

RAILROAD ACCIDENT INVESTIGATION

REPORT NO. 4150

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LONG ISLAND RAIL ROAD COMPANY

PENN CENTRAL COMPANY

ACCIDENTS

January 25, 1969  
May 27, 1969  
June 23, 1969 (2)  
August 13, 1969

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DEPARTMENT OF TRANSPORTATION  
FEDERAL RAILROAD ADMINISTRATION

Washington, D. C. 20591

Summary

DATE: October 12, 1969

RAILROAD: Bessemer & Lake Erie

LOCATION: Conneautville, Pa.

KIND OF ACCIDENT: Collision

EQUIPMENT INVOLVED: Freight train                      Automobile

TRAIN NUMBER: Extra 851 North

LOCOMOTIVE NUMBERS: Diesel-electric units  
853, 831, 855

CONSIST: 80 cars, caboose

SPEEDS: 45 m p h.                      5-15 m p.h

OPERATION: Signal indications

TRACK: Single; tangent; level

HIGHWAY: Tangent; level; crosses  
track at angle of 67°

WEATHER: Clear

TIME: 8:57 p.m., dark

CASUALTIES: 9 killed

CAUSE: Failure of automobile driver  
to keep his vehicle stand-  
ing short of the rail-highway  
grade crossing while automa-  
tic warning signals were  
indicating the close approach  
of a train

DEPARTMENT OF TRANSPORTATION  
 FEDERAL RAILROAD ADMINISTRATION  
 RAILROAD SAFETY BOARD

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Introduction

In 1969, train accidents on lines of the Penn Central Company and the Long Island Rail Road caused public alarm relative to the safety of passenger train operations in the New York City area. The Federal Railroad Administration investigated five of the more serious involving certain similarities and concluded it would be in the public interest to treat them as a whole, setting forth the circumstances involved, the findings as to cause, and recommendations for remedial action, in one report.

For brevity and clarity, the report omits details of a technical nature customarily included in FRA accident investigation reports.

The report deals with Penn Central Company and Long Island Rail Road trains enroute to or from Pennsylvania Station, New York City. The station tracks are underground.

Beginning about one-half mile west of the Pennsylvania Station tracks, two adjoining Penn Central tunnels extend westward under the Hudson River to New Jersey. They are 2.5 miles long and are known as the North River Tunnels. Electrically-propelled Penn Central trains operating in those tunnels are powered via a catenary system.

Beginning about 1,000 feet east of the Pennsylvania Station tracks, four adjoining Penn Central tunnels extend 2.4 miles eastward under the East River to Long Island. Long Island Rail Road trains operate in those tunnels under a trackage agreement with the Penn Central. The trains are electrically propelled, collecting power from a third-rail system. The tunnels and the signals therein are maintained by the Penn Central.

LONG ISLAND RAIL ROAD ACCIDENT - JANUARY 25, 1969

No 4186, an eastbound 10-car electrically-propelled passenger train, left Pennsylvania Station at 9:46 p m , with approximately 400 passengers aboard the first five cars. About 9:50 p m , the train entered tunnel 3 of the East River Tunnels. About that time, a series of three or four loud reports resembling sounds of explosions were heard emanating from an electrical-equipment cabinet located inside the fourth car just behind the front vestibule. The cabinet door opened, permitting fire and smoke to come into the car. An unidentified passenger gave the engineer a stop signal by pulling on the communicating whistle-signal cord extending through the car. The engineer promptly applied the brakes, stopping the train with the last car 500 to 1,000 feet inside the tunnel.

The passengers in the fourth car evacuated that car by going back to unoccupied cars at the rear of the train. During this period, the conductor and ticket collector searched the train for a fire extinguisher and found one in the 9th car. The conductor, however, discovered it was not in working order after returning to the fourth car. By that time, the fire and smoke in the car had intensified, and fire damage to a brake valve had caused an emergency application of the train brakes.

