Testimony of

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Before the

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Committee on Transportation & Infrastructure
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— On —

Oversight of Positive Train Control Implementation in the United States

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An Independent Federal Agency

Good morning, Chairman Denham, Ranking Member Capuano, and Members of the Subcommittee. Thank you for inviting the National Transportation Safety Board (NTSB) to testify before you today.

The NTSB is an independent federal agency charged by Congress with investigating every civil aviation accident and significant incidents in the United States, as well as significant accidents and incidents in other modes of transportation—railroad, highway, marine, and pipeline. We determine the probable cause of these accidents and other transportation events and issue safety recommendations aimed at preventing future accidents. In addition, we carry out special studies concerning transportation safety and coordinate the resources of the federal government and other organizations to assist victims and their family members who have been impacted by major transportation disasters.

On November 14, 2016, we announced our Most Wanted List of Transportation Safety Improvements for 2017–2018.[1] This list, based on safety issues we have identified in our investigations, highlights the 10 areas in transportation safety where we believe improvements are most critical. One issue area on this cycle's Most Wanted List is "Increase Implementation of Collision Avoidance Technologies," which addresses the need for positive train control (PTC) to reduce accidents, prevent injuries, and save lives.

Positive Train Control

PTC is an advanced train control system designed to prevent train-to-train collisions, overspeed derailments, incursions into established work zones, and movement through a switch left in the wrong position. If a train does not slow for an upcoming speed restriction, PTC will alert the engineer. If an appropriate action is not taken, PTC will apply the train's brakes before the speed restriction is violated.

The first NTSB-investigated accident that train control technology would have prevented occurred in 1969, when 4 people died and 43 were injured in the collision of two Penn Central commuter trains in Darien, Connecticut. In the 49 years since then, we have investigated 150 accidents that could have been prevented by PTC. These accidents have claimed almost 300 lives.

Many train collisions and overspeed derailments are caused by operational errors involving human performance failures. A large number of these human performance failures involve a variety of factors such as fatigue, sleep disorders, medications, loss of situational awareness, reduced visibility, and distractions in the operating cab. Many of these PTC-preventable accidents occurred after train crews failed to comply with train control signals, follow operating procedures in non-signaled or "dark" territories, observe work zone protections, or adhere to other specific operating rules such as returning track switches to normal position after completing their work at

[1] NTSB, *2017–2018 Most Wanted List* (Washington, DC: NTSB, 2016).

railroad sidings. We may never eliminate human error from the railroad system, but PTC provides a level of redundancy to protect trains and those on board when those errors do occur.

Congress mandated PTC in the Rail Safety Improvement Act of 2008 (RSIA), in the aftermath of the 2008 accident in Chatsworth, California, in which a Metrolink commuter train and a Union Pacific freight train collided head-on, killing 25 people and injuring 102 others.[2] Our investigation concluded that the Metrolink engineer's use of a personal electronic device to send text messages distracted him from his duties and that PTC could have prevented this accident. RSIA required the implementation of a PTC system on each line over which intercity passenger or commuter service is operated or over which poison- or toxic-by-inhalation hazardous materials were transported, by December 31, 2015.[3] In October 2015, Congress extended this deadline to December 31, 2018, and included provisions for railroads to request an additional 24-month extension to December 31, 2020, if certain criteria are met.[4]

The NTSB is gravely concerned that the majority of the Nation's railroads required to install PTC will not have fully operational PTC systems by the December 31, 2018, deadline. For each day that goes by without PTC, we are at continued risk for another tragic accident, such as those described below.

NTSB Investigations of PTC-Related Accidents

Since the enactment of RSIA, we have completed investigations of 22 accidents that could have been prevented by PTC, and which resulted in 23 deaths, over 314 injuries, and over $126 million in property damage. These include:

- In September 2010, near Two Harbors, Minnesota, human error and fatigue contributed to the collision of two freight trains. Five crewmembers were injured.
- In April 2011, near Red Oak, Iowa, fatigue contributed to the rear-end collision of a coal train with a standing maintenance-of-way equipment train. Two crewmembers were killed.
- In May 2011, in Hoboken, New Jersey, human error contributed to the collision of a train with the bumping post at the end of the track.
- In June 2012, near Goodwell, Oklahoma, human inattentiveness contributed to the collision of two freight trains. Three crewmembers were killed.

