

DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

Safety Advisory 2015-03

Operational and signal modifications for compliance with maximum authorized passenger train speeds and other speed restrictions.

AGENCY: Federal Railroad Administration (FRA), Department of Transportation (DOT).

ACTION: Notice of safety advisory.

SUMMARY: FRA is issuing Safety Advisory 2015-03 to stress to passenger railroads and railroads that host passenger service and their employees the importance of compliance with Federal regulations and applicable railroad rules governing applicable passenger train speed limits. This safety advisory makes recommendations to these railroads to ensure that compliance with applicable passenger train speed limits is addressed by appropriate railroad operating policies and procedures and signal systems.

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SUPPLEMENTARY INFORMATION: The overall safety of railroad operations has improved in recent years. However, two fatal passenger train accidents in the last 18 months in which serious overspeed events occurred highlight the need to ensure train speed limit compliance, as mandated by existing Federal railroad safety regulations and railroad operating rules.

AMTRAK DERAILMENT

On Tuesday, May 12, 2015, Amtrak passenger train 188 (Train 188) was traveling timetable east (northbound) from Washington, D.C., to New York City. Aboard the train were five Amtrak crew members, three Amtrak employees, and 250 passengers. Train 188 consisted of a locomotive in the lead and seven passenger cars trailing. Shortly after 9:20 p.m., the train derailed while traveling through a curve at Frankford Junction in Philadelphia, Pennsylvania. As a result of the accident, eight persons were killed, and a significant number of persons were seriously injured.

The National Transportation Safety Board (NTSB) has taken the lead role conducting the investigation of this accident under its legal authority. 49 U.S.C. 1101 et seq.; 49 CFR 831.2(b). As is customary, FRA is participating in the NTSB's investigation and also investigating the accident under its own authority. While NTSB has not yet issued any formal findings, the information released to date indicates that train speed was a factor in the derailment. As Train 188 approached the curve from the west, it traveled over a straightaway with a maximum authorized passenger train speed of 80 mph. The maximum authorized passenger train speed for the curve was 50 mph. NTSB determined that the train was traveling approximately 106 mph within the curve's 50-mph speed restriction, exceeding the maximum authorized speed on the straightaway by 26 mph, and 56 mph over railroad's maximum authorized speed for the curve.¹

¹ FRA regulations provide, in part, that it is unlawful to "[o]perate a train or locomotive at a speed which exceeds the maximum authorized limit by at least 10 miles per hour." 49 CFR 240.305(a)(2).

In response to the derailment, FRA issued Emergency Order No. 31 (EO 31; 80 FR 30534, May 28, 2015). EO 31 requires Amtrak to take the following actions to ensure the safe operation of passenger trains on the Northeast Corridor:²

- Immediately implement code changes to Amtrak's Automatic Train Control (ATC) System to enforce the passenger train speed limit ahead of the curve at Frankford Junction in Philadelphia, Pennsylvania where the fatal derailment occurred.
- Survey its Northeast Corridor system and identify each main track curve where there is a reduction of more than 20 mph from the maximum authorized approach speed to that curve for passenger trains, and provide a list of each curve location to FRA within 5 days after EO 31 was issued.
- Submit an action plan for FRA approval within 20 days identifying modifications to its ATC System (or other signal systems) that Amtrak will make to enable warning and enforcement of applicable passenger train speeds at the identified curves. If such modifications would interfere with the timely implementation of a Positive Train Control (PTC) system or are not otherwise feasible, Amtrak's plan must describe alternative procedures that it will adopt at the identified curves to ensure compliance with applicable passenger train speed limits. Amtrak's plan must contain milestones and target dates for completion of action plan items.

² EO 31's requirements will not apply where Amtrak's Positive Train Control System (Advanced Civil Speed Enforcement System (ACSES)) is already in use on the Northeast Corridor. Among other features, ACSES enforces civil speed restrictions that are in place at locations such as curves and bridges.

