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NORFOLK SOUTHERN CORPORATION

BEFORE THE

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COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE

SUBCOMMITTEE ON RAILROADS, PIPELINES, AND HAZARDOUS MATERIALS

"EXAMINING RAIL SAFETY"

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Thank you for the opportunity to be here today. I am Cindy Sanborn, Executive Vice President and Chief Operating Officer of Norfolk Southern Corporation, the parent company of Norfolk Southern Railway Company. My career in the rail industry has spanned over 30 years and has included service for three Class I railroads. I was certified as a locomotive engineer for 26 years. While I am testifying today on behalf of Norfolk Southern (NS), most of what I have to say is applicable to other U.S. freight railroads as well.

Norfolk Southern's beginnings date back to the earliest days of railroading nearly 200 years ago. Today, NS operates approximately 19,300 route miles in 22 states and the District of Columbia. We serve more than 400 general warehouses and distribution centers; more than 200 lumber and paper facilities; some 120 steel-related facilities; 116 active coal loading facilities; 78 power plants; and more than 60 auto-related facilities. We have more than 50 intermodal terminals and serve every major port on the East Coast between New York City and Jacksonville, as well as several Great Lakes ports and numerous river ports. Through connections with our transportation partners, we deliver products to consumers in every state and throughout the world.

THE NORFOLK SOUTHERN SYSTEM

Together, NS and the approximately 630 other freight railroads operating in the United States form an integrated, nearly 140,000-mile system that provides the world's safest, most productive, and lowest-cost freight rail service. The U.S. freight railroad industry is the envy of the world. It is an irreplaceable national asset that enhances our nation's standard of living and its competitiveness in the tough global economy.

The U.S. rail system owes it success to a lot of different factors, but in my opinion the key ingredient is our dedicated workforce. Railroading is a tough, demanding job, and not everyone is cut out for it. The men and women of Norfolk Southern put their boots on every day and work hard to provide a safe, efficient, and reliable service product for our customers. It's no

exaggeration to say the railroad couldn't operate without them, and I am grateful that they have chosen to pursue a career in this important industry.

Throughout my testimony, I will discuss a series of broad principles that should govern the relationship between railroads and rail safety regulators. Following that, I will briefly examine several specific topics related to safety that are particularly germane today.

Safe and Working Hard Every Day to Get Even Safer

For Norfolk Southern —and I'm sure I can speak for all railroads here too —pursuing safe operations is not optional; it's a business imperative. We have an obligation to operate safely for the benefit of our employees, our customers, and the communities where we operate.

While we have not yet reached our ultimate goal of zero accidents and injuries, we are encouraged by the progress we have made. Data from the Federal Railroad Administration (FRA) indicates that, for the rail industry as a whole, the overall train accident rate in 2021 decreased 32 percent from 2000; the employee injury rate fell 48 percent; and the grade crossing collision rate was down 23 percent. Railroads today have lower employee injury rates than most other major industries, including trucking, airlines, agriculture, mining, manufacturing, and construction—even lower than grocery stores. Safety extends to hazardous materials too; well over 99.99% of rail hazmat shipments reach their destination without a release caused by a train accident. These are tremendous safety success stories, driven by the industry's sustained investment in its infrastructure, the development and advancement of safety technologies, and the modernization of operating and maintenance practices.

Railroad Accident Rates: 2000-2021

Total accidents	-32%
Collisions	-50%
Derailments	-35%
Other	-13%
Employee injuries	-48%
Grade crossings	-23%
Hazmat incidents*	-60%

*Through 2020 Source: FRA, AAR

But the most important factor in achieving continuous safety improvement is the creation of a company culture that promotes safety through continuous education and reinforcement of safe behaviors. This is why railroads work very hard to train their employees and instill in them a high level of safety awareness in everything they do. Railroads work diligently to identify new technologies, operational enhancements, training, and other ways to further improve their safety record.

