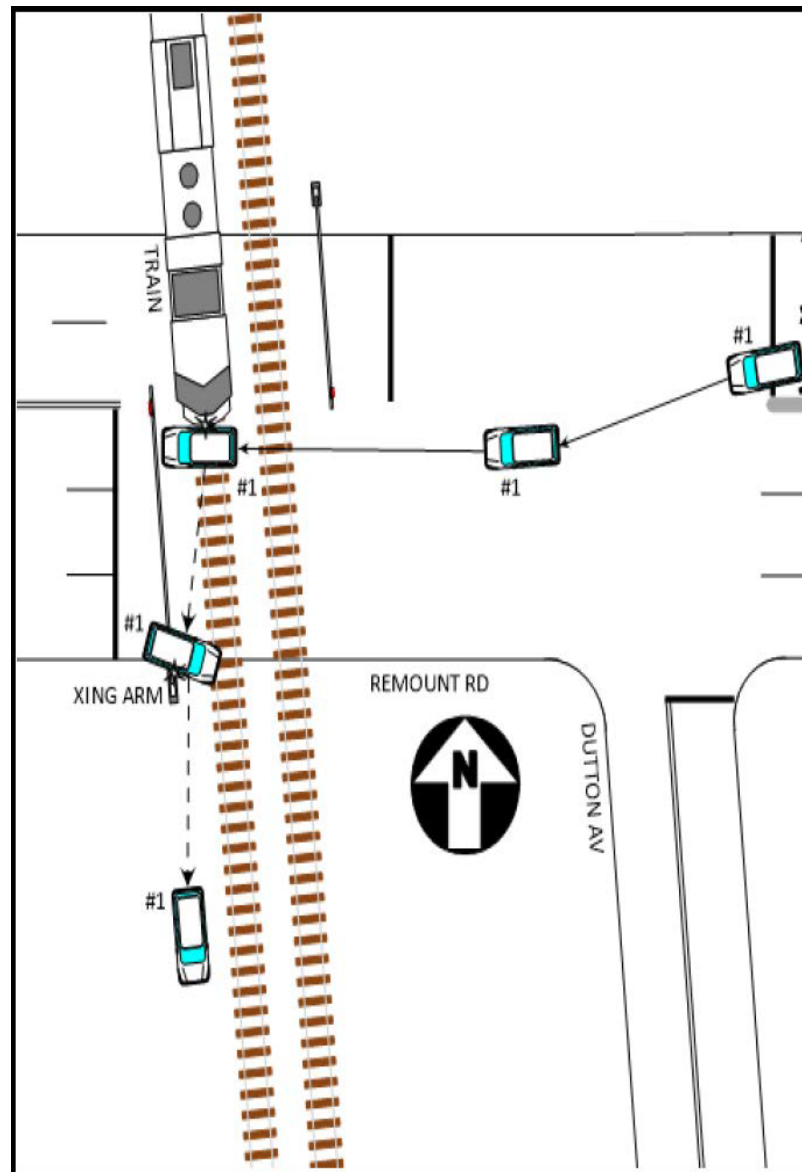
Explanation Code

- | | |
|--|--|
| 1 - Provided minimum 20-second warning | A - Insulated rail vehicle |
| 2 - Alleged warning time greater than 60 seconds | B - Storm/lightning damage |
| 3 - Alleged warning time less than 20 seconds | C - Vandalism |
| 4 - Alleged no warning | D - No power/batteries dead |
| 5 - Confirmed warning time greater than 60 seconds | E - Devices down for repair |
| 6 - Confirmed warning time less than 20 seconds | F - Devices out of service |
| 7 - Confirmed no warning | 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 |
| N/A - N/A | 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 |

SKETCHES

Sketch - Sketch

ATK Hwy-Rail
GX Collision HQ-
CSX-2021-
1030-1459 North
Charleston, South
Carolina, October
30, 2021, 2:36
a.m., EDT



NARRATIVE**Circumstances Prior to the Accident**

The Amtrak (ATK) southbound (timetable direction) Train Symbol P-053-29 (Train 1) was a passenger train consisting of 2 locomotives, 15 loaded passenger cars containing 474 passengers, 30 loaded auto racks, and measured 4,228 feet in length with 3,764 trailing tons. Train 1 originated at ATK's Lorton Terminal located in Lorton, Virginia, on October 29, 2021, with a destination of Sanford, Florida. Train 1 received the regulatory required mechanical inspection and initial terminal class 1 air brake test by qualified mechanical personnel prior to departure.

On October 29, 2021, at 10:25 p.m., EDT, Train 1's train crew, consisting of one Engineer, one Assistant Engineer, one Conductor, and one Assistant Conductor, went on duty at the ATK train station located in Florence, South Carolina. The crew received the required statutory off-duty period prior to reporting for duty.

