

Testimony of

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## **Introduction**

Good morning. I wish to thank Chairman Thune and Ranking Member Nelson for hosting this important discussion on Positive Train Control (PTC). My name is Scot Naparstek, and I am Amtrak's Chief Operating Officer. I joined Amtrak in 2012, and currently oversee Amtrak's operations, including the Transportation, Engineering, and Mechanical departments, and their nearly 17,000 hardworking operating employees. Our workforce does a great job and I am proud to represent them here today, on behalf of our President and Chief Executive Officer Richard Anderson, who previously testified before this Subcommittee in March of this year.

PTC represents an essential next step for the rail industry to improve safety of train operations, and it will make the entire U.S. rail network safer for passengers, railroad employees, and the cities and towns through which the national rail network traverses. Thus, we have developed a policy of network-wide PTC or PTC-equivalency at Amtrak. Simply stated, we believe that all of our trains and routes should eventually be equipped with PTC or employ some other equivalent suite of technology and operating practices that addresses the safety risks that PTC helps to mitigate. Given the tragic incidents Amtrak has experienced since the PTC mandate was enacted in 2008, particularly relating to over-speed situations which are a risk regardless of the amounts or types of traffic using a specific route, we think this is the safest course and the right standard for the nation's intercity passenger rail carrier.

Amtrak has long been a leader in the installation of PTC, having deployed systems where we control the tracks. We have been operating on the Northeast Corridor (NEC) since December 31, 2015 and on the Harrisburg line since March 2016. Amtrak is committed to running the safest intercity passenger rail system we can for our customers and employees.

## **Overview**

Today, I will provide an update on PTC, including its operation on Amtrak-owned infrastructure, Amtrak's PTC operation on other hosts' infrastructure, and other tenants' PTC operations on Amtrak-owned infrastructure.

As we have discussed with you before, PTC systems are designed to provide protection from the following conditions: train-to-train collisions; operating over misaligned switches; over-speed events; and work zone incursions. While we acknowledge that PTC is complicated and difficult to implement, Amtrak has made significant progress implementing PTC across the routes and equipment we control. As of September 24, 2018:

- 91 percent of the minimum number of Amtrak-owned locomotives required for revenue service are fully equipped and PTC operable,
- 126 of 142 installations on 114 state-owned locomotives and cab cars that Amtrak operates or maintains are complete, and 57 are also tested, and PTC operable,

- 8 of 11 installation/track segments completed,
- 132 of 140 radio towers fully installed and equipped,
- 100 percent of employees trained as required per the PTC Implementation Plan to run in revenue service,
- 607 of 901 route-miles in PTC operation, and
- 480 route-miles in testing.

We are proud of the work we have accomplished thus far and remain focused on the work ahead to advance PTC as soon as possible.

### **Amtrak's Operations Are Unique**

In many ways, the installation and deployment of PTC reflects the complicated nature of railway operations in the United States. Multiple companies and agencies must cooperate closely to ensure the safe, reliable, timely operation of various types of trains across differing networks. To integrate PTC into this complex environment has been a significant undertaking for the industry and its suppliers. Amtrak and its industry partners remain eager to bring this technology online, but there is no way around the fact that it is a difficult process and has required the dedication of significant resources, both in terms of funding and of our personnel. Over the last few years Amtrak and many other railroads have worked to develop complicated deployment plans, and then rethink them, as various limitations became apparent.

At a scale unlike any other carrier in North America, Amtrak operates over a large and complex network of various host railroads and is also a host itself to numerous tenants. Our unusual role within the industry reflects our unique origins, and while this presents a wide range of challenges, it also creates opportunities for us to serve as a leader in a number of important ways. For example, earlier this year Amtrak organized and hosted PTC summits in Seattle, Washington and Chicago, Illinois, which brought together freight railroads, commuter railroads, government agencies, and vendors to focus on the challenges of PTC implementation in those regions. These events have been followed by an ongoing series of regular calls that have allowed the participants to learn from one another, to share their latest developments, to coordinate testing schedules, and to work through all sorts of unexpected issues.

Amtrak has also worked hard to share our PTC expertise with our partners. We have done this in ways both large and small, but two quick examples include: preparing to install and commission PTC equipment on thirteen locomotives for the North Carolina Department of Transportation, ensuring those units will be ready in time for the deadline; and conducting an engineering survey of the new Siemens Charger locomotives that belong to the Illinois Department of Transportation, so that they could fully understand what they need to do to equip that fleet to become PTC-ready.

Our work across all these fronts and with so many partners has enabled us to make significant progress, but it has also revealed a number of limitations and bottlenecks. System federation and the subsequent interoperability testing of the Interoperable Electronic Train Management System (I-ETMS) PTC system are complicated tasks. By definition, they depend on coordinating with external partners who are facing their own time and resource constraints. As we have worked through these issues, we have learned much that we expect will streamline the work involved in the remaining portions.

