National Transportation Safety Board
Office of Railroad, Pipeline and Hazardous Materials Investigations
Human Performance and Survival Factors Division
Washington, D.C. 20594

Survival Factors Group Chairman's Factual Report

June 5, 2017

A. Accident Information

Railroad:	Long Island Rail Road
Train	No. 2817
Location:	Brooklyn, New York
Date:	January 4, 2017
Time:	0818 am EST[1]
Number:	DCA17FR002

B. Group Members

Dana Sanzo
National Transportation Safety Board

Ray Tyrrell
Federal Railroad Administration

Frank Maldari
Long Island Rail Road

Peter Lapré
Federal Railroad Administration

Chief Lee Sorensen
Long Island Rail Road

[1] Times in this report are Eastern Standard Time.

C. On Scene Group Participants

Shaun Eshraghi
Volpe National Transportation Systems Center

Edward Flynn
Federal Railroad Administration

D. Synopsis

For a summary of the accident, refer to the *Accident Summary* report, within this docket.

E. Details of the Investigation

1. Train Configuration

The following table shows the type and placement of the equipment in train 2817.

Position	Type	Number
1	M-7 multiple unit locomotive	7553
2	M-7 multiple unit locomotive	7554
3	M-7 multiple unit locomotive	7067
4	M-7 multiple unit locomotive	7068
5	M-7 multiple unit locomotive	7073
6	M-7 multiple unit locomotive	7074

Table 1 -The consist for train 2817

The consist of train 2817 were electrically-powered M-7 multiple unit locomotives manufactured by Bombardier, Inc., between 2002 and 2007. The length of the cars is 85 feet, the width is about 10 ½ feet, and the height is about 13 feet. The weight of the A cars is 127,500 pounds; the weight of the B cars is 129,240 pounds. The A cars have seating capacity for between 110 and 112 passengers and have standing capacity for an additional 129 passengers. The B cars have a capacity for 101 seated passengers and a standing capacity for an additional 132 passengers. There are four emergency egress windows in each car. The windows in the four side doors can function as emergency access points and have emergency signage on the exterior of the cars.

2. Damage Description

Train 2817 was examined at the site before the train was removed from the station, and the rear four cars were re-examined after recovery at a nearby yard. For this report, the equipment is described in reference to the direction of travel of the westbound train. The north side of the train is referred to as the right side, and the south side of the train is referred to as the left side.

Overview

The train struck the bumping post at the end of the track. The first car overrode the bumping post. The front truck impacted the concrete platform, separated from the carbody, and remained wedged between the running rail and the platform. The third axle of the rear truck remained on the track, and the fourth axle derailed. The carbody came to a stop in a secure employee-only access hallway. The front office wall collapsed into the office. The office windows were shattered, and the ceiling collapsed.

Figure 1- A view of the accident site

Segments of each rail, which were bolted to the bumping post, separated from the rest of the track and pivoted forward and upward toward the floor of the first car. The figure below shows a bumping post on an adjacent track.

Figure 2- A bumping post on an adjacent track

After the accident, it was reported that the side doors could not be opened electrically with crew access keys. The doors had to be opened with the manual door releases. The Mechanical Group tested the operation of the doors on the rear four cars. For further information, see the *Mechanical Group Chairman's Factual Report*.

Car 7553

The leading electric coupler and the pilot were separated from the car. The mechanical coupler was in place and aligned toward the right side of the car. The buffer plate was bent upward. The leading truck was separated from the carbody. Underneath the car, the center pin was fractured, bent rearward, and five of the bolts were sheared.

Inside of the cab, eight circuit breakers were found in the tripped position. These circuit breakers are listed in the table below.

CB1	Master Controller
CB10	Brake indicator lights
CB11	Emergency brake loop
CB14	Brake apply {coupler control}
CB16	Control train lines (train level) {coupler control}
CB17	Coupler control {coupler control}
CB19	Door control panels
CB20	TSCU traction interlock

Table 2- Circuit breakers tripped in the cab of car 7553

Inside of the car, a segment of the north-side rail punctured through the car's floor into the electrical cabinet behind the operating cab. The picture below shows the inside of the electrical cabinet.

Figure 3- A view of a rail that punctured the floor of the car 7553

In the passenger area, seven seat backs were cracked. On the right side, the seat backs next to the windows in rows 11, 12, 14, 15, and 19 were cracked. On the left side, the seat back next to the window in row 12 and the seat back next to the aisle in row 13 were cracked. Blood drops were found on the seat cushion and floor near the left-side row 14 seat. The forward and rear right side door release covers broken, and the releases were in the pulled position. One right side emergency window was removed. There was no evidence of damage to the pull handle from this window.

Figure 4- An example of a cracked seatback

Car 7554

The leading end buffer plate climbed up and over on top of the rear buffer plate of car 7553. The leading end buffer plate and coupler were pushed inward and were aligned toward the right side of the car. The trailing coupler was pushed inward.

Inside of the car, three left-side seat backs were cracked. These seats were the window seat in row ten and the aisle seats in rows six and fifteen. Next to the side doors, the interior door release covers were in place. Above the right-side doors, the door releases were in the pulled position.

Remainder of the Consist

On the exterior of car 7067, there were scrape marks on the car's right side at the rear lower corner. In the car, the door release cover next to the front right door was removed. For cars 7067 and 7068, the leading end buffer plates and couplers were pushed inward and were off-centered. The #4 axle on the lead end of car 7068 derailed toward the left. On the exterior of car 7068, there were scrape marks on the car's left side at the front lower corner. The left corner post of this car came to rest against a wall and concrete floor. On the exterior of car 7073, the front left lower corner of the car was torn and scraped. For cars 7073 and 7074, the leading end buffer plates and couplers were pushed inward and were off-centered.

3. Emergency Response

The MTA Police Department has an office in Atlantic Terminal, and officers heard a loud bang. They responded immediately to assist passengers and requested additional resources to respond.

At the time of the accident, a LIRR engineer and a conductor were on train 904 on an adjacent track. A loud and long screeching sound drew their attention to track 6, and they saw the collision. The engineer and conductor went to the accident train to assist. They tried to use their door keys to open the doors, but the doors would not open electrically. The engineer and conductor used the exterior manual door release covers to access the door releases. The engineer entered the train through an open door and opened additional doors using the interior manual door releases. The conductor went to the front of the train to locate the engineer of train 2817.

The lead transportation manager, who was in his office at the time of the accident, went to the platform to assist. He contacted the movement bureau to request that third rail power be removed from track 6. A few minutes later, he met with an electric traction foreman who was in the area for other work. The foreman told the terminal manager that he opened the third rail power circuit, and power was removed.

The Fire Department of New York City was dispatched at about 0822. Unified command was established with responding city agencies and railroad personnel. The command post was established outside the terminal on Hanson Place, and a triage area was established outside the terminal on Flatbush Avenue. Nearly all passengers were able to evacuate the train unassisted. Ninety-three people were transported to hospitals by ambulances and major emergency response vehicles.

-- End of Report --