National Transportation Safety Board

Washington, DC 20594

Safety Recommendation

Date: February 18, 2014

In reply refer to: R-14-07 through -09

Mr. Joseph Giulietti
President
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The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation—railroad, highway, marine, and pipeline. The NTSB determines the probable cause of the accidents and issues safety recommendations aimed at preventing future accidents. In addition, the NTSB carries out special studies concerning transportation safety and coordinates the resources of the federal government and other organizations to provide assistance to victims and their family members affected by major transportation disasters. The NTSB urges the Metro-North Railroad (Metro-North) to take action on the safety recommendations issued in this letter.

These recommendations address the installation and maintenance of approach permanent speed restriction signs on the right-of-way and the use of inward- and outward-facing audio and image recorders. The recommendations are derived from the NTSB's ongoing investigation of the derailment of Metro-North passenger train 8808 on December 1, 2013, near Spuyten Duyvil Station in The Bronx, New York. Information supporting these recommendations is discussed below.

On Sunday, December 1, 2013, at 7:19 a.m. eastern standard time, southbound Metro-North passenger train 8808 derailed at milepost 11.35 on track number 2 of the Metro-North Hudson Line. The train originated in Poughkeepsie, New York, with a destination of Grand Central Station in New York City. It consisted of seven passenger cars and one locomotive at the rear in a push configuration. All seven passenger cars and the locomotive derailed. The derailment occurred in a 6° left curve, where the maximum authorized speed was 30 mph**.** Event recorder data indicated that the train was traveling at 82 mph when it derailed. As a result of the derailment, 4 passengers died and 4 crewmembers and 55 persons were transported to local hospitals for treatment of their injuries. Metro-North estimated there were about 115 passengers on the train at the time of the derailment. Damage was estimated by Metro-North to be $9 million. The weather at the time of the accident was reported as 39°F with cloudy skies.

The NTSB is currently investigating three other accidents involving Metro-North in addition to the derailment in The Bronx: the derailment and subsequent collision that occurred in Bridgeport, Connecticut, on May 17, 2013; the employee fatality that occurred in West Haven, Connecticut, on May 28, 2013; and the derailment of a CSX train carrying refuse on a Metro-North track in The Bronx on July 18, 2013. The NTSB recently concluded an investigative hearing into the Bridgeport, Connecticut, derailment and the employee fatality that occurred in West Haven, Connecticut. The combination of four serious accidents in a 7-month period has raised concerns about the state of Metro-North's operational safety.

While this investigation is not complete, the circumstances of the accident and our investigation thus far support the issuance of these recommendations.

Approach Permanent Speed Restriction Signs

Federal regulations and railroad operating rules require locomotive engineers to be familiar with territories over which they operate. Most railroads install approach permanent speed restriction signs located a specified distance in advance of permanent speed restrictions. Signs are also posted for temporary speed restrictions. Approach permanent speed restrictions are listed in the timetable by milepost number. Approach permanent speed restriction signs serve as a reminder to operating crews that they are approaching a point where speed must be reduced.

Information developed thus far in our investigation of the December 1, 2013, derailment indicates that, while Metro-North posted signs for temporary speed restrictions, it did not use approach permanent speed restriction signs for permanent speed restrictions, such as the 30 mph speed restriction at the derailment location. As a result of the accident, Metro-North installed approach permanent speed restriction signs to aid operating crews at the derailment location, as well as in three other locations where the permanent speed restriction is greater than 20 mph less than the prevailing speed. The NTSB believes that Metro-North should take additional steps by implementing a more systematic approach and install such signs at all locations where permanent speed restrictions are in place. Although posting of these signs may not have prevented the December 1, 2013, accident, in the process of investigating that accident and the others mentioned above, the NTSB noted this issue and felt it needed the attention of Metro-North. It is crucial that locomotive engineers and conductors know the location of speed restrictions that are identified by milepost in the timetable or in operating bulletins. This will alert train operating crews that speed restrictions are forthcoming and will comply with industry best practices.

Therefore, the NTSB recommends that Metro-North survey its system and install approach permanent speed restriction signs where permanent changes in train speed apply, to alert train operating crews of the reduced speeds.

Audio and Image Recorders

The NTSB continues to advocate and recommend the use of inward- and outward-facing audio and image recorders to assist in accident investigations and with management and regulatory oversight of rules compliance. In its report on the 2008 collision between a commuter passenger train and a freight train in Chatsworth, California, the NTSB stated that:

> The NTSB believes that the recorded audio and images should be easily recoverable and available for review not only after an accident has occurred but routinely, as part of the railroad's efficiency testing and performance monitoring program. In the same way that operating employees are continually tested on signal compliance or speed control, audio and image recordings of engineers and other crewmembers could be reviewed at random to verify compliance with safety rules and procedures. In particular, this information could allow railroads to identify unsafe behaviors and pursue corrective action before an accident occurs.[1]

In the investigation of the 2011 rear-end train collision in Red Oak, Iowa, the NTSB noted that inward-facing image recorders might also have value in detecting and addressing fatigue among crewmembers:[2]