We recognize that the federal government can also have a significant impact on the freight transportation sector's ability to achieve positive safety outcomes. Therefore, it is

essential that, when Congress enacts laws or federal agencies promulgate regulations, they not be driven by parochial concerns or persuaded by the use of anecdotes that provide an incomplete, and often inaccurate, picture of the rail safety environment. And it is equally important that when federal officials regulate the rail industry that they not lose sight of the impact laws and regulations focused on railroads have on the safety of the nation's entire transportation system. Laws and regulations, however well intended, that place operational burdens on railroads can distort competition within the freight transportation sector and divert freight from the much safer rail system to other far more dangerous modes of transportation. We urge all federal officials—not just safety regulators—to take these impacts into account when they craft rail regulatory policy. Taking an evidence-based, holistic view of the nation's entire transportation ecosystem is vitally important to creating a national transportation policy that works for all stakeholders and delivers continuous improvements in safety.

Technology and Process Streamlining

New technologies are changing transportation. For example, widespread efforts are underway today—including extensive research subsidized by taxpayers—to develop autonomous motor vehicles, including autonomous trucks that would compete directly with railroads. Autonomous vehicle technologies and other technologies impacting transportation vary in their stages of development, but these are challenges railroads must be ready to confront and compete with once commercially viable.

As such, railroads will continue to work diligently to identify and implement new technologies to make their operations more efficient while also achieving safety outcomes that are at least as good as what we are achieving today. However, the efforts of NS and other railroads to harness the power of technology and drive innovation will not be as effective as they could be if legislative and regulatory processes and requirements fail to keep pace or are not well grounded in evidence-based, scientific understanding.

Regulatory reform can, and should, be a key part of any federal effort to improve rail safety. Railroads respectfully suggest that the FRA and other agencies with regulatory authority over railroads should become more forward-looking in how they propose and promulgate new rules and in their approach to new safety technologies. More specifically, these agencies should:

- Carefully identify and describe beforehand the specific concern that a particular new rule

is meant to address and ensure that the new rule actually would address the concern efficiently and effectively. Meaningful dialogue with railroads and other interested parties is essential in this effort.

- Use current data and sound science to establish the need for a new rule and to validate that the benefits of a new rule exceed its costs. Assess the impact of any rule on the competitiveness of the freight railroad industry and any likely freight diversions to less safe modes of transportation.
- When proposing rules, also propose metrics by which the rules' effectiveness in achieving their stated objectives can be judged. Regularly review final rules to determine if they are still meeting those objectives.
- Issue emergency orders only after finding a high risk of imminent harm. Emergency orders should be narrowly tailored and expire automatically after the unusual risk has passed or has been adequately addressed.
- Regulation of technologies should occur at the federal level to avoid a patchwork of state and local rules that would create confusion, inhibit the deployment of new innovations, and undercut the efficient functioning of the national rail network.
- Adopt performance-based, rather than prescriptive, regulations. Take care not to "lock in" existing technologies and processes so that new innovations and new technologies that could improve safety and efficiency are not stifled. Performance-based standards would give industry discretion to innovate, while still being subject to effective agency oversight and continuing to ensure the safety of rail employees, customers, and the public-at-large.

This last point, regarding technologies, is especially pertinent. Railroads have long applied technological solutions to improve safety, enhance performance, and create efficiencies—e.g., inspection cars that use sophisticated electronic and optical instruments to inspect track alignment, gauge, and curvature; ground-penetrating radar and terrain conductivity sensors to identify problems below the ground (such as excessive water penetration and deteriorated ballast) that hinder track stability; and highly advanced vehicles that detect internal flaws in rails; and drones to inspect the underside of bridges.

Railroads will continue to develop and implement new technologies to improve infrastructure safety and performance, but achieving maximum safety benefits will require regulatory flexibility that does not hinder innovation, allows railroads to find what works best, and encourages railroads to keep investing in those technologies.

Track Inspection

Today, new railroad technologies must often be utilized in addition to existing regulatory compliance practices and procedures—some of which have been in place for decades and have long since been made obsolete. This means, unfortunately, that the benefits of technological advances are often marginalized for purposes of regulatory compliance.

Track inspections are a case in point. Since the advent of railroading, track defects have been a cause of train accidents, especially derailments. Historically, track inspections have been conducted visually by track inspectors using hand-held measuring tools. These manual inspections are conducted either on foot, or, more often today, in railroad "hi-rail" vehicles.[1] Based on a rule published in 1971—more than 50 years ago—the FRA prescribes how often track must be inspected in this manner.

