Federal Railroad Administration
Office of Railroad Safety
Accident and Analysis Branch

Accident Investigation Report
HQ-2015-1089

Amtrak (National Railroad Passenger Corporation) (ATK)
Northfield, VT
October 5, 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.

SYNOPSIS

On October 5, 2015, at 10:04 a.m., southbound Amtrak Passenger Train 55, operating on the New England Central Railroad (NECR), derailed at Milepost 65.2 on the single main track of NECR's Roxbury Subdivision. The derailment occurred in the Town of Northfield, Washington County, Vermont. There were approximately 102 passengers and 4 crew members aboard the train when the derailment occurred. The train consisted of one diesel electric locomotive pulling five passenger coaches. The locomotive and 4 of the 5 passenger cars derailed with the locomotive and the first car after the locomotive sliding down an embankment and ending up approximately 85 feet from the rail bed. Except for a few gallons of diesel fuel from the locomotive's fuel tank vent pipe, there was no release of hazardous material nor were there any evacuations of nearby residences or businesses. Hazmat units were able to contain the diesel fuel spill from entering the river. There was $181,732 in damage to track structure, and $4,148,125 in damages to equipment. There were four crew members and eight passengers injured in the derailment, none with life-threatening injuries. The Conductor was airlifted to a nearby hospital, treated and released the following day. All others were treated and released from local hospitals by the next day as well. There were no injuries to the general public.

At the time of the accident, the weather was clear with slight overcast and a temperature of 45 degrees F with no precipitation.

The probable cause of the derailment is Amtrak Train 55 striking a rock slide which obstructed the track.

This derailment was not PTC preventable.

U.S. Department of Transportation
Federal Railroad Administration

FRA FACTUAL RAILROAD ACCIDENT REPORT

FRA File #HQ-2015-1089

TRAIN SUMMARY

1. Name of Railroad Operating Train #1	1a. Alphabetic Code	1b. Railroad Accident/Incident No.
Amtrak (National Railroad Passenger Corporation)	ATK	139478

GENERAL INFORMATION

1. Name of Railroad or Other Entity Responsible for Track Maintenance	1a. Alphabetic Code	1b. Railroad Accident/Incident No.
New England Central Railroad	NECR	NEC81625D

2. U.S. DOT Grade Crossing Identification Number	3. Date of Accident/Incident	4. Time of Accident/Incident
	10/5/2015	10:04 AM

5. Type of Accident/Incident
Derailment

6. Cars Carrying HAZMAT	7. HAZMAT Cars Damaged/Derailed	8. Cars Releasing HAZMAT	9. People Evacuated	10. Subdivision
0	0	0	0	Roxbury

11. Nearest City/Town	12. Milepost *(to nearest tenth)*	13. State Abbr.	14. County
Northfield	65.2	VT	WASHINGTON

15. Temperature (F)	16. Visibility	17. Weather	18. Type of Track
45 °F	Day	Clear	Main

19. Track Name/Number	20. FRA Track Class	21. Annual Track Density *(gross tons in millions)*	22. Time Table Direction
Main	Freight Trains-40, Passenger Trains-60	6	South

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OPERATING TRAIN #1

1. Type of Equipment Consist:	2. Was Equipment Attended?	3. Train Number/Symbol
Passenger Train-Pulling	Yes	No. 55

4. Speed (recorded speed, if available) R - Recorded E - Estimated	Code	5. Trailing Tons (gross exluding 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
59 MPH	R			0

6. Type of Territory

Signalization:
Not Signaled

Method of Operation/Authority for Movement:
Direct Train Control

Supplemental/Adjunct Codes:

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.)*	ATK102	1	yes			
(2) Causing *(if mechanical, cause reported)*	N/A	0		9. Was this consist transporting passengers?		Yes

