National Transportation Safety Board

Railroad Accident Brief

Metro-North Railroad Employee Fatality

Accident No.:	DCA13FR005
Location:	West Haven, Connecticut
Date:	May 28, 2013
Time:	11:57 a.m. eastern daylight time
Railroad:	Metro-North Railroad
Property damage:	Negligible
Injuries:	0
Fatalities:	1
Type of accident:	Employee fatality

The Accident

On May 28, 2013, at 11:57 a.m. eastern daylight time, Metro-North Railroad (Metro-North) passenger train 1559, which was traveling westbound at 70 mph on the New Haven Line main track 1, struck and killed a track foreman in West Haven, Connecticut.[1] The accident location was about 100 feet west of catenary bridge 1021 at milepost 69.56.

At the time of the accident, the weather was 67°F, wind speed was 6 mph, and the sky was overcast. Metro-North reported minimal equipment damages.

The track foreman reported for work at 8:00 a.m. on the day of the accident. He was briefed by a supervisor; he, in turn, briefed the crew with which he would be working that day. The work plan involved relocating segments of rail from main track 1 to industrial track 5 in the vicinity of the new West Haven Station using a crane. This work was in preparation for the raising and resurfacing of track 1.

At 10:41 a.m., the track foreman contacted a Metro-North rail traffic controller (RTC) at the Operations Control Center (OCC) to request that main track 1 be removed from service between control point (CP) 266 and CP 271. To fulfill this request, the RTC placed blocking devices to prevent trains from entering the area.[2] At 10:42 a.m., the RTC issued authority to the foreman that took main track 1 out of service between CP 266 and 271 until 4:00 p.m. This action provided the foreman an exclusive work area on main track 1. In accordance with Metro-North procedures, the track could not be returned to service until the foreman released this authority back to the RTC.

[1] All times referenced in this report are eastern daylight time.

[2] *Blocking devices* are electronic locks applied in the OCC to prevent the routing of trains onto tracks. Applying and removing a blocking device involves clicking on a drop-down menu on a computer screen. When a blocking device is applied, an indication shows on the RTC's screen at the location where it is applied.

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About 10:45 a.m., the track supervisor informed the track foreman that no one was available to remove overhead power. Without overhead power removed, the height to which the crane boom could be raised was limited. (The overhead catenary wires are typically about 17 feet above the center line of the rail.)

At 10:55 a.m., the track foreman contacted the RTC to request authority to move the crane from CP 257 to CP 266.[3] At 10:56 a.m., the RTC issued a separate authorization to the foreman that granted permission to move on main track 2 from CP 257 to CP 266. This move was completed at 11:26 a.m.

The foreman requested permission from the RTC to proceed into the interlocking to move the crane from main track 2 west to main track 1 and then east into the exclusive work area. After the authority was granted, the foreman moved the crane. By 11:45 a.m., the crane cleared CP 271 and was positioned on industrial track 5. (See figure 1.)

