

DCA15MR006

Collision
Metro-North Railroad
February 3, 2015
Vahalla, NY

National Transportation Safety Board

Operations Group Chairman – Factual Report

June 25, 2015

David Bucher – Group Chairman
NTSB



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Crash Summary

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

Metro-North Train – No. 659

Metro-North (MNR) Train No. 659 originated in Grand Central Terminal, NY(GCT) with a final destination of Southeast Station, Brewster, NY. The train crew received the train's equipment at GCT and performed all required pre-departure equipment tests prior to departure. The 659 train consisted of 8 multiple unit passenger cars, powered by electricity obtained from an outside 3rd rail. The train crew consisted of a locomotive engineer, located in the control compartment of the lead car, and a conductor located in the 6th car of the train. The train departed GCT on schedule, at 5:44 p.m. (local time). The crew had an uneventful trip departing GCT.

Train 659's first scheduled station stop was Chappaqua, NY. The train proceeded at the required track speed from GCT through to the crash location. The 659 train passed 15 open passenger stations before passing North White Plains station at about 6:22 p.m., on schedule.

Train 659 was operating on No. 2 track northbound. It approached the Commerce Street highway-rail crossing, operating at a speed of 58 miles per hour. The track speed limit on No. 2 track at this location is 60 miles per hour. According to the locomotive engineer, at a distance of approximately 1200 feet, he noticed a reflection of light at or near the crossing, but initially could not determine the origin of the reflection. After traveling a short distance further, the engineer determined that the reflection had come from a highway vehicle that was fouling No. 2 track at the Commerce Street crossing. He immediately placed the train into an emergency air brake application and sounded the horn on the lead car.

As the brakes applied and train 659 began to slow, the locomotive engineer observed the vehicle that was fouling the Commerce Street crossing, pull forward and completely foul No. 2 track.

The lead car of train 659 struck the SUV at 6:26 p.m. at speed of approximately 51 miles per hour. The train then pushed the vehicle north on No. 2 track 665 feet before coming to a stop. The locomotive engineer transmitted an emergency radio transmission to trains in the area, and gave immediate notification of the crash to the Metro-North control center.

Immediately following the crash, the lead car of the train started to fill with smoke. The train's engineer commenced assisting with the evacuation of the lead car. Emergency responders relieved the engineer of evacuation responsibilities after only a few minutes.

Method of Operation and Location

The crash occurred at the Commerce Street Highway-Rail Crossing located in Valhalla, NY, milepost 26.6 on the Harlem Line of the Metro-North Railroad. The railroad at this location is double main track. Tracks are designated as numbers 1 and 2 tracks. The railroad at this location is controlled by Centralized Traffic Control from a Metro-North operations control center located in GCT. Trains are operated in both directions on both numbers 1 and 2 tracks. Track speed for both tracks is 60 miles per hour at the crossing.

Operating Rules

Operating Rules governing employees were the Metro-North Operating Rules the MN-400 last updated with general order No. 202, effective 2/3/15. Also governing train movements was Metro-North Timetable No.2 effective 11/9/14. Latest Bulletin Order in effect was No.2-57, effective 2/3/15, as well as, General Notice No. 2-66, Operations Notice No. 2-5, and Daily Train Operations Bulletin Order No. 02-03-15.

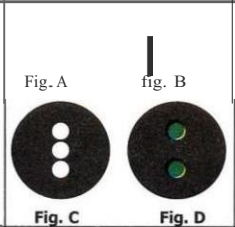
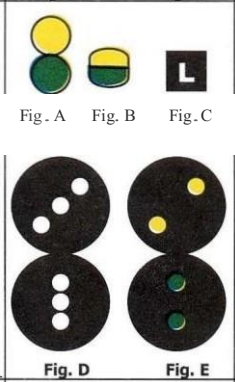
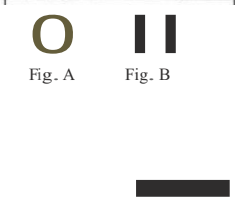
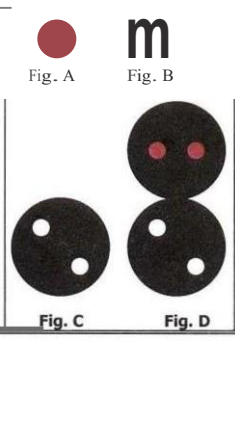
The train crew operating 659 train involved in the crash, was governed by wayside interlocking signal indications, Cab Signals, and Metro-North operating rules, specifically Rule No.s 11-A, (11-A(1)), 11-B (11-B(1)).