10. Locomotive Units (Exclude EMU, DMU, and Cab Car Locomotives.)	a. Head End	Mid Train b. Manual	Mid Train c. Remote	Rear End d. Manual	Rear End e. Remote	11. Cars (Include EMU, DMU, and Cab Car Locomotives.)	Loaded a. Freight	Loaded b. Pass.	Empty c. Freight	Empty d. Pass.	e. Caboose
(1) Total in Train	1	0	0	0	0	(1) Total in Equipment Consist	0	5	0	0	0
(2) Total Derailed	1	0	0	0	0	(2) Total Derailed	0	4	0	0	0

12. Equipment Damage This Consist	13. Track, Signal, Way & Structure Damage
4148125	181732

14. Primary Cause Code
M101 - Snow, ice, mud, gravel, coal, sand, etc. on track

15. Contributing Cause Code

Number of Crew Members

16. Engineers/Operators	17. Firemen	18. Conductors	19. Brakemen
1	0	3	0

Length of Time on Duty

20. Engineer/Operator	21. Conductor
Hrs: 1 Mins: 51	Hrs: 1 Mins: 51

Casualties to:	22. Railroad Employees	23. Train Passengers	24. Others
Fatal	0	0	0
Nonfatal	4	8	0

25. EOT Device?	26. Was EOT Device Properly Armed?	N/A
No		N/A

27. Caboose Occupied by Crew? N/A

28. Latitude	29. Longitude
44.112841000	-72.676232000

SKETCHES

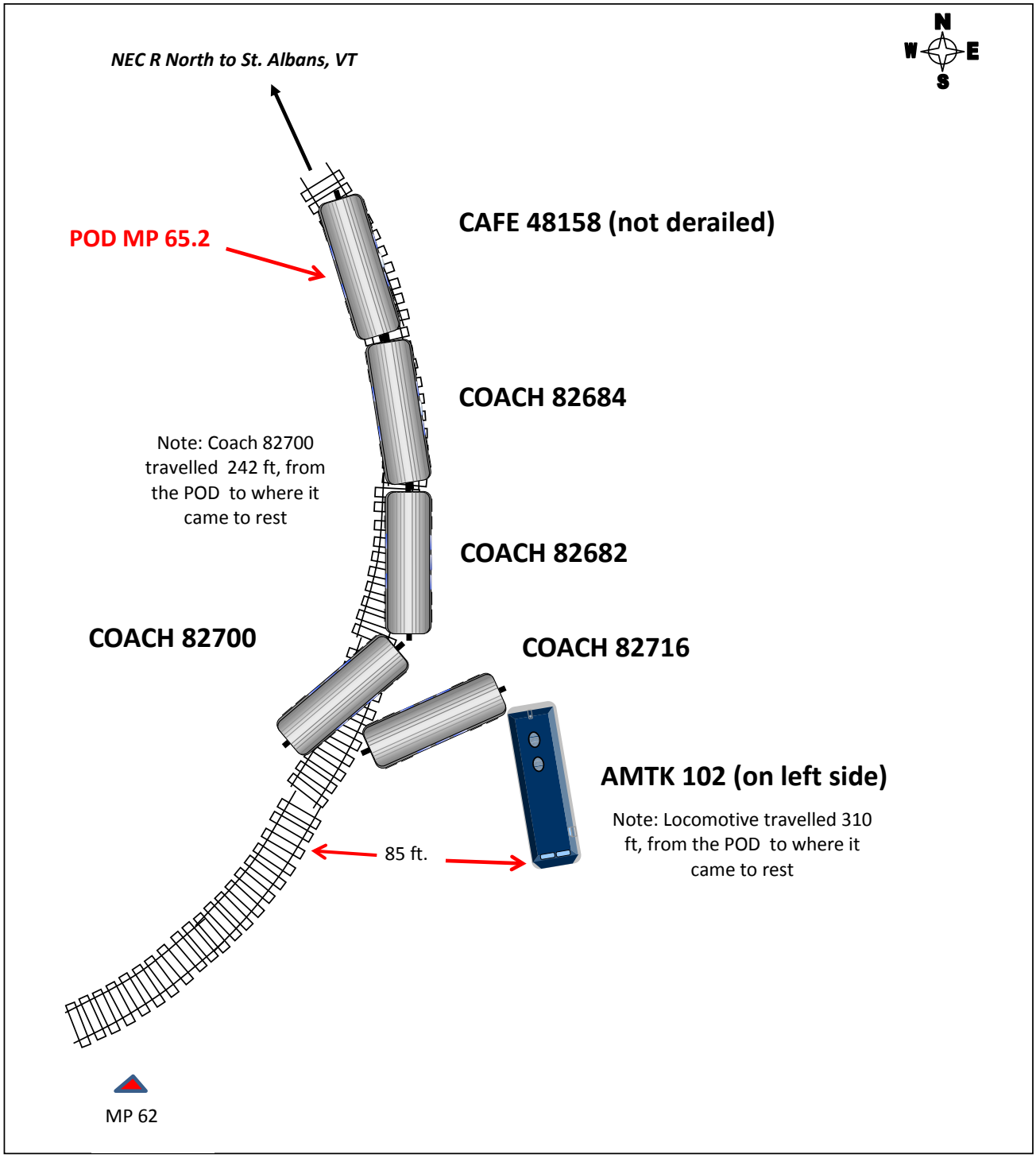
Derailment sketch

HQ-2015-1089

Sketch of Derailment of Amtrak Train 55

MP 65.2 NECR Roxbury Subdivison Northfield, VT

October 5, 2015



NARRATIVE

Circumstances Prior to the Derailment

The crew of Amtrak Train Number 55 included a locomotive engineer, a conductor, an assistant conductor, and a lead service attendant. The crew reported for duty at St. Albans, Vermont, at 8:13 a.m. local time. All crew members had received more than the required off-duty rest period prior to reporting for duty. The train originated at St. Albans and was en route to Washington, D.C.

Both the geographic and railroad Timetable direction of the train was south. Timetable directions are used in this report.

The track segment in the vicinity of the derailment is a single main track and is owned by New England Central Railroad (NECR). The track layout consists of a series of curves and tangents traversing alternate cuts and fills on an ascending grade of 0.75 percent southward. Operating from Milepost (MP) 66 south, the track alignment is a series of right and left reverse curves followed by a short 0.3-mile tangent, followed by a 3- degree, 21 minute, right hand curve beginning at MP 65.3. The point of derailment (POD) is located just in the full body of this curve at MP 65.2. The curve has a super-elevation of 5 ¼ inches.