The conductor then proceeded to a nearby tunnel telephone and, at 9:58 p m , informed the power director about the situation. As a result, power to the third rail was shut off at 9:59 p m , and car inspectors were dispatched to the tunnel from Pennsylvania Station with instructions to take whatever action was necessary to enable No 4186 to move out of the tunnel. In addition, train No 4890, which had left Pennsylvania Station at 9:50 p m and had been routed to tunnel 3, was instructed by a Penn Central trainmaster to push No 4186 through the tunnel to Harold, L I.

About 9:57 p m., No 4890 stopped behind No 4186. Approximately two minutes later, the power director shut off power to the third rail, preventing No 4890 from moving forward to a coupling with the disabled train. About 25 minutes later, after going back to an interlocking station outside the west portal, both train conductors succeeded in having power restored to the third rail.

Meanwhile, smoke conditions in the tunnel worsened and all the passengers on the rear cars of the disabled train were evacuated to No 4890. All the passengers in the first three cars evacuated the train by going to the elevated walkways along the tunnel walls. The front brakeman led and/or directed them about 3,400 feet eastward to an air shaft, where they eventually ascended via an emergency exit to the street surface at 1st Avenue and 33rd Street, New York City. The passengers' progress to the air shaft was impeded because of the poor lighting and smoke conditions in the tunnel.

About 10:22 p m , when power was restored to the third rail, No 4890 coupled to the disabled train and made several unsuccessful attempts to move it. The car inspectors sent to the scene then advised the conductor and engineer of No. 4890 that they were unable to release the brakes of the disabled train. Upon hearing this, the conductor of No 4890 had his train detached from the disabled train. No 4890 then returned to Pennsylvania Station and stopped on station track 20 at 10:44 p m , at which time passengers evacuated from the disabled train were given first-aid treatment for smoke inhalation and/or taken to hospitals.

Ambulances, and city fire and police department forces, were not called before approximately 10:30 p m , when a crew member of the disabled train walked back to a stationmaster's office in Pennsylvania Station and advised that medical assistance was urgently needed for about 200 passengers. Approximately 20 minutes later, rescue forces were also called to the emergency tunnel exit at 1st Avenue and 33rd Street, when passengers from the first three cars of the disabled train emerged to the street surface.

### Casualties

Five crew members and 49 passengers of No 4186 were injured by inhalation of smoke.

### Damages

The electrical equipment in the cabinet inside the fourth car of No 4186 was heavily damaged by fire. The cabinet wall ahead of the first passenger seat was burned through and the seat was virtually destroyed by fire. The interior of the fourth car was discolored by smoke, with residue from the fire and smoke clinging to the ceiling, walls, windows and seats.

### Electrical Equipment - 4th Car of No. 4186

The electrical equipment of the car collected 650-volt direct current from the third rail. It was grounded by an insulated (insulated from the car body) ground return to the track rails. All ground wires, including those from the electrical equipment of the cabinet inside the car, became common to each other at an insulated ground block located under the car at a point above the traction-motors truck at the front of the car. A single ground cable extended from the insulated ground block to a point adjacent to the No 2 traction motor. At this point the single ground cable was spliced (lug connected) to the ends of two cables running to brush holders mounted on the traction motors. The three cables at the splice formed a "T" and were secured by tape. The brush holders, one for each traction motor, were mounted in such manner that the brushes of each holder grounded the holder to the truck axles and, therefore, to the track rails via the wheels.

Post-Accident Examination of the 4th Car of No. 4186

Examination revealed the aforesaid single ground cable had separated from its splice with the two cables running to the brush holders on the traction motors. The separation apparently occurred about the time that the train entered tunnel 3. As a result of the separation, current from the third rail went to ground at the weakest point in the electrical system of the car. The grounding occurred in the electrical equipment cabinet inside the car, between a common ground terminal and a bolt of a grounded terminal board. This caused electrical arcing, which in turn caused the equipment in the cabinet to catch on fire and the smoke resulting in the casualties.

The "T" splice connecting the single ground cable to other ground cables was not visible for routine inspections due to being secured and covered by tape, and being under the car in a location not conducive to observation or accessibility in the course of a routine inspection. After the accident, the Long Island Rail Road instituted a program calling for such splices on its cars to be uncovered and examined on a 30-day basis.

Cause

This accident was caused by a break in the electrical ground system of the fourth car of No. 4186.