[2] NTSB, *Collision of Metrolink Train 111 With Union Pacific Train LOF65-12 Chatsworth, California September 12, 2008*, Rpt. No. NTSB/RAR-10/01 (January 21, 2010).
[3] Rail Safety Improvement Act of 2008, Pub. L. No. 110-432, § 104 (October 16, 2008).
[4] Positive Train Control Enforcement and Implementation Act of 2015, Pub. L. No. 114-73, § 1302 (October 29, 2015).

- In May 2013, near Chaffee, Missouri, inattentiveness and fatigue contributed to the collision of two freight trains. Two crewmembers were injured and a highway bridge collapsed.
- In December 2013, in the Bronx, New York, fatigue contributed to the derailment of a passenger train. Four passengers were killed and 61 others were injured.

Amtrak 188 Derailment—Philadelphia, Pennsylvania

The deadliest PTC-preventable accident since Chatsworth occurred on May 12, 2015, when Amtrak Northeast Regional train 188 derailed in Philadelphia, Pennsylvania. The train, operating northbound from Washington to New York City, departed Philadelphia's 30th Street Station and derailed while traveling through a curve at Frankford Junction. Maximum speed through the curve was 50 miles-per-hour (mph), but the train was traveling at 106 mph when the engineer applied the emergency brake system. Eight passengers were killed and more than 185 others were injured. We determined the probable cause of this accident to be the engineer's acceleration as he entered the curve, due to his loss of situational awareness likely because his attention was diverted to an emergency situation with another train. Contributing to the accident was the lack of a PTC system.[5]

PTC had not yet been implemented in the area at the time of this accident. Afterward, in December 2015, Amtrak finished installing and implementing PTC on all Amtrak-owned property along its Northeast Corridor (NEC) where it was required; however, there are approximately 94 miles of track on the NEC that are owned by other railroads, and those segments are not PTC equipped. Additionally, the NEC only consists of 4 percent of Amtrak's route miles. Amtrak must rely on other host railroads to implement PTC on the remaining 96 percent of route miles.[6]

The NTSB continues to investigate accidents that occur on other tracks that remain unprotected by PTC.

Amtrak 501 Derailment—DuPont, Washington

On the morning of December 18, 2017, on its first regular passenger service trip, Amtrak passenger train 501 derailed as it traversed a curve near DuPont, Washington. The lead locomotive, the power car, and two passenger railcars derailed from an overpass onto Interstate 5. At the time of the accident, 77 passengers, 5 Amtrak employees, and a technician from the railcar manufacturer, Talgo Incorporated, were on the train. Of these individuals, 3 passengers were killed and 62 passengers and crewmembers were injured. Eight individuals in highway vehicles were

[5] NTSB, *Derailment of Amtrak Passenger Train 188 Philadelphia, Pennsylvania, May 12, 2015*. Rpt. No. NTSB/RAR-16/02 (May 17, 2016).
[6] NTSB, *Amtrak Train Collision with Maintenance-of-Way Equipment, Chester, Pennsylvania, April 3, 2016*. NTSB/RAR-17/02 (November 14, 2017).

also injured. Our investigation is ongoing, but on January 4, 2018, we issued a preliminary report regarding this derailment.[7]

Central Puget Sound Regional Transit Authority (Sound Transit), a public transit agency in the state of Washington, owns the Point Defiance Bypass tracks where the derailment occurred. Sound Transit reported that the PTC system on this line was not operational at the time of the accident. The authorized track speed decreases from 79 mph to 30 mph as the track approaches the curve. According to the lead locomotive's event data recorder, the final recorded speed of the locomotive was 78 mph. In this accident, PTC would have notified the train engineer about the speed reduction for the curve, and if he did not take appropriate action to control the train's speed, PTC would have applied the train brakes to maintain compliance with the speed restriction and to stop the train.

Amtrak 91 Collision with CSX Train—Cayce, South Carolina

In the early morning of February 4, 2018, an Amtrak passenger train unexpectedly entered a siding near Cayce, South Carolina, and collided with a stationary CSX freight train. It is still very early in the investigation, but we do have some preliminary factual information. According to preliminary information, there were 139 passengers and 8 crew on the Amtrak train. Two of the crewmembers—the engineer and the conductor—were killed, and 116 others were injured.