RULE 11

SIGNAL ASPECTS AND INDICATIONS

11-A CAB SIGNAL ASPECTS AND INDICATIONS


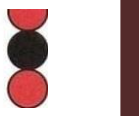
Rule No.

<p>11-A (1)</p>		<p><i>NAME:</i> Normal Cab <i>INDICATION:</i> Proceed at Maximum Authorized Speed</p>
<p>11-A (2)</p>		<p><i>NAME:</i> Limited Cab <i>INDICATION:</i> Proceed at Limited Speed</p>
<p>11-A (3)</p>		<p><i>NAME:</i> Medium Cab <i>INDICATION:</i> Proceed at Medium Speed</p>
<p>11-A (4)</p>		<p><i>NAME:</i> Restricted Cab <i>INDICATION:</i> Proceed at Restricted Speed</p>

11-8 INTERLOCKING SIGNAL ASPECTS AND INDICATIONS

Dark circles indicate signal lights not illuminated. A horizontal signal identification plate, located at the top of the signal, may be displayed at some locations. Signals may be mounted on ground, masts or overhead signal bridges. Letters/numerals shown on identification plate are for illustration.

Rule No.

<p>11-8 (1)</p>	 <p>Flashing</p>	<p><i>NAME:</i> Proceed Cab <i>INDICATION:</i></p>	<p>Proceed, governed by cab signal indication</p>
<p>11-8 (2)</p>	<p>Flashing Alt Flashing Flashing</p>	<p><i>NAME:</i> Absolute Block Signal [Rule 15-J(2)] <i>INDICATION:</i></p>	<p>Proceed at:</p> <ul style="list-style-type: none"> • <u>low Speed</u> within interlocking limits; • <u>MAS not exceeding</u> 59 MPH outside of interlocking limits, approaching the next interlocking signal prepared to stop.
<p>11-8 (3)</p>	 <p>Fig A. Fig B</p>	<p><i>NAME:</i> Stop Signal <i>INDICATION:</i></p>	<p>Stop Signal Stop.</p>

Signal Indications received by – Train No. 659

Train 659, with lead car No. 4333, received a “Proceed Cab” (the visible trackside signal outside the cab) at the last control point prior to the crash. The cab signal indication was a “Normal” indication in the control compartment at the time of the crash, allowing the engineer to operate at maximum authorized speed.

Operating Crews

MNR Train No. 659

Engineer: S. Smalls

Hire: Nov. 2010

Engineer certification: Mar. 2013

Certification Exp: Mar. 2016

Conductor: P. Larkin

Hire: Feb. 2007

Conductor Certification: May 2014

Certification Exp: May 2017

Engineer Smalls and Conductor Larkin went on-duty at Brewster, NY. Both train crew members (conductor and engineer) received their first train assignment of the day at Brewster, NY at 9:37 a.m.. Both operated 3 trains earlier in the day, prior to the 659 train, which was to be their last train of the day. Both crew members received the required off-duty rest period prior to working the day of the crash.

Train Consist

MNR Train 659 consisted of 8, multiple unit passenger cars (for additional details on equipment type, reference NTSB's Mechanical Factual Report). On the head of the train was the lead car 4333. The lead car was equipped with a control compartment on the lead (north) end of the car, for the engineer of the train. The lead car was followed by 7 additional cars. All 8 cars were in revenue service. The train equipment lined-up, as follows:

4333 (North End)(Head End)(Controlling Car)
4332
4197
4196
4175
4174
4309
4308 (South End)(Rear Car)

Crew Duty Cycles

No. 659 Train Crew

Previous Duty Trip

Engineer Steven Smalls went on duty at 11:59 p.m., on Feb. 1, 2015, and worked until 9:59 p.m., for a total of 10 hours 0 minutes on-duty.

Conductor Patrick Larkin went on duty at 9:37 a.m., on Feb. 2, 2015, and worked until 7:37 p.m., for a total of 10 hours and 1 minute on duty.

No. 659 Train Crew

Day of the Crash

Engineer Steven Smalls went on duty in Brewster, NY, at 9:37 a.m., on Feb. 3, 2015.

Conductor Patrick Larkin went on duty in Brewster, NY, at 9:37 a.m., on Feb. 3, 2015.