Another issue that was raised in March's hearing that has continued to present challenges is the limited number of vendors available to support the industry. While Amtrak has developed significant PTC expertise in the last few years, there are still times when we would appreciate the ability to better utilize additional vendors to expedite the installation, configuration, and testing of various PTC components. There is simply not a deep reservoir of relevant expertise available to the rail industry, which has resulted in all of the railroads turning to the same small number of vendors seeking the same resources. To work around this, we have worked hard to foster the necessary skills inside of Amtrak, and we will continue to do so, but that is a slow and expensive process.

Looking ahead to the upcoming December 31 deadline, let me address three important environments so that you can fully understand where Amtrak stands with its PTC deployment.

### **Amtrak PTC Operation on Amtrak-Owned Infrastructure**

First, the most straightforward scenario Amtrak faces is when Amtrak trains operate over Amtrak infrastructure. In this case, Amtrak plans to be fully PTC ready and compliant by the end of this year.

Where Amtrak owns or operates the infrastructure, Amtrak is responsible for all elements of the PTC system. These rail lines include the following: 397 miles of the 457-mile Northeast Corridor mainline between Washington and Boston; 105 miles between Philadelphia and Harrisburg, Pennsylvania; 232 miles between Porter, Indiana and Dearborn, Michigan; 94 miles between Schenectady and Poughkeepsie, New York; and 61 miles between New Haven, Connecticut and Springfield, Massachusetts. We also own or operate another 12 miles of track near our terminals, for example, in Chicago and New York. These segments total 901 route-miles. Currently 605 of them have at least one wayside PTC system installed and operational. We have developed a detailed plan for every portion of our network, and we are executing an aggressive yet realistic plan which will enable the remaining third of the route-miles to be complete by December 31.

In some places where we host tenant operations over our tracks, at the freight railroads' request, we are installing the freights' standard I-ETMS PTC system on our infrastructure in parallel with either our Advanced Civil Speed Enforcement System (ACSES) or ITCS system, which will eliminate the requirement for them to install either ACSES or the Incremental Train Control System (ITCS) PTC equipment on their locomotives. Locations where this occurs include along the NEC between Washington and Philadelphia, along the Keystone Line between Frazer and

Harrisburg, Pennsylvania, and the eastern, Michigan-owned portion of the Michigan Line between Kalamazoo and Dearborn. 345 miles, or roughly two-fifths, of our 901 route-miles will be equipped with dual PTC systems.

Amtrak is dedicating significant attention to the segments where PTC installation is not yet complete, such as the Springfield and Hudson Lines. We hold regular cross-department meetings to ensure rapid coordination in our efforts, as we are giving this work the highest priority. While the timeline for these segments is indeed tight, we are planning to complete these projects by the December 31 deadline.

For Amtrak locomotives, the process starts with installing the necessary equipment for one or, in some cases, two different PTC systems, and then running each unit through the necessary tests to ensure the proper functioning and integration of the various elements, which we call “commissioning.” Given the need for multiple PTC systems in individual locomotives, we have added 535 systems to 443 units, and have completed commissioning on 459 of them. Again, we have developed detailed plans and are confident we will have the commissioning work done in time for the December 31 deadline.

So much of the discussion around PTC relates to the hardware, that sometimes we do not properly convey how important training is to the successful rollout of PTC across our operations. To ensure our workforce is ready, we will need to provide training to, and ensure the successful completion of, 5,142 qualifications. All of those qualifications are complete. As some employees will need to be trained on multiple systems, the number of qualifications is higher than the specific number of people being trained. Of the overall total, 70 percent are for the train and engine crews who operate the trains, with dispatchers, maintenance of way, and mechanical forces making up the remainder.

### **Amtrak PTC Operation on Other Hosts’ Infrastructure**

The second operating environment I would like to cover is where Amtrak is a tenant on other entities’ infrastructure. Since Amtrak runs 96% of its route-miles over tracks owned and maintained by other railroads, we have spent a great deal of time and effort preparing for PTC operations on such areas. For the tracks we use but do not own or control, we are cooperating with our freight and commuter host railroads as they advance their obligations to complete PTC installations. In these models, Amtrak is responsible for the locomotive portion of the PTC system, which I have already addressed. We are currently interoperable with five hosts and we anticipate several more before the year-end deadline, although this is dependent on each host railroad’s readiness.

In places where the host’s PTC system is not anticipated to be ready for service by year’s end, if they have made sufficient progress with installation, they will be able to apply for an alternative schedule. We anticipate this being the case on 42 segments across our route network.