At the time of the accident, a signal suspension was in place through the area, due to signal work being done, including upgrades to prepare for implementation of PTC. Trains were being directed through the area by a CSX dispatcher, who would issue warrants, or permissions, to use the main line.[8] The crew of the CSX had completed work in the area, moved the train to the siding, and released their authority to use the main line back to the dispatcher. However, the switch on the main line was left open to the siding and locked. The Amtrak train, traveling at 57 mph, was diverted into the siding from the main and struck the CSX train.

This is the second accident that we are investigating involving a train being unexpectedly diverted onto a side track because of a switch left in the incorrect position in an area of track under "signal suspension" due to installation and testing of PTC. On December 5, 2017, we issued an accident brief regarding the collision of two Union Pacific Railroad freight trains that occurred on March 14, 2016, in Granger, Wyoming. One crew member received minor injuries. We determined that the probable cause of the accident was that the employee-in-charge incorrectly used information from a conversation with the train dispatcher as authorization to send a train into

[7] NTSB, *Preliminary Report, RRD18MR001* (January 4, 2018).

[8] Signal suspension means train control signals located alongside the track have been taken out of service, oftentimes for maintenance or system upgrades. When these signals are taken out of service, train movements are controlled by means such as absolute blocks or by track warrants.

the signal suspension territory. Contributing to the accident was the failure of a crew member to check the switch position before authorizing the train to enter the signal suspension territory.[9]

As with the Granger accident, part of our investigation into the Cayce accident will involve examining train operations through signal suspension areas, in addition to other safety issues.

End-of-Track Collisions at Terminal Stations

On February 6, 2018, the NTSB held a board meeting to consider a special investigation report based on investigations into two very similar accident that occurred within 13 weeks of one another. In both accidents, the engineers failed to stop their trains before reaching the end of a terminating track at a station. The September 29, 2016, accident on the New Jersey Transit commuter railroad at Hoboken, New Jersey, killed one person, injured 110, and resulted in major damage to the passenger station. The January 4, 2017, accident on the Long Island Rail Road, (a subsidiary of Metropolitan Transportation Authority) at the Atlantic Terminal in Brooklyn, New York, injured 108 people.[10] The probable causes of the accidents involved each of the engineers' impairment as a result of undiagnosed severe sleep apnea.

Federal regulation permits certain main line tracks to be excluded from PTC requirements.[11] According to the Federal Railroad Administration (FRA), there are at least 35 passenger train terminals in the United States with terminating tracks -- that is, tracks that end at a bumping post and/or platform. Most train movements on these terminating tracks are protected only by rules compliance and the attentiveness of the engineer. All passenger railroads that operate terminals with terminating tracks, including New Jersey Transit and Long Island Rail Road, have asked to be excluded from installing PTC within the terminals and the FRA has granted all the requests.[12] Our investigation noted the challenges with implementing PTC in such stations due to operational necessity and technological challenges. However, as evidenced by these two accidents, relying solely on an engineer's ability to stop his or her train does not provide the level of safety necessary to protect the public. To address this safety issue, we have made a recommendation to the FRA to require intercity passenger and commuter railroads to implement technology to stop a train before reaching the end of tracks.

[9] NTSB, *Collision of Two Union Pacific Railroad Freight Trains, Granger, Wyoming*. Rpt. No. NTSB/RAB-17-10 (December 5, 2017).
[10] NTSB, *Abstract of Special Investigation Report, End-of-Track Collisions at Terminal Stations, Hoboken, New Jersey, September 29, 2016, and Atlantic Terminal, Brooklyn, New York, January 4, 2017*. (February 6, 2018).
[11] Title 49 *CFR* 236.1019.
[12] NTSB understands that FRA has received one additional request that has not yet been granted pending further information from the railroad.

Conclusion

It has been nearly half a century since the NTSB first recommended technology such as PTC, and it has been almost 10 years since Congress mandated its implementation. In the meantime, because PTC implementation has been delayed, we continue to see more accidents, injuries, and fatalities, that could be prevented by a fully functioning PTC system. Lives depend on it.

Thank you for the opportunity to testify before you today. I look forward to responding to your questions.