Federal Oversight

Federal oversight of the Metro-North Railroad Operations is provided by the Federal Railroad Administration (FRA), which is part of the US Department of Transportation (DOT). The FRA employs multiple field inspectors which conduct field inspections on MNR property on a scheduled and random basis. FRA operational field inspectors monitor the railroad's compliance with DOT regulations per 49 CFR Parts 200 to 299. FRA also conducts periodic records review on MNR for various federal record keeping requirements. A review of FRA field inspection data showed that 616 Operating Practices field operational inspections were conducted on MNR during 2013, 2014, and the month of 2015 prior to the crash. No exceptions were taken.

Employee Training and Qualifications

Federal regulations 49 CFR Part 240 and 242 require that both locomotive engineers and conductors be trained and certified under a federally approved program. For both of these training programs, employees must pass required testing to confirm that they are qualified to perform their assigned duties. Records provided to NTSB, as part of the crash investigation, indicate that MNR Railroad had approved training plans in place and that the train crews involved in this crash had received the required training by the railroad. All train crew members involved in the crash held current certifications for their assigned positions.

Employee Interviews

A summary of the 7 interviews conducted during the investigation appear below:

Interview Highlights

Below are bullets from the NTSB Operations Group interviews:

Name: Steven Smalls

Title: Locomotive Engineer Train 659

Date/Time of Interview: 2/5/2015, 2:00 p.m.

- Locomotive engineer since March 2014
- Called for duty at 7:30 a.m.
- Wife drove him to work
- At Brewster, had a safety briefing with the conductor prior to departing
- Operated 3 trains, then had a 2 & ½ hour break before the 659 train
- Train 659 was an 8 car train
- Departed out of GCT on then normal route with no problems
- Train handled normally, with no problems
- Went by North White Plains Yard, with no problems
- At a distance approaching Commerce Street, noted a reflection.
- As he got closer, noticed it was the front end of an SUV fouling No.2 track (his track)
- He put the train into Emergency
- He saw the SUV pull entirely onto the crossing
- His train struck the SUV
- He said he saw a woman in the SUV
- He said his train pushed the SUV down the track and the train came to a stop
- He said he called “Emergency” on the radio and also called the control center
- He said smoke started to fill the control compartment
- He exited the control compartment and saw smoke and fire in the rear of the car
- He assisted with evacuation of the first car until emergency personnel arrived
- He said he knew something had come into the car, but did not know what it was
- Concerning the operation of the train, he said had done all of his pre-departure checks and running brake test, and the train had handled as it should
- He said there were a lot of people on the train
- He said the lead car was the “Quiet” car
- He said he had operated north on No. 2 track
- He said that the fire started in the B end of the lead car and progressed to the A end, the north end
- He said the weather conditions were clear, but it was dark at the time of the crash
- He said he did not recall seeing any explosion, nor did he hear any explosion
- He said he did communicate with his conductor, initially through the intercom
- He said he operated train through the Commerce Street area about 3 time a week
- He said it was common to see a lot of vehicle traffic at the Commerce Street crossing
- He said he thought his speed was 56 or 58 miles per hour at the time he put the train into Emergency

Name: Michael McDermott

Title: Train Dispatcher Metro-North Operations Control Center, District B

Date/Time of Interview: 2/5/2015, 3:20 p.m.

- Said he reported on-duty at 2:15 p.m.
- Said he was working District “B”, due to vacations

- Stated that a track circuit came on at CP 119 (just south of Scarsdale station) on No.1 track (about 7 miles south of Valhalla)
- Said he ran train 659 on No. 2 track
- Said it was normal to operate train in both directions on both tracks
- Said he heard the Emergency radio transmission from the locomotive engineer on the 659 train
- Said it took a minute to confirm the train number and the location of the train via radio
- Said he also remembered talking to the 659's conductor
- Said he was assisted by the Asst. Deputy Director, two Asst. Chiefs and one Chief dispatcher who handled notification of emergency responders

Name: Patrick Larkin

Title: Conductor Train 659

Date/Time of Interview: 2/6/2015, 8:30 a.m.