Note: NECR is owned and operated by the Genesee & Wyoming (G&W). G&W owns or leases 120 freight railroads worldwide that are organized in 11 operating regions with 7,500 employees and more than 2,500 customers. G&W's 9 North American regions serve 41 U.S. states and 4 Canadian provinces, and include 113 short line and regional freight railroads with more than 13,000 track-miles.

The main track in the area of the derailment is operated as Federal Railroad Administration (FRA) Class 3 with a maximum allowable speed of 60 mph for passenger trains and 40 mph for freight. There were no temporary speed restrictions in effect in the vicinity of the POD at the time of the derailment as per NECR's Daily Operating Bulletin Number 278 issued October 5, 2015.

NECR's Roxbury Subdivision is generally constructed of 115lb RE continuous welded rail (CWR) on double shoulder tie plates attached to wood ties with cut track spikes. The ballast section is composed of clean crushed stone ballast with full cribs and shoulders throughout.
The Roxbury Subdivision was refurbished with renewed crossties and switch timbers, installation of new CWR and turnouts, out-of-face raising, surfacing and lining, bridge deck renewals, and highway grade crossing rehabilitation throughout the entire subdivision as part of a government funded grant with the work completed in 2012.

The Derailment

After obtaining and checking equipment paperwork, the crew performed the required Class II air brake test prior to departing. In addition, the crew performed a running air brake test. The train left the yard at St. Albans at 8:58 a.m., completed a running brake test and proceeded to the first passenger stop at the St. Albans Amtrak Station. After departing St. Albans, the train continued south, stopping at Essex Junction, Waterbury, and Montpelier Amtrak Stations, as scheduled.

