



# PRELIMINARY REPORT

## RAILROAD

### DCA16MR011

*The information in this report is preliminary and will be supplemented or corrected during the course of the investigation.*

On Thursday, September 29, 2016, about 8:38 a.m. eastern daylight time, New Jersey Transit (NJT) train 1614 failed to stop, overrode a bumping post at the end of track 5, and struck a wall of the NJT Hoboken Terminal. Train 1614 was about 400 feet in length and consisted of one controlling passenger car (cab car), three passenger cars, and one locomotive at the rear of the train. The accident resulted in one fatality—a person on the passenger platform—and about 110 injuries to passengers and crewmembers. The weather at the time of the accident was reported to be 63°F, northeast wind of 18 mph, and overcast sky.

There were significant challenges in accessing the accident area due to severe structural damage and environmental safety concerns in the area of the accident.



**Figure 1.** Damaged controlling cab car.

On October 4, 2016, investigators gained access to the cab car of the accident train, and removed an event data recorder memory board and the video data recorder hard drive. They were taken to the NTSB recorder laboratory in Washington, DC, where investigators found them to be undamaged and in good condition.

After downloading data from these devices on October 6, 2016, investigators learned:

- Both recorders captured the accident sequence. Forward-facing color video from the cab car is of good quality, and the video recording also includes audio from an exterior microphone. The event recorder also appears to have been working as designed.
- The forward-facing video showed the cab car colliding with and overriding the bumping post at the end of the track 5 platform at Hoboken Terminal. A large flash was visible as the car collided with the panel at the end of the track and the video ended.
- About 1 minute before the collision, the forward-facing video recorder captured the sound of one blast of the train's horn while it was in the yard leading up to the terminal. Shortly afterward, the train's bell began sounding and continued until the end of the recording.
- The event recorder indicated that about 38 seconds before the collision, throttle increased from idle to the #4 position while the train was traveling about 8 mph. Train speed began to increase and reached a maximum of about 21 mph while the brake pipe pressure remained unchanged.
- Just prior to the collision, the event recorder indicated that the throttle position went from #4 to idle. Engineer-induced emergency braking occurred less than 1 second before the collision with the bumping post.
- The event recorder showed the train speed was about 21 mph at the time of collision with the bumping post. Event recorder speeds during the final seconds were consistent with train speed estimates obtained from the NTSB's preliminary analysis of images from the forward-facing video camera.

Investigators inspected the track structure, signal system, and mechanical equipment; collected and are examining records for operations, signal systems, mechanical equipment, and track and engineering; and interviewed train crewmembers, train dispatchers, and other NJT personnel. In addition, investigators are reviewing the emergency response to the accident and assembling information obtained through interviews with passengers and other eyewitnesses to the accident.

The NTSB formed the following technical investigative working groups:

- Operations
- Human Performance
- Survival Factors
- Signal Systems
- Track and Engineering
- Mechanical/Equipment
- Event/Video Data Recorders

Documentation regarding crewmember qualifications, training, scheduling, health, and any activities at the time and up to 72 hours prior to this accident has been collected. Blood and urine samples were obtained from all crewmembers for toxicology examination.

Investigators interviewed the engineer and conductor of the accident train. The engineer was originally hired by NJT in 1987 and became a qualified engineer in 2000. On the day of the accident, he went on duty at 6:46 a.m. He said he felt fully rested upon arriving at work. He stated that his cell phone was stored and turned off in his personal backpack; he conducted the required brake tests on the train prior to departure; and that the train operated normally throughout the trip approaching the accident site. He said the cab alerter was operating properly and that there was clear visibility approaching the terminal.<sup>1</sup>

He arrived on track 5, which was the normal arrival track for the 1614 train at Hoboken. He stated that as the train approached the end of the terminal platform, he blew the horn, checked his speedometer, and starting ringing the bell. He said he looked at his watch and noticed his train was about 6 minutes late arriving at Hoboken. He stated that when he checked the speedometer, he was operating at 10 mph upon entering the terminal track. He said he remembers waking up in the cab laying on the floor after the accident, but has no memory of the accident.

The conductor said he went on duty at 6:30 a.m. at Spring Valley, New York. He had worked with the accident engineer on other occasions, and said that he spoke with the engineer on the morning of the accident, but did not notice anything unusual about his behavior. He said that he and the engineer had a job briefing with the crew, and that the preparation for departure was normal. On the day of the accident, the train consist had four cars when it normally has five cars. The cars were very crowded, with people standing in the vestibules and crowding the cars. It was so crowded the conductor was unable to collect fares. The conductor did not notice anything unusual about the speed of the train as it approached the terminal, but said that he was focused on the crowds of passengers at that time. After the accident, the conductor helped evacuate the train and walked through it to ensure all passengers had exited.

Investigators tested the signal and train control system; the accident route was duplicated with signal alignment and functioned as designed. The signal system has been restored to service with exception of the signal that was damaged at the end of track 5.

Investigators completed an examination of the controlling cab car to determine if the brake control system, throttle, and other systems could be repaired to complete testing. They found that the cab car's electrical communication network necessary for brake, signal, and propulsion control was destroyed in the accident, and that functional testing of key controlling components would be necessary to assess the mechanical condition of the train prior to the accident. Accident damage to the cab car's air brake system was minor and repaired for testing. A friction brake test was

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<sup>1</sup> An *alerter* is a safety device required by Title 49 *Code of Federal Regulations (CFR)* 229.140 and is a device or system installed in the locomotive cab to promote continuous and active locomotive engineer attentiveness by monitoring select locomotive engineer-induced control activities. If fluctuation of a monitored locomotive engineer-induced control activity is not detected within a predetermined time, a sequence of audible and visual alarms is activated so as to progressively prompt a response by the locomotive engineer. Failure by the locomotive engineer to institute a change of state in a monitored control, or acknowledge the alerter alarm activity through a manual reset provision, results in a penalty brake application that brings the locomotive or train to a stop.

completed using the rear locomotive to apply the brakes. The brakes functioned as designed. Follow-up testing of several key controlling components has been scheduled.

An NTSB drone was used to capture 109 aerial images of the accident scene, especially documenting the collapsed roof of the terminal. The NTSB Transportation Disaster Assistance Division assisted NJT in their support of the accident victims.

Parties to the investigation include the Federal Railroad Administration (FRA), New Jersey Transit (NJT), Brotherhood of Locomotive Engineers and Trainmen (BLET), International Association of Sheet Metal, Air, Rail, and Transportation Workers – Transportation Division (SMART), and Brotherhood of Railroad Signalmen (BRS).