- Within 30 days of issuance of the Order, Amtrak must begin to install additional wayside signage alerting engineers and conductors of the maximum authorized passenger train speed throughout its Northeast Corridor system, with particular emphasis on additional signage at the curve locations where significant speed reductions occur. Amtrak must identify the locations where it intends to install the additional wayside speed limit signs in its action plan, and must notify FRA when installation of the signs is completed.

METRO-NORTH DERAILMENT

In addition to the recent Amtrak passenger train derailment discussed above, in December 2013 a New York State Metropolitan Transportation Authority Metro-North Commuter Railroad Company (Metro-North) train derailed as it approached the Spuyten Duyvil Station in Bronx, New York. The train traveled over a straightaway with a maximum authorized passenger train speed of 70 mph before reaching a sharp curve in the track with a maximum authorized speed of 30 mph. NTSB's investigation of the Metro-North accident determined the train was traveling approximately 82 mph as it entered the curve's 30-mph speed restriction before derailing. That derailment resulted in four fatalities and at least 61 persons being injured. The Metro-North accident is similar to the recent Amtrak accident in that it involved a serious overspeed event in a sharp curve in the track. As a result of the derailment, FRA issued Emergency Order No. 29 (78 FR 75442, Dec. 11, 2013) requiring Metro-North to take certain actions to control passenger train speeds. FRA also issued Safety Advisory 2013-08, which recommended that all railroads in the United States:

- (1) Review the circumstances of the December 1, 2013, Spuyten Duyvil derailment with each of their operating employees.
- (2) Provide instruction to their employees during training classes and safety briefings on the importance of compliance with maximum authorized train speed limits and other speed restrictions. This training should include discussion of the railroad's absolute speed limits, speed restrictions based on physical characteristics, temporary speed restrictions, and any other restrictions commonly encountered.
- (3) Remind their employees that Federal railroad safety regulation, at 49 CFR 240.305(a)(2) and 242.403(e)(2), prohibits the operation of a locomotive or train at a speed which exceeds the maximum authorized speed by at least 10 mph.
- (4) Evaluate quarterly and 6-month reviews of operational testing data as required by 49 CFR 217.9. A railroad should consider increasing the frequency of operational testing where its reviews show any non-compliance with maximum authorized train speeds. A significant number of operational tests should be conducted on trains that are required to reduce speed by more than 20 mph from the maximum authorized train speed. Operational tests should use the reliable methods available, such as reviewing locomotive event recorder data and testing by radar to verify compliance with maximum authorized speeds.
- (5) Reinforce the importance of communication between train crewmembers located in the controlling locomotive, particularly during safety critical periods when multiple tasks are occurring (e.g., copying mandatory directives, closely approaching or passing fixed signals and/or cab signals at a reduced speed, approaching locations where

the train's movement authority is being restricted, during radio conversations with other employees or job briefings about track characteristics) and during extended periods of inactivity.

OVERSPEED PREVENTION

FRA recognizes that passenger rail transportation is generally extremely safe. However, these two recent accidents, which both involved overspeed events and resulted in numerous passenger fatalities, highlight the need to remain vigilant in ensuring employee compliance with operational speed limits and restrictions for passenger trains. As required by 49 U.S.C. 20157, railroads operating scheduled intercity and commuter passenger service in this country are required to implement PTC Systems by December 31, 2015. By statute a PTC system must be designed to prevent the type of overspeed events that occurred in the derailments discussed above, as well as train-to-train collisions, incursions into roadway work zone limits, and the movement of a train over a switch left in the wrong position. Amtrak has indicated that it intends to meet the statutory deadline to install PTC on the Northeast Corridor. FRA understands that other passenger railroads in this country have concerns about their ability to meet the December 31, 2015 deadline to install PTC. FRA intends to enforce the December 31, 2015 deadline to ensure that PTC is in use as quickly, safely, and efficiently as possible.

Until PTC is in use across the passenger railroad systems in this country, and due to the significant safety concerns presented by the two accidents described above, FRA believes all passenger railroads and railroads that host passenger service need to evaluate

their systems and take immediate actions to prevent future catastrophic overspeed events from occurring.