As the train approached the accident area, the Locomotive Engineer was seated at the controls on the right side of the locomotive and the Assistant Conductor was seated on the left side of the locomotive.

The Assistant Conductor was in the process of receiving a track authority via radio from NECR's Train Dispatcher. Just as the train entered the 3.1-degree, right hand curve at 59 mph, the Engineer saw a large pile of rocks obstructing the track. He immediately made an emergency brake application. The locomotive struck the rock obstruction on the rails at MP 65.2, resulting in the locomotive and second car derailing to the left and down the embankment.

The locomotive turned over on its left side as it slid down the embankment, travelling approximately 310 feet from the POD before coming to rest approximately 85 feet from the track. The first coach followed the locomotive down the hill, but remained upright as the remaining cars in the train swung the north end of the car southward, with the car coming to rest perpendicular to the track. The second, third, and fourth coaches in the train consist derailed but remained upright, in-line, and coupled on the roadbed. The fifth car did not derail. The train consist travelled approximately 242 feet south after the POD.

Track Damage

Approximately 400 feet of main track was damaged with repairs requiring the installation of six, 39-foot track panels and out-of-face surfacing and lining of the track through the derailment area. Damage estimates to track and structures was estimated to be $181,732.

Equipment Damage

The GE P-32 locomotive came to rest on its left side with the windshields cracked but in place. The left side windows were cracked and broken and the left side door was pushed inward into the cab. The crew seats were secure and the consoles were intact. The right side and rear cab entry doors were open. The right side windows were intact. At the trailing end of Coach 82716, the left corner was slightly deformed inward toward the vestibule but there were no remarkable findings in the interior of the car. On the leading end of Car 82700, the left corner was crushed inward into the sill steps in the vestibule. On the left side of the car, the second and fifth windows were not in place, and there were scrape marks, gouges, and dents on the body sheathing near the window openings. No remarkable findings were noted in the interior of the car. There were no remarkable findings noted in the interiors of the remaining cars as well. The appliances in the service area of the café car were found to be secure.

Analysis and Conclusions

Analysis: Fatigue: FRA obtained fatigue-related information, including a 10-day work history, for three of the employees involved in this derailment, the Locomotive Engineer, the Conductor, and the Assistant Conductor of Amtrak Train Number 55.

Conclusion: FRA concluded that fatigue was not probable for the crew of Amtrak Train 55.

Analysis - Toxicological Testing: In accordance with provisions of Title 49 Code of Federal Regulations (CFR) 219.201(b), Federal Post-Accident testing was not performed on any crew members of Southbound Amtrak Train Number 55, or on NECR's train dispatcher. The Designated Employee Representative for Amtrak in Wilmington, Delaware, in contact FRA's Drug and Alcohol Specialist, determined that the testing was not required under exception (b) as follows:

(b) Exceptions: No test may be required in the case of a collision between railroad rolling stock and a motor vehicle or other highway conveyance at a rail/highway grade crossing. No test may be required in the case of an accident/incident the cause and severity of which are wholly attributable to a natural cause (e.g., flood, tornado, or other natural disaster) or to vandalism or trespasser(s), as determined on the basis of objective and documented facts by the railroad representative responding to the scene. This does not preclude the possibility of a Federal reasonable suspicion or reasonable cause test being appropriate.

Conclusion: No Toxicological tests was performed

Analysis: Evaluation and testing of the train control system. The Roxbury Subdivision is non-signaled dark territory with operations conducted by track warrant control under control of NECR's Train Dispatcher located at the St. Albans American Rail Dispatch Center. There is no Positive Train Control in service on this route. The investigation revealed that the train was operating under proper authority as per track warrant ROXB0226.

Conclusion: The train control system did not contribute to the accident.

Analysis - Evaluation and inspection of Amtrak Locomotive 102 and braking system: Review of the train locomotive event recorder showed the equipment operated as intended when the Engineer initiated an emergency brake application with no exceptions taken by FRA inspectors. The investigation revealed that an FRA mechanical inspector inspected Locomotive 102 on 10 October 2, 2015, and took no exceptions.