In recent years, though, automated track inspection (ATI) has dramatically changed the nature of track inspection. ATI systems use technology (*e.g.*, lasers and cameras) to measure and identify railroad track defects. ATI systems are mounted on freight cars or locomotives[2] that inspect track during their day-to-day operations. These systems collect and analyze track information while trains are operating at normal speed and pulling freight across the network. Additionally, a measurement showing how track structure is actually performing under the load of a train is more valuable from a safety perspective than a static measurement taken during a visual inspection from a hi-rail vehicle.

With ATI, inspection data are sent wirelessly in real time to an inspection office where track engineers verify the data and arrange for needed repairs. If necessary, maintenance personnel are dispatched to visually inspect track identified as potentially having a defect. ATI systems allow track inspections at frequencies and levels of detail that are not possible under standard visual inspection techniques. Put another way, ATI detects track defects with far more accuracy, consistency, and frequency than do manual visual inspections. ATI also results in the collection of huge amounts of track inspection data, allowing railroads to better understand and evaluate the safety of their infrastructure and to develop improved preventative maintenance. In

[1] A hi-rail vehicle is a specially designed vehicle that can operate on roadways and rail tracks and is outfitted with track inspection technologies.

[2] NS is pleased to be the first North American freight railroad to develop and deploy an ATI system mounted on a locomotive.

other words, capital resources are better directed to ensure track repairs are most accurately planned. The enormous advantages of ATI explain why railroads have voluntarily invested significant resources to develop and implement these systems. The FRA itself has also expended millions of dollars annually to develop and use this technology to improve track safety.

ATI inspections reduce (but do not eliminate) the need for visual inspections. In fact, they help to make visual inspections more effective by directing track inspectors to focus on areas that need greater attention. ATI also lower employee risk exposure, as there is a decreased need for inspectors to physically occupy track solely to fulfill obsolete manual inspection requirements. Moreover, greater use of ATI would increase rail network capacity and supply chain benefits because existing track inspection procedures require railroads to devote scarce capacity to visual inspections—capacity that could otherwise be devoted to moving freight. Better track safety that results in fewer track-caused accidents would also reduce supply chain impacts that occur due to accidents and the subsequent time-consuming, resource-intensive accident clean-up and repair efforts that flow from them.

In recent years, the FRA gave several railroads, including NS, permission to test ATI systems on portions of their networks in conjunction with a reduced level of traditional visual inspections. The results of these test programs were impressive. NS's experience is illustrative. We call our ATI system an "automated track geometry measurement system," or ATGMS. We conducted our test program in our Blue Ridge Division, where the wide variety of climatological, topological, and operational features render it representative of our rail system as a whole.

On every single metric tested, ATGMS increased track safety and quality, even as the frequency of manual inspections was reduced. ATGMS was able to detect defects that were imperceptible under visual inspection, while human inspectors were able to concentrate on making track repairs and finding defects in switches, crossing diamonds, and other areas that ATGMS could not evaluate.

Because our data clearly demonstrated that ATGMS was safer than legacy methods, in March 2021, we petitioned the FRA for a permanent waiver that would allow us to reduce manual inspection for all lines on which we had implemented ATGMS. However, in March of this year, FRA denied that request. With all due respect to the FRA, its denial in our case was contrary to the evidence. The FRA did not explain how granting our waiver request could possibly endanger rail safety or the public interest. It did not explain how granting a waiver

could "short-circuit" the existing Railroad Safety Advisory Committee's (RSAC) consideration of ATI technology.[3] Indeed, even as the FRA described the test program as "successful," it ignored the key finding—that systemwide implementation of ATGMS would improve rail and worker safety.

On the same day that it denied our request for a waiver, the FRA denied a similar request from BNSF Railway. In BNSF's case, the FRA denied BNSF the ability to expand a pre-existing waiver to new territories even though the data BNSF had already developed under that waiver conclusively showed that doing so would improve safety on those new territories. The FRA has previously announced that it will allow existing ATI test programs performed by other railroads to expire in November 2022, when their initial terms are up, despite their positive safety improvements. The FRA's actions are difficult to understand. The combination of enhanced track inspections with reduced visual inspections provides a far, far better system in terms of detecting track defects than the 50-year-old visual inspection regime. The FRA had encouraged the development and deployment of this technology for years until abruptly changing their approach. The FRA should go back to encouraging, not discouraging, technological advancements like these that advance safety.