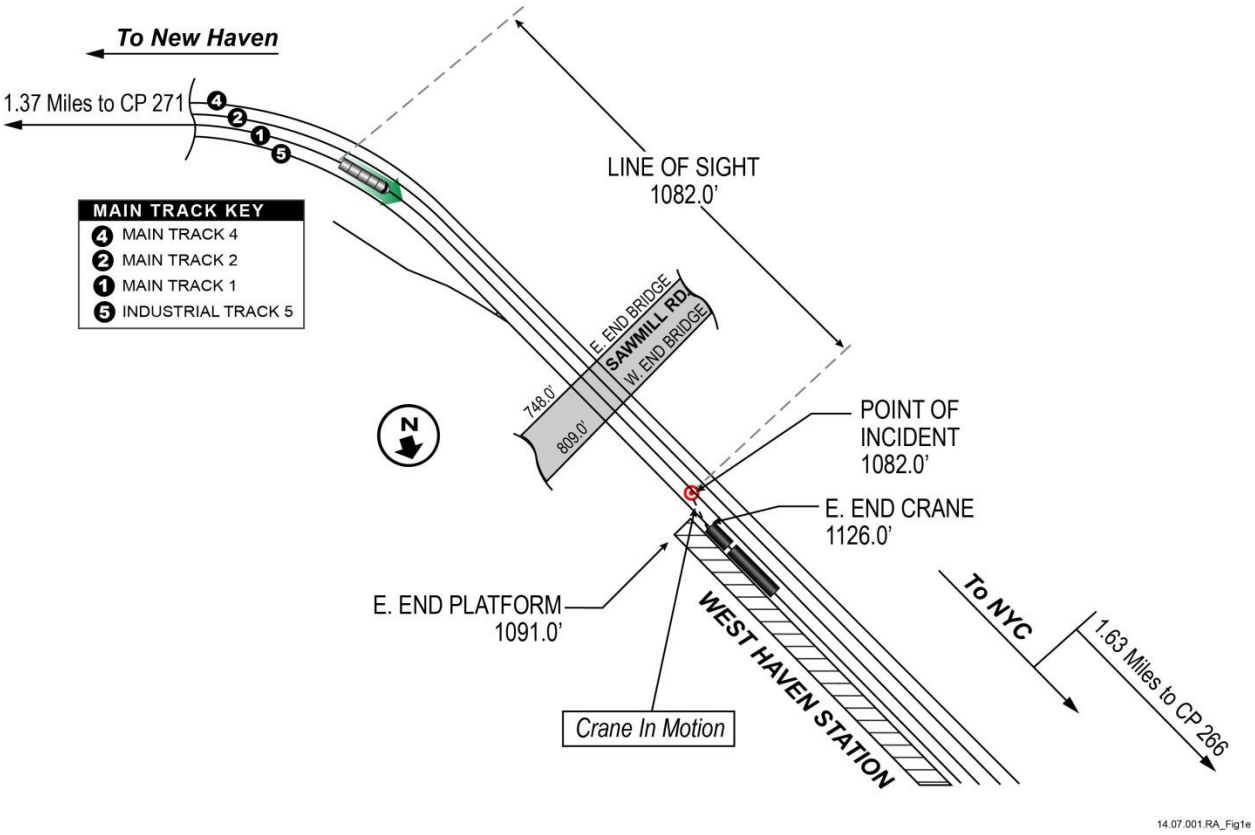

Figure 1. Accident area track diagram.

Once on industrial track 5, the foreman reported to the RTC that he was in the clear of the interlocking on track 5 and proceeded west with the crane to the work site at the West Haven Station platform. At this location, the foreman and the crane operator decided to work from industrial track 5 and to operate the crane with a low boom, so they would not need to remove

[3] An RTC works a specific section of a railroad referred to as a desk. Each desk or division is managed by a different RTC.

power from the overhead catenary wires above the main tracks.[4] After they verified that the crane could swing without contacting the station platform, they began moving rail from main track 1 to industrial track 5. This effort required the foreman to manually attach rail tongs to the rail on track 1. The crane would pick up the rail and move the rail onto industrial track 5. The crew worked in a westerly direction with the crane facing east and the foreman facing west. (See figure 2.)

Figure 2. Westward view of work location and crane.

As the crane operator began moving rail from main track 1 to industrial track 5, the crane operator heard the horn of a train approaching from the east. The crane operator and the track foreman continued to look to the east and observe the approaching train. The crane operator told investigators that he could not tell which track the train was on due to a curve in the tracks. He said that he returned his attention to his work because main track 1 was out of service. However, as the train neared, he realized that the train was on main track 1. He tried to warn the track foreman by yelling for him to run. The operator moved the boom clear of main track 1 just before the train arrived, thus minimizing the hazard to the train and its passengers. However, the track foreman did not clear the track. The train struck and killed the foreman, and it struck the rail that was draped over the north rail of main track 1; this collision with the rail knocked the remainder of the rail into the center ditch between main track 1 and industrial track 5.

The event recorder data shows that the striking train was moving 70 mph as it approached the accident site. The authorized maximum speed was 75 mph. The engineer of train 1559 stated that he sounded his train horn in anticipation of workers being at the

[4] The Metro-North rules specified a minimum 10-foot separation between the boom and the energized catenary line.

West Haven Station construction area. He stated that as he came around the curve he first saw the boom of the crane fouling main track 1. He then said he observed the white hard hat of a worker standing between the rails of main track 1. The engineer continuously sounded the horn and made an emergency brake application before striking the foreman and the rail.

The sight-distance test conducted by NTSB investigators showed that the train engineer would have had a view of the foreman and rail from a distance of about 1,082 feet. The stopping distance for the train was measured at 2,423 feet.

The engineer of train 1559 said that he previously had conducted an initial brake test in New Haven Yard prior to the departure from the yard. At that time, the train brakes functioned as intended. Between the yard and the New Haven station, he conducted a running brake test.[5] He conducted a second running brake test after departing the New Haven station. In both running brake tests, no exceptions were noted. He also said that during the emergency brake application prior to impact, the brakes functioned as intended.

The investigation determined that the following were not factors in the accident: signal system defects, the track condition, the train mechanical condition, the actions of the Metro-North engineer, and the actions of the Metro-North track foreman.

Rail Traffic Controller Procedures

Two RTCs at the OCC were responsible for the accident location. One was a student RTC, who had been hired in November 2012 and was working under the mentorship of a qualified RTC. The student RTC was receiving on-the-job training at the desk and was the employee who applied the electronic blocking devices for this work crew and issued the authority to the foreman. At 11:47 a.m., the student RTC removed the blocking device on main track 1 between CP 266 and CP 271 without first following the proper procedures for canceling the authority that had been issued to the track foreman. The qualified RTC responsible for supervising the student said that he did not see the student RTC remove the blocking device. At the time the block was removed, he said he may have momentarily stepped away from the desk.