We have stayed in close contact with the various hosts to keep apprised of the status of their PTC installation work, and the best information we have now suggests that approved alternative schedules will be in place for all of the portions of the network where PTC is mandated by law and is not available on January 1, 2019. Additionally, the FRA permits railroads to seek Mainline Track Exclusion Addendums (MTEAs) if the operation meets certain criteria. An MTEA waives the requirement for a railroad to install PTC.

To prepare for operations where PTC is not in service, we have been conducting detailed risk assessments to enable us to develop an appropriate array of risk mitigation measures to address those areas that are not mitigated by a functional PTC system, consistent with our Safety Management System methodology. Starting in late spring, our safety team began a detailed, cross-departmental process of reviewing every portion of our network falling in one of two categories: places where an MTEA is present or places where we had reason to believe PTC is mandated but the railroads will qualify for an alternative schedule. Ten members of the safety team lead these assessments.

They work with their Engineering and Transportation colleagues to develop detailed profiles of each location under review, covering at least 4,200 miles of track. Each assessment defines the segment under review, with an emphasis on the physical characteristics of the territory, including elements such as curves and speed restrictions. In these instances, our Engineering department is performing analyses of the sections of routes that have an approved MTEA using data acquired from specialized train cars that take curvature and super-elevation measurements of the track geometry. We then review the results of this analysis to determine if there are any curves or other locations where additional mitigations may be warranted to ensure that trains are operated in accordance with Maximum Authorized Speeds. We also review facing point switches as part of an inventory of the switches traversed in each direction on each route. In the course of this inventory, we identify the means by which the switch is controlled and what, if any, safeguards are already in place to warn dispatchers and approaching trains of a misaligned switch.

The assessments also address operational factors and local traffic volumes and traffic mixes. As the assessment is conducted, the team quantifies potential risks both in terms of likelihood of occurrence and the potential severity. This methodology is based on the means of assessing risk contained in the Department of Defense Standard Practice for System Safety contained in MIL-STD-882E, which is widely known and referenced by Safety Professionals. The assessment team then develops operational and technological recommendations to reduce risk in the near-, middle-, and long-term, and works with Amtrak leadership to ensure there is a clear, organization-wide understanding of the results before any approvals are sought to adopt the recommendations. These assessments are being worked through as quickly as possible while ensuring the quality of the work, and those covering MTEA territory are slated to be complete by the end of October, with the rest by the end of the year. As this work is all above and beyond statutory requirements, the timing is driven by our own Safety Management System approach.

The central value of these assessments will be their role in determining what mitigations will be necessary to adopt for a given location over a given period to ensure Amtrak has a high degree of confidence in our ability to operate the safest possible railroad, short of the installation of PTC. We envision these potential mitigations in three tiers or layers.

The first is made up of changes to our operations, which may go beyond compliance with the host railroads' rulebooks to create a greater safety margin for our operations. These changes, most of which could be implemented almost immediately, could include reducing the maximum speed of our trains, further reducing speed when we approach facing point switches, or even changing the composition of our crews. In some cases, these changes may impose delays on our trains, but we believe that the additional level of safety is justified.

The second level of potential mitigations would be technological in nature but would take the form of relatively simple infrastructural changes that could be installed fairly quickly to add additional safety measures. Examples of such mitigations include warning signs for the crews, or new switch position indicators, both of which would provide additional situational awareness for our employees. The idea is to add these additional layers of mitigation to the system, which may then allow us to remove or minimize some of the more inconvenient operational mitigations we initially put in place.

The third and final layer of mitigations consists of more elaborate technological solutions that would take more time to develop and deploy. In many cases, we may determine that a full PTC system is the best long-term solution to strengthening safety on a given route. In other cases, we believe there may be various technologies, that when coupled with the other mitigations I have mentioned, could offer what we term "PTC equivalency" once they were ready. Many of the ideas in this category are in early stages, and still have significant operational and procedural issues that will need to be resolved. Nonetheless, we are determined to be open to innovative approaches to obtaining the benefits of PTC across all of our network.

While this risk analysis process and mitigation plan development is still underway, let me be clear that Amtrak's goal is to continue to operate all of our services over all of our current routes come January 1, 2019. Exactly how we accomplish this will vary across our network, based on the specifics of each route, but I want to assure the Committee that, at this time, we believe we will have strategies in place that will permit us to continue operations until operational PTC or PTC-equivalency is achieved for all of our network.

### **Other Tenants' PTC Operations on Amtrak-Owned Infrastructure**

Third, there are several freight and commuter railroads that operate over Amtrak's infrastructure, and for those railroads who may require an extension from the FRA, Amtrak is prepared to work collaboratively with the FRA and each railroad on a case-by-case basis with the aim of ensuring their continued, safe operations.