The ATI example shows how a broader use of the FRA's waiver authority could be used to modify FRA regulatory directives in light of changed circumstances, without sacrificing appropriate regulatory oversight. Unfortunately, the timeline for granting even simple FRA waiver requests is typically measured in months or years, and waivers often come with conditions that largely negate their value. Congress should direct the FRA to make permanent those long-standing waivers whose value has been proven through successful test programs.

In addition, because short-term waivers from existing regulations do not give the rail industry sufficient confidence to invest in new technologies, regulatory barriers should be overcome in ways that are more enduring than waivers. For example, the FRA could issue waivers of indefinite duration and provide procedures for the expedited conversion of time-

[3] RSACs are formally chartered Federal Advisory Committees and typically include representatives from all the FRA's major stakeholder groups, including railroads, labor organizations, suppliers, and other interested parties. Their purpose is to provide a forum for collaborative rulemaking and program development. RSACs exist for many different topics, including ATI systems.

limited waivers to permanent waivers or final rules if equivalent or improved safety has been demonstrated.

Brake Systems

Railroads are deeply disappointed in the FRA's recent treatment of ATI technology, but are more pleased with recent actions regarding rail braking systems that will move safety forward.

FRA's final rule implementing miscellaneous amendments to its brake system safety standards was published in December 2020 and allows for railroads to modernize and make their operations more efficient while reducing safety risks to employees and the public. More specifically, the December 2020 rule modified FRA regulations governing train air brake inspections in part by codifying longstanding industry waivers, many of which were adopted during the Obama Administration, that allowed railroads to lengthen the number of miles a rail car could travel before the car's brake systems had to be tested. Safety data gathered under the waivers demonstrated conclusively that more advanced testing methods for automated single car air brake tests result in a significant decline in freight car brake failures compared to the older test method. The final rule also extends the time period between certain air brake inspections. These regulatory updates were appropriate due to the proliferation of technological improvements to air brake systems.

Meanwhile, in January 2021, the FRA issued a Notice of Proposed Rulemaking (NPRM) which proposes to allow railroads to replace antiquated paper records of rail car brake inspections with modernized electronic Air Brake Slip (eABS) recordkeeping systems. The eABS systems allow railroads to accurately and efficiently track inspections and mileage electronically on a freight car-by-freight car basis. The old regulations require trains to stop more often than necessary for inspections and limit trains' ability to drop off and pick up other railcars due to recordkeeping limitations that necessitate treatment of all the cars in a train as a single unit to be managed by a paper record.

An eABS system provides robust, constantly updated car-specific data. Coupled with railroads' use of modern preventative and predictive maintenance strategies, wayside detectors

and machine vision stations,[4] modernized mechanical equipment components, and improved employee training programs, eABS systems permit far safer and more efficient train operations.

Fatigue Risk Management

On December 22, 2020, the FRA published an NPRM that, if implemented, would require railroads to develop and implement Fatigue Risk Management Programs. The NPRM would require railroad fatigue plans to: (1) identify safety hazards associated with fatigue; (2) assess the risks associated with identified hazards; (3) prioritize risks for mitigation; (4) implement mitigation strategies for those risks; (5) track the effectiveness of mitigation strategies; and (6) revise fatigue plans after review of the effectiveness of such strategies. Fatigue plans would set specific fatigue-related safety goals and describe strategies for reaching those goals.

NS and other railroads want properly rested crews; it is not in a railroad's best interest to have employees who are too tired to perform their duties properly and safely. That's why railroads have long worked with their employees and others to find innovative, scientifically-based solutions to fatigue-related problems. Because factors that can result in fatigue are multiple, complex, and frequently intertwined, there is no single solution to fatigue. Railroads are concerned that as the NPRM process plays out, the FRA will attempt to expand the scope of this NPRM to encompass crew scheduling issues that are properly within the purview of collective bargaining between railroads and rail labor.