The student RTC said that when he heard the foreman state that he was in the clear on industrial track 5 (that is, the crane was on industrial track 5 and clear of main track 1), he took that to mean that it was okay to remove the blocking device from main track 1. After the blocking device was removed about 11:51 a.m., the student RTC aligned a route for train 1559 to proceed westbound into the area where the track foreman was moving rail from main track 1.

Toxicological samples from the engineer, the student RTC, the mentor RTC, and the killed foreman were tested in accordance with federal regulations. The test results were negative for both illicit drugs and alcohol.

Prior to this accident, on May 4, 2013, a similar error occurred when an RTC incorrectly removed the blocking devices from an occupied track. This earlier incident did not result in

[5] Title 49 *Code of Federal Regulations* 238.319 states, "a running brake test shall be conducted in accordance with railroad's established operating rules, and shall be made by applying brakes in a manner that allows the engineer to ascertain whether the brakes are operating properly when the train is moving."

damage or injury. On May 6, 2013, Metro-North instituted additional operation control procedures, including a software enhancement that required RTCs to validate their intent to release track authorizations before removing the blocking devices. The student RTC used this feature to validate his intent to release the track authority in this instance but still released the authority in error.

Postaccident Actions

On June 17, 2013, the NTSB issued the following urgent safety recommendation to Metro-North:

(R-13-17) Urgent

> Immediately implement redundant signal protection, such as shunting, for maintenance-of-way work crews who depend on the train dispatcher to provide signal protection.[6]

The recommendation is currently classified "Open—Acceptable Response."

In addition, the NTSB reiterated Safety Recommendation R-08-6 made to the FRA. That recommendation was issued as a result of the 2007 Massachusetts Bay Transportation Authority accident that killed two track workers at Woburn, Massachusetts:

(R-08-6)

> Require redundant signal protection, such as shunting, for maintenance-of-way work crews who depend on the train dispatcher to provide signal protection.[7]

After the accident, Metro-North designated a dedicated OCC manager to approve all blocking device applications and removals before authority to foul a track is either granted or rescinded. Metro-North also reinstituted the use of a handwritten blocking device authority form as an additional safeguard against the improper removal of a blocking device. The RTC must record the details of the blocking device removal on the blocking device authority form.

In addition, Metro-North (with a technology vendor) developed the Enhanced Employee Protection System (EEPS).[8] The EEPS is an automated system that allows employees in the field to control the application and removal of blocking devices by use of a random, computer-generated code known only to that employee. Before the RTC can release a blocking

[6] *Shunting* involves making an electrical connection between the two running rails to simulate the presence of a train, typically with a cable. Shunting causes the signal system to display stop indications to trains approaching the area where shunts are applied.

[7] National Transportation Safety Board, *Collision of Massachusetts Bay Transportation Authority Train 322 and Track Maintenance Equipment, Woburn, Massachusetts, January 9, 2007*, RAR-08/01 (Washington, DC: National Transportation Safety Board, 2008).

[8] This system was in addition to, and separate from, the software enhancement developed after the May 4, 2013, event.

device, the employee in the field must provide the unique code and the RTC must type it into the system. On April 3, 2014, EEPS was implemented system-wide.

Metro-North also reported that the guidelines for the supervision of a student RTC while receiving on-the-job training have been examined and improved. Students are no longer permitted to apply or remove blocking devices without the permission of a qualified RTC. A daily evaluation form is to be completed so further assessment of the student's performance can be reviewed by the instructor.

Written instructor guidelines were developed to ensure uniformity and consistency in the training. In addition, a simulator was designed and incorporated into the training program in order to simulate real-world scenarios.

Probable Cause

The National Transportation Safety Board determines that the probable cause of this accident was the student rail traffic controller's removal (while working without direct supervision) of signal blocking protection for the track segment occupied by the track foreman and the failure of Metro-North to use any redundant feature to prevent this single point failure. Contributing to the accident was the Federal Railroad Administration's failure to require redundant signal protection, as recommended by Safety Recommendation R-08-6.

For more details about this accident, visit www.ntsb.gov/investigations/dms.html and search for NTSB accident ID DCA13FR005.

Adopted: October 24, 2014

BY THE NATIONAL TRANSPORTATION SAFETY BOARD

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The NTSB has authority to investigate and establish the facts, circumstances, and cause or probable cause of a railroad accident in which there is a fatality or substantial property damage, or that involves a passenger train. (49 U.S. Code § 1131 - *General authority*)

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, "accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties . . . and are not conducted for the purpose of determining the rights or liabilities of any person." 49 *Code of Federal Regulations*, Section 831.4. Assignment of fault or legal liability is not relevant to the NTSB's statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report. 49 *United States Code*, Section 1154(b).