National Transportation Safety Board

Office of Railroad, Pipeline and Hazardous Materials Investigations
Washington, D.C. 20594

Long Island Rail Road Passenger Train 2817 Derailment
Brooklyn, New York
Atlantic Terminal
January 4, 2017

NTSB Accident Number DCA17FR002

Mechanical Group Factual Report
Joey Rhine, Mechanical Group Chairman

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Accident

NTSB Accident Number:	DCA17FR002
Date of Accident:	January 4, 2017
Time of Accident:	8:18 a.m. (EST)
Type of Train:	Passenger
Railroad Owner:	LIRR
Train Operator:	LIRR
Fatalities:	0
Injuries	108
Location of Accident:	Brooklyn, NY Atlantic Terminal

SYNOPSIS

For a summary of the accident, refer to the *Accident Summary Report* in the docket for this investigation.

Figure 1. Lead car 7533 at final resting point.

TRAIN CONSIST

Westbound Long Island Rail Road (LIRR) Train 2817 consisted of 6 cars mechanically and electrically coupled together. The "A" car weighs about 127,500 lbs., the "B" car weighs about 129,240 lbs., and are about 85 feet in length. The total estimated weight of the train is about 770,220 lbs. with a total estimated length of 510 feet.

The cars were designated as follows:

1. 7553 (B) – lead car
2. 7554 (A)
3. 7067 (B)
4. 7068 (A)
5. 7073 (B)
6. 7074 (A) – trailing car

All LIRR Bombardier M-7 revenue cars operated in a multiple unit arrangement that were semi permanently coupled married pairs with an operating cab at each end. A 750-volt direct current (DC) third rail system supplied power to the electrically powered cars. They were equipped with friction and electric brakes, a low voltage system, automatic heat, ventilation, and air conditioning (HVAC) control, and air actuated automatic couplers.

ACCIDENT SEQUENCE

See the *Recorder Factual Report* in the docket for this accident.

WRECKAGE DESCRIPTION

Cars 7067, 7073, and 7074 remained in the upright position and did not derail. The lead car 7553 sustained the majority of the damage. It derailed upright with the front end of the car resting on the end platform. The front end truck became disconnected from the carbody during the collision and the force shoved it about six feet rearward. The no. 4 axle also derailed.

The no. 3 axle of car 7554 derailed and the no. 4 axle of car 7068 derailed. Both cars remained upright.

PRE-DEPARTURE INSPECTIONS

The LIRR maintenance personnel provided pre-departure inspection records for train 2817. The LIRR stated that they conducted pre-departure inspections pursuant to 49 *Code of Federal Regulations* (CFR) Part 238, Passenger Equipment Safety Standards. This regulation consisted of subsections 238.303, Exterior Calendar Day Mechanical Inspection, 238.305, Interior Calendar Day Inspection, and 238.313, Class I Brake test. The inspection records indicated that all pre-departure inspections were completed on January 4, 2017, at 12:01 a.m. at the Jamaica facility.

An Exterior Calendar Day Mechanical Inspection consists of examination of the following components and systems:

- Battery venting
- Coupler systems
- Suspension systems
- Wheels
- Grounding and jumper cables
- High voltage markings
- Air compressor
- Rescue access markings

An Interior Calendar Day Mechanical Inspection consists of examination of the following components and systems:

- Moving parts and electrical system safety guards
- Floors and passageways
- Manual door releases
- Emergency equipment and signage
- Doors
- Public address and intercom

A Class I Brake test consists of the following inspections and tests:

- Friction brakes apply and release as intended
- Brake shoes and pads are properly seated and aligned
- Piston travel
- Communicating signal system
- Operation of the engineer's master controller
- Brake pipe leakage
- Emergency brake application and deadman pedal
- Brake shoe and pad thickness
- Air valves are properly aligned
- Brake rigging operation
- Brake disc inspection
- Communication of the brake pipe pressure to the rear of the train

In addition to these pre-departure inspections, the cab signal system receives a departure test using a test circuit to verify operation pursuant to 49 CFR 236.587 prior to departing the initial terminal.

EQUIPMENT POST ACCIDENT INSPECTIONS

On January 6, 2017, investigators met with LIRR personnel at the VD Yard, adjacent to the Atlantic Terminal in Brooklyn, New York, to inspect train 2817. Train 2817 consisted of six Bombardier M7 electric multiple unit (EMU) Cars. The leading car 7553 and second car 7554, which received most of the damage were still being extracted from the collision site due to the difficulty of removal. Due to damage, the electric and pneumatic systems could not be tested, so a general exterior and interior examination was completed. During the exterior inspection of the damaged cars, investigators examined brake systems and running gear, draft components, glazing, signage, electrical components, and car body general condition. During the interior inspection of the damaged cars, investigators examined signage, emergency tooling, glazing, seating, hand

holds, and general condition. Refer to the *Survival Factors Factual Report* for more detailed information of interior conditions.

The remaining 4 cars were placed outside on track 5 of the VD yard for the inspection. The remaining consist included cars 7067,7068,7073, and 7074.

The following tests and examinations were successfully completed with no exceptions:

- Class I Air Brake Test
- Public address and intercom system
- Emergency lighting systems
- Manual door open with the conductor's key (right side only)

DOCUMENTATION RECEIVED

- Train list
- Weight list
- Any diagrams and photos of the accident scene
- Event recorder data
- Car repair history
- Blue cards for the locomotives
- Locomotive daily inspection records
- Air brake test record
- Train repair/inspection records
- Mechanical damage estimates
- Equipment Characterizations

END OF REPORT

Group Member to the Investigation - Acknowledgment Signatures

The undersigned designated *Group Member to the Investigation* representatives attest that the information contained in this report is a factually accurate representation of the information collected during the on scene phase of this investigation, to the extent of their best knowledge and contribution in this investigation.

_____ Date _____
Joey Rhine, NTSB

_____ Date _____
Timothy Marvel, FRA

_____ Date _____
Craig Daly, LIRR

_____ Date _____
Robert Steiger, LIRR