Since the passage of the Rail Safety Improvement Act of 2008, Amtrak has worked closely with all NEC commuters to define the ACSES design requirements. As the pioneer, Amtrak has led the way with designing, testing, and implementing this system. We regularly share the lessons we have learned with the commuter railroads. Additionally, we share all of our documentation, including hardware and software variance approvals, FCC license approvals, our PTC ACSES Implementation Plan, and our PTC ACSES Safety Plan. We have provided all of our testing information and documentation to the commuters to help them develop their own test plans. We work carefully at the boundary locations between our systems and those of the commuters. Amtrak has set the standards for all ACSES PTC on the NEC.

These various freight and commuter railroads that operate over our infrastructure must equip their rolling stock with PTC for use on our railroad and we are working cooperatively with them to advance these tasks. This cooperation, where applicable, primarily takes the form of linking our server system with the server systems of each tenant. Additionally, we then conduct inter-operability field testing to verify the proper functioning of all the elements to enable both Amtrak and the tenant to develop confidence that the systems are working as intended.

Along the NEC, we have ten tenants that will use Amtrak's ACSES PTC system, and another two tenants that will use the freights' I-ETMS system. This is another example of how the PTC tasks facing Amtrak are complicated by the wide range of rail partners with whom we interface. Off the corridor, we also have one freight railroad that will operate over our tracks using both I-ETMS and ITCS, and three freight railroads and one commuter railroad that we host that will use I-ETMS only, so there are many different integrations that all must be verified for the whole network to be ready. Presently on the NEC, our tenants Connecticut DOT, CSX, MBTA, SEPTA, and the Providence & Worcester Railroad have completed implementation and are currently operating with fully functioning PTC on our routes. MARC and Norfolk Southern will both be I-ETMS ready, but it is not clear yet if everything for PTC operation will be in place before the deadline. Our sense is that NJ Transit has significant work facing it before it will be PTC operational.

Amtrak believes strongly in the value and importance of PTC and our aim is to ensure that all of our tenants have an operational system as soon as possible. Having said this, we are mindful of the impacts that any disruption of commuter service may have on the regions we serve and the potential safety consequences that could follow. Thus, Amtrak is continuing to work with the FRA and any tenants who believe they may be at risk of not having fully completed the installation and commissioning of PTC equipment on their trains for use on our tracks. We will work with these carriers and the FRA to explore, through our Safety Management System process, the potential of risk mitigation strategies that could be applied in such situations until full installation and commissioning is achieved.

## **Next Steps**

Amtrak has worked for years to be ready for the upcoming PTC deadline. When 2019 arrives, we will have our track, computer, training, and locomotive PTC work complete and we will be operating PTC across all of the tracks we control and across much of the host railroad network. Already 222 of our 315 daily trains currently operate with PTC protection along some or all of their routes. On January 1, 2019, we anticipate that this number will climb to 283, or 90%, with only those portions of the network which have been granted an alternative schedule or an exemption by the FRA being without the protection of this system for our trains.

Having said that, given the difficulty of completing testing with so many freight and commuter partners and the potential for some limited technical issues to arise during testing of the sort that often accompany the initial operation of any complex technology, Amtrak will be required to submit an application to the FRA for an alternative schedule to enable us to continue operating while we finalize testing of our system and the systems of our hosts and tenants. This alternative schedule is required due to the FRA's interpretation of the law that full implementation status cannot be achieved until all non-Amtrak trains operating on Amtrak's PTC-equipped lines are also PTC-compliant. However, to be considered fully implemented requires that all other railroads operating across any of Amtrak's PTC-equipped lines must be capable of operating with Amtrak's PTC system. This interoperability of PTC systems between railroads remains a work in progress and we are currently working with each railroad to assess this work, so we can determine the appropriate alternative schedule durations. In addition, as I mentioned, we will implement mitigation measures that we develop for all those areas which will not have operational PTC due to a host's alternative schedule of PTC exemption.

Strengthening safety is a continuous process. Amtrak's responsibility is to lead safety across our industry and serve as good stewards of the vital resources that we receive from Congress and the Administration to help us implement these advancements. Likewise, PTC is not a silver bullet and railroads alone cannot solve all of the safety issues that face us, such as grade crossing and trespasser accidents, which require a broader effort of local, state, and Federal stakeholders to educate motorists and pedestrians, better equip vulnerable crossings, limit public access to rights of way, and strengthen enforcement. Still, we are confident that achieving PTC or PTC-equivalent levels of safety across our network will be a major achievement in the safety performance of intercity passenger rail. One need look no further than our accident history to see the universal benefits that PTC can bring to Amtrak and our industry. We look forward to continuing to work with all of our partners to improve safety across the rail network.

## **Conclusion**

I have the highest confidence in Amtrak's dedicated workforce and the commitment I see across our company to become the safest passenger railroad in North America. While the challenges

described today are difficult, they can, and will, be overcome. At Amtrak, we owe our customers, and your constituents, nothing less.

Thank you for the opportunity to appear before you today, and I welcome your questions.