The accident occurred at Remount Road (MP A385.8) located on the CSX Charleston Subdivision in North Charleston, South Carolina, within Charleston County. The vehicle involved in this accident was a 2021 Nissan Sport Utility Vehicle (SUV). The SUV was traveling at an estimated speed of 40 mph westbound when it was struck on the passenger side. The SUV was occupied by a driver and three passengers.

As Train 1 approached the public crossing, the Engineer was seated at the controls on the Engineers' right side of the locomotive cab, the Assistant Engineer was seated on the left side, and the Conductor and Assistant Conductor were seated in passenger cars.

The Accident

As Train 1 approached the crossing at Remount Road, the Engineer noticed an SUV attempt to drive around the activated crossing gates traveling in a westward direction. Upon observing the SUV, the Engineer realized the vehicle was not stopping and immediately applied an emergency brake application of the Train's air brakes. At the time of impact, Train 1 was traveling at an estimated speed of 69 mph. Train 1 impacted the SUV at the passenger side door. After impact, the SUV was pushed in a south westward direction striking the crossing arm support and coming to rest clear of the tracks. Train 1 continued south, stopping 2,607 feet beyond the point of impact.

There were no sight obstructions associated with the approach of the SUV.

Emergency personnel from the North Charleston Police Department (NCPD), Charleston County Rescue, and Charleston County Coroner's Office responded. The Coroner's Office pronounced three occupants of the SUV deceased on the scene. The survivor, believed to be the driver of the vehicle, was immediately transported to Medical University of South Carolina (MUSC) Hospital for injuries sustained. There were no injuries to the train crew or passengers and no hazardous materials were involved. The damage to rail equipment was estimated at \$26,422 and track structure at \$8,680. The damage amount to the SUV was estimated at \$30,000.

At the time of the accident, the weather was 50°F, clear skies at nighttime, and the pavement was dry.

Post-Accident Investigation

The Federal Railroad Administration (FRA), ATK, and the NCPD investigated the accident.

The NCPD's investigation into the circumstances surrounding this accident resulted in the charge and arrest of the SUV driver for 3 counts of reckless homicide.

Analysis and Conclusions

Analysis – Fatigue Analysis: FRA obtained fatigue-related information, including work history, for all train operating employees involved in this accident. FRA uses an overall effectiveness rate of 63 as the baseline for fatigue analysis. This is the level at which the risk of a human factors related accident is calculated to be equal to chance. Any schedule that violates the overall effectiveness rate on the date of the accident or in the days leading up to the accident are considered to be at risk of fatigue contributing to the accident. The higher the FAID score, the higher fatigue exposure. Below this baseline, fatigue is not considered as probable for an employee. Software sleep settings vary according to information obtained from each employee. If an employee does not provide sleep information, FRA uses the default software settings.

Conclusion: FRA concluded fatigue did not contribute to the cause or severity of the accident.

Analysis – Train Crew Performance: Post-accident interviews with the train crew, view of the locomotive outward facing image recorder, nearby business video cameras, and analysis of event recorder data from the lead and controlling locomotive, found the Engineer's actions to be consistent with safe practices and proper train-handling procedures and compliant with all carrier and regulatory requirements.

Conclusion: FRA concluded train crew performance did not contribute to the cause or severity of the accident.

Analysis – Motive, Power and Equipment: FRA reviewed locomotive inspection reports for the lead locomotive (ATK835) involved in the collision and noted no exceptions.

Conclusion: FRA determined that the condition and function of the locomotive safety apparatus did not contribute to the cause or severity of the accident.

Analysis – Track: Approaching the area of the accident, the track is tangent and on a level grade, with unobstructed visibility. This public crossing is equipped with an active warning system (gates, flashers, bells, cross bucks, with railroad crossing signs) working as intended, with Emergency Notification System (ENS) signs on both sides of the crossing. The annual average daily traffic count for the public crossing is 4,123 vehicles with 18% being trucks.

Conclusion: FRA concluded that track structure did not contribute to the cause or severity of the accident.

Analysis – Signal & Train Control Systems: At the time of the collision, all active advance warning signal systems operated as designed. Post-accident tests conducted by railroad signal maintainers and reviewed by FRA Inspectors, determined that all active advance warning systems operated as intended.

Conclusion: FRA concluded that neither signal nor train control systems contributed to the cause or severity of the accident.

Overall Conclusion

The actions of the train crew were not a factor in this event. This was a public crossing on a public road protected by an active functioning advance warning signal system that operated as intended on the day of the accident, and therefore, not considered a factor. The police report indicated the driver disregarded signs and signals and was traveling in the wrong lane or direction.

Probable Cause

FRA determined the probable cause of the accident to be M308 -- Highway user deliberately disregarded crossing warning devices.