- Said that Train 659 was part of his regular job since November 2014
- Said he reported for work at about 9:30 a.m., and went on-duty at 9:37 a.m.
- Said the normal engineer was in training
- Said he had 3 trains before the 659 train
- Said he usually worked out of the 6th car
- Said he heard and felt the emergency brake application
- He also said he heard the engineer call Emergency on the radio
- Said he confirmed the train's location with the control center
- He said he talked to engineer briefly on the intercom
- He said he made an announcement to passengers that there had been an crash
- Said he worked his way back to the 8th car
- Said there was a policeman at the crossing
- Said he went back through the train checking for any injured passengers
- Said his car was properly supplied with emergency equipment
- Said the train's evacuation was made in an orderly manner
- Said he made a final walk through of the cars to make sure all passengers were off the train, but only made it as far as the 3rd car. Where he met emergency responders who requested that he evacuate the train

Name: Henry Markowski

Title: Regular Locomotive Engineer on Train 659, who was at training the day of Feb. 3rd

Date/Time of Interview: 2/6/2015, 12:10 p.m.

- Stated that he had been the regular locomotive engineer on train 659 since November of 2014

- Said that he had not experienced any incidents at the Commerce Street crossing
- He said that the 659 train used both No. 1 and No. 2 tracks, depending on what might be going on that day
- Said he normally finds Commerce St. vehicle traffic to be light
- Said he can adequately sound the horn to warn traffic at the Commerce Street crossing
- Said he has not had any close call incidents at the Commerce St. crossing

Name: Brian Boryk

Title: Locomotive Engineer on Train 657, who operated the last train north on No. 2 track, 10 minutes before the crash train 659

Date/Time of Interview: 2/6/2015, 1:40 p.m.

- Confirmed that his train went by Commerce St. about 10 minutes before the 659 train
- Said he noted nothing unusual at the crossing
- He took no exceptions to the operation of the crossing gates at Commerce St.
- Stated that there usually are vehicles at Commerce St. when his train passes, but the number of vehicles varies
- Stated that he heard the radio transmissions of the engineer on train 659
- Stated that his train had a full crew including a conductor and two assistant conductors
- He said that his train was an 8 car train
- He also said that his train was very full, but many passenger got off at Chappaqua

Name: Tommy Cooper

Title: Locomotive Engineer on Metro-North's Harlem Line

Date/Time of Interview: 2/6/2015, 2:10 p.m.

- Stated that he has operated regularly over the Harlem Line and over Commerce St. since 1983
- Said he currently operates 2 trains daily, 5 days a week over the Commerce St. crossing
- Said he has never had an incident at the Commerce Street crossing
- Said he operates regularly on both No. 1 and No. 2 tracks
- Confirmed that operations can be in either direction on either track
- Stated that the amount of vehicle traffic over the crossing varies, depending on the time of the day
- Stated that he did not consider any of the crossings on the Harlem line to be exceptionally dangerous
- Stated that he usually has a full complement of train crew on his trains

Name: Robert Burnett

Title: Locomotive Engineer on Train No. 672, previous southbound train over the Commerce St. crossing before train No. 659

Date/Time of Interview: 2/8/2015, 11:15 a.m.

- Stated that his train went over the Commerce St. crossing about 45 minutes before the accident train
- Said that he operated south on No. 2 track
- Stated the highway traffic on the adjacent Taconic Parkway was jammed
- Stated that he saw police on the Parkway
- Stated that train operations were normal that day
- Stated that he saw some traffic at Commerce St., but could not remember how much
- Said he could not remember any crossing malfunctions at Commerce St.
- Stated that it was already dark, when he went through Commerce St.

Radio Communications

The lead controlling car of MNR Train 659 was equipped with a permanent working railroad radio the day of the crash. The conductor on-board the train also had a hand held portable radio. Both radios were tested by the train crew on the day of the crash prior to departing Grand Central Terminal. No problems were noted.

Locomotive Sight-Distance Observations

On Feb. 7, 2015, sight distance testing was conducted at the crash site with representatives from the FRA and Metro-North with a similar MNR train set representing the trains involved in the crash.

Equipment numbers were:

4019 (North car)

4018

4265

4264

4183

4182

4273

4272 (South car)

The train made three runs through the crash location at track speed, for purposes of audio measurements

A fourth run was made through to the crash location at approximately 6:40 p.m. Observations were made and photos were taken from the control compartment approaching the crash location at the following points:

- a) The point where an object could be recognized at the crossing – 689 feet
- b) The point where a vehicle could be recognized at the crossing – 488 feet

End of Report

David S. Bucher
NTSB Rail Accident Investigator