Some railroads have ATC or cab signal systems³ that may be modified to prevent overspeed events at critical locations such as curves, bridges, and stations, similar to what FRA required of Amtrak at the May 12, 2015 derailment location in EO 31. Where such signal system modifications are appropriate and would not interfere with the timely implementation of PTC⁴, FRA recommends that railroads make such modifications after identifying critical main track locations. Where such modifications to the signal system to slow trains at critical locations are not viable or would interfere with PTC implementation (or on railroads where no cab signal or ATC system is installed or operative), FRA encourages railroads to take other operational actions to prevent overspeed events, such as requiring additional qualified employees to occupy the controlling locomotive of a train to identify and communicate the applicable passenger train speed limits and restrictions, or by requiring additional crew communications regarding applicable passenger train speed limits and restrictions.

FRA will continue to focus on ensuring passenger railroad compliance with maximum authorized train speeds and relevant temporary and permanent speed restrictions in the coming months, including stepped up enforcement actions. These actions will include, but will not be limited to, on-board inspections, radar speed

³ FRA regulations require that “[p]rior to December 31, 2015, where any train is permitted to operate at a speed of 80 or more miles per hour, an automatic cab signal, automatic train stop, or automatic train control system complying with the provisions of this part [part 236] shall be installed, unless an FRA approved PTC system meeting the requirements of this part [part 236] for the subject speed and other operating conditions, is installed.” 49 CFR 236.0(d)(1).

⁴ FRA recommends that railroads consult with FRA if they believe a modification would interfere with PTC implementation.

monitoring at locations of significant permanent or temporary speed restrictions, monitoring of railroad officers who conduct operational tests, and comprehensive reviews of a railroad's implementation of their operational tests and inspection program.

FRA strongly encourages railroads and other industry members to re-emphasize the importance of compliance with maximum authorized train speeds and any applicable speed restrictions, and to conduct operational testing at a level that will ensure compliance with all posted speed restrictions.

RECOMMENDED RAILROAD ACTION: In light of the accidents discussed above, and in an effort to ensure the safety of the Nation's railroads, their employees, and the general public, FRA recommends that passenger railroads and railroads that host passenger service⁵ do each of the following:

- (1) Review and implement the recommendations made in FRA Safety Advisory 2013-08, which are discussed above.
- (2) Review the circumstances of the fatal May 12, 2015, Philadelphia derailment with their operating employees.
- (3) Survey their entire systems, or the portions on which passenger service is operated, and identify main track locations where there is a reduction of more than 20 mph from the approach speed to a curve or bridge and the maximum authorized operating speed for passenger trains at that curve or bridge (identified locations).
- (4) If the railroad utilizes an ATC, cab signal, or other signal system capable of providing warning and enforcement of applicable passenger train speed limits, make

⁵ This Safety Advisory only applies to the portions of the railroad's system over which passenger service is operated.

modifications to those systems where appropriate to ensure compliance with applicable speed limits at the identified locations. If the railroad is required to implement PTC at the identified locations, implement these recommended signal system changes in the interim.

(5) If the railroad does not utilize an ATC, cab signal, or other signal system capable of providing warning and enforcement of applicable passenger train speed limits (or if a signal system modification would interfere with the implementation of PTC or is otherwise not viable) all passenger train movements at the identified locations be made with a second qualified crew member in the cab of the controlling locomotive, or with constant communication between the locomotive engineer and an additional qualified and designated crewmember in the body of the train. If the railroad is required to implement PTC at the identified locations, implement these recommended changes in the interim.

(6) Install additional wayside signage alerting engineers and conductors of the maximum authorized passenger train speed throughout the passenger railroad's system or the portions of its system in which passenger service is operated, with particular emphasis on additional signage at the identified locations.

FRA encourages all railroad industry members to take actions consistent with the preceding recommendations. FRA may modify this Safety Advisory 2015-03, issue additional safety advisories, or take other appropriate action necessary to ensure the highest level of safety on the Nation's railroads, including pursuing other corrective measures under its rail safety authority.

Issued in Washington, D.C. on June 9, 2015.

Sarah Feinberg
Acting Administrator.