Conclusion: The locomotive's mechanical condition or the train braking system did not contribute to the accident.

Analysis - Locomotive Engineer and Conductor Operating Performance: The locomotive was equipped with a speed indicator and event recorder as required by Federal regulations. The event recorder was downloaded and analyzed by Amtrak, NECR, FRA, and the NTSB investigators. Review of the event recorder showed that the train was operating at 59 mph when the head-end entered the curve at MP 65.3

Conclusion: Amtrak Train Number 55 was being operated in compliance with all applicable railroad operating rules and Federal regulations.

and Federal regulations.

Analysis - Track Structure: NECR's Roxbury Subdivision is constructed of 115lb RE continuous welded rail on double shoulder tie plates attached to wood ties with cut track spikes. The ballast section is composed of clean crushed stone ballast with full cribs and shoulders throughout.

The Roxbury Subdivision was refurbished with renewed crossties and switch timbers, installation of new CWR and turnouts, out-of-face raising, surfacing and lining, bridge deck renewals, and highway grade crossing rehabilitation throughout the entire subdivision as part of a government funded grant with the work completed in 2012.

Conclusion: NECR's track structure in the area of the derailment was in compliance with Federal regulations and did not contribute to the accident.

Analysis Track Inspections and Track Inspection Records

NECR's Roxbury Subdivision is scheduled to be visually inspected twice weekly with the track inspection performed from a hi-rail vehicle or on foot. The last track inspection prior to the derailment was performed on October 2, 2015. The inspection found no reportable track defects nor were there any exceptions to the roadway noted in the vicinity of MP 65.2.

On July 21, 2013, FRA conducted an inspection of NECR's Track Inspection Records for the Roxbury Subdivision from MP 18.7 to MP 5.0, from January 1, 2013, to July 18, 2013. The inspection revealed that the track was being inspected at the required frequency of twice a week with at least 1 calendar day interval between inspections.

Conclusion: NECR's Roxbury Subdivision was inspected in compliance with all applicable Federal regulations.

Analysis: Weather and Geologic Factors

Investigators contacted the Vermont State Geologist, the Director of the Vermont Geological Survey, and the Transportation Geologist of the Vermont Agency of Transportation to assist in determining a possible cause of the rockslide. An initial inspection of the rockslide at the derailment site revealed that the failure mechanism of the rock cut at the accident site was likely Flexural Toppling, where the rocks bent and rotated forward before falling to the track. The geologists were of the opinion the situation likely developed over time before the final failure occurred, but that the exact cause of the failure could not be determined without a more detailed inspection of the rock cut. The geologists were asked if there was any record of occurrence of earthquakes or other seismic activity that may have caused the rockslide at the POD. They stated that there was no seismic activity in the State of Vermont on the day of the accident recorded by U.S. Geological Survey.

Investigators contacted the Vermont State Police (VSP) to ascertain if there had been any active blasting permits issued in the vicinity of the derailment that may have triggered the rockslide. VSP responded that there were no active blasting operations ongoing at the time or vicinity of the derailment.

A review of the weather over the days prior to the accident showed no abnormal rain or any other weather related incidents that may have been a factor in the rock slide.

Conclusion: There was no record of occurrence of seismic activity, blasting operations, or weather related factors that may have contributed to the rock slide.

Overall Conclusions

FRA's investigation concluded all of the equipment of Train Number 55 was in compliance with all Amtrak and Federal regulations and rules. There were no exceptions taken to the operation of Train Number 55 by the crew. The track had received upgrades in 2012 and all track inspections were current and in compliance with all Federal and railroad regulations and rules. There were no other conditions such as blasting in the area, seismic activity or weather conditions FRA investigators could find that might have contributed to the rock slide.

Probable Cause and Contributing Factors

The probable cause of Amtrak Train Number 55 derailment is the train struck a rock slide obstructing the track.

There were no contributing factors discovered during the investigation.