> Event recorder and alerter data inputs could be used to develop a "fatigue signature" that could result in management intervention. An alerter-induced penalty brake application is one element of such a signature. As geographic databases are created to support PTC, it will be possible, for example to coordinate locations of grade crossings with whistle use; when a locomotive whistle is not sounded at a crossing, it is often an indicator of crew inattentiveness. In the future, if railroads implement the NTSB's recommendations on inward-facing video cameras, image analysis technology could be used to activate an in-cab alerter device when an engineer appears to have fallen asleep on a moving train, and also to provide an alert to a dispatch center to trigger a timely intervention.[3]

As a result of the Chatsworth accident investigation, the NTSB made the following recommendations to the Federal Railroad Administration (FRA):

> Require the installation, in all controlling locomotive cabs and cab car operating compartments of crash-and fire-protected inward- and outward-facing audio and image recorders capable of providing recordings to verify that train crew actions are in accordance with rules and procedures that are essential to safety as well as train operating conditions. The devices should have a minimum 12-hour continuous recording capability with recordings that are easily accessible for review, with appropriate limitations on public release, for the investigation of accidents or for use by management in carrying out efficiency testing and systemwide performance monitoring programs. (R-10-1)

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[1] National Transportation Safety Board, *Collision of Metrolink Train 111 With Union Pacific Train LOF65-12, Chatsworth, California, September 12, 2008*, RAR-10/01 (Washington, DC: National Transportation Safety Board, 2010) http://www.ntsb.gov.

[2] National Transportation Safety Board, *Collision of BNSF Coal Train With the Rear End of Standing BNSF Maintenance-of-Way Equipment Train, Red Oak, Iowa, April 17, 2011*, RAR-12/02 (Washington, DC: National Transportation Safety Board, 2012) http://www.ntsb.gov.

[3] National Transportation Safety Board, *Collision of BNSF Coal Train With the Rear End of Standing BNSF Maintenance-of-Way Equipment Train, Red Oak, Iowa, April 17, 2011*, RAR-12/02 (Washington, DC: National Transportation Safety Board, 2012) http://www.ntsb.gov.

> Require that railroads regularly review and use in-cab audio and image recordings (with appropriate limitations on public release), in conjunction with other performance data, to verify that train crew actions are in accordance with rules and procedures that are essential to safety. (R-10-2)

Although the FRA indicated that it is amenable to the concept of using audio and imaging technology in locomotives and cab cars, it has yet to directly address the implementation of these specific safety recommendations. Pending action by the FRA to require that all locomotives and cab cars operated under Title 49 *Code of Federal Regulations* (CFR) Part 229 be equipped with crash- and fire-protected inward- and outward-facing audio and image recorders, the NTSB classified these recommendations to the FRA as "Open—Unacceptable Response".

In the investigation of the 2012 Goodwell, Oklahoma, head-on train collision, the NTSB made the following recommendation to all Class I railroads: [4]

> Install in all controlling locomotive cabs and cab car operating compartments crash- and fire-protected inward- and outward-facing audio and image recorders. The devices should have a minimum 12-hour continuous recording capability. (R-13-26)

The NTSB continues to believe that inward- and outward-facing audio and image recorders improve the quality of accident investigations and provide the opportunity for proactive steps by railroad management to improve operational safety.

The NTSB makes the following recommendations to Metro-North Railroad:

> Survey your system and install approach permanent speed restriction signs where permanent changes in train speed apply, to alert train operating crews of the reduced speeds. (R-14-07)

> Require the installation, in all controlling locomotive cabs and cab car operating compartments of crash- and fire-protected inward- and outward-facing audio and image recorders capable of providing recordings to verify that train crew actions are in accordance with rules and procedures that are essential to safety as well as train operating conditions. The devices should have a minimum 12-hour continuous recording capability with recordings that are easily accessible for review, with appropriate limitations on public release, for the investigation of accidents or for use by management in carrying out efficiency testing and systemwide performance monitoring programs. (R-14-08)

> Regularly review and use in-cab audio and image recordings in conjunction with other performance data, to verify that train crew actions are in accordance with rules and procedures that are essential to safety. (R-14-09)

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[4] National Transportation Safety Board, *Head-On Collision of Two Union Pacific Railroad Freight Trains Near Goodwell, Oklahoma, June 24, 2012*, RAR-13/02 (Washington, DC: National Transportation Safety Board, 2013) http://www.ntsb.gov.

The NTSB is vitally interested in these recommendations because they are designed to prevent accidents and save lives. We would appreciate receiving a response from you within 90 days detailing the actions you have taken or intend to take to implement them. When replying, please refer to the safety recommendations by number. We encourage you to submit your response electronically to correspondence@ntsb.gov. If your response exceeds 10 megabytes, including attachments, please e-mail us at the same address for instructions. Please do not submit both an electronic copy and a hard copy of the same response.

[Original Signed]

By: Deborah A.P. Hersman
Chairman