Many rail employees work set schedules. However, some rail employees, such as some train crews, work flexible schedules that vary based on a variety of factors, including business levels, the time of the year, and the day of the week. Weather conditions, track maintenance, accidents, an unexpected employee illness, and dozens of other factors can affect an employee's work schedule, thus impacting the time other crews will be needed. Moreover, in many cases, collective bargaining agreements allow rail employees, especially those with the most seniority,

[4] Machine vision is, in essence, an MRI for a rail car. As a train passes through a machine vision imaging area, lasers and cameras quickly provide a three-dimensional model of each piece of train equipment, identifying actual and potential defects. The model and images can be viewed remotely from anywhere, allowing these "in advance" inspections to be conducted rain or shine, day or night, from the comfort of a desk chair. They allow railroads' mechanical teams to know what repairs are needed before a train arrives in a rail yard. This improves safety, speeds the repair process, reduces the time trains have to spend in rail yards, reduces costly system delays, and improves reliability and customer service.

to largely determine for themselves when and how many hours they work (subject to limitations on the maximum number of hours a rail employee can work). These employees' actions, in turn, affect how many hours, and when, less senior employees work. This greatly complicates railroads' ability to schedule crew assignments.

Scheduling is a complicated issue with circumstances unique to each railroad. The FRA should refrain from interjecting itself into this matter and instead allow railroads to continue to address the issue as part of the collective bargaining process.

Crew Size

As members of this Committee are aware, legislation and regulations have been proposed that would mandate that all Class I freight trains must operate with a certified locomotive engineer and a certified conductor in the locomotive cab.

Existing FRA regulations do not mandate minimum crew staffing requirements. Some non-Class I railroads have long operated with just one person in the locomotive cab, and thousands of Amtrak and commuter passenger trains, carrying hundreds of thousands of passengers, operate every day with just one person in the locomotive cab. For Class I railroads, industry practice to date has been to have two-person crews for over-the-road mainline operations. On NS and other Class I railroads, the subject of crew size has typically been addressed as part of the collective bargaining process with rail labor, and railroads believe such matters should continue to be addressed in that venue.

The major reason offered by proponents of a two-person crew mandate is that it would enhance rail safety. Yet no one—not the FRA, not sponsors of the legislation in Congress, not rail labor—can point to hard data that support this contention. There is no evidence that trains with one-person crews have accidents at a higher rate than trains with two-person crews. The FRA itself, after its own review, stated in 2009 that it found no "factual evidence to support the prohibition against one-person operations."[5] The FRA again reviewed the data on this issue in 2019 and determined that "issuing any regulation requiring a minimum number of train crewmembers would not be justified because such a regulation is unnecessary for a railroad operation to be conducted safely at this time."[6]

[5] FRA, *Denial of BLET Petition on RCO and Other Single-Person Operations*, Nov. 10, 2009

[6] FRA's May 28, 2019 Withdrawal of Notice of Proposed Rulemaking in Dkt. FRA-2014-0033.

While crew size mandates have never been supported by safety data, they make even less sense today with the implementation of positive train control technology (PTC), which has been installed and is operational on tens of thousands of miles of rail line throughout the country. PTC is a system of technologies designed to automatically stop a train before certain accidents caused by human error occur. PTC advances rail safety through the use of advanced technology, while at the same time further eliminating the need for "a second set of eyes" in locomotive cabs in certain circumstances. Neither NS nor other Class I railroads seek the ability to impose one-person crews unilaterally. Rather, we seek the flexibility to continue to work with rail labor under the existing collective bargaining framework to identify when the presence of PTC, or other technologies, allow a reduction in the number of crewmembers in a locomotive cab without jeopardizing rail safety.

Virtual Training

The pandemic has been an unspeakable tragedy on many levels, but one silver lining of it has been the development of reliable new video communications systems that allow individuals to attend meetings remotely. Virtual meeting technology has positive safety implications in that it allows, in this case, railroaders to more easily access training and other safety-related subjects than would be the case if everything had to be done in-person in a classroom. Railroads have developed virtual training modules for their employees—often with the exact same course materials and a live instructor present, just on a video screen rather than in a room together—but they are running into resistance from the FRA and rail labor on expanding their use. Virtual training can be an effective, efficient way to reach more employees more quickly, and railroads urge policymakers to facilitate its use, especially at a time when worker shortages are impacting rail service.

Conclusion

At NS, our goal is to provide a customer experience that is as safe, efficient, and cost effective as possible. I know other railroads share these goals. We are always willing to work cooperatively with you, other policymakers, our employees, our customers, and all other interested parties to advance our shared interests.

That can't happen without technology. Technology is the key to unlocking further reductions in rail-related accidents and fatalities of all kinds. While the rail industry is

encouraged by the FRA's recently published research which confirmed longstanding railroad data that wayside detection systems are effective in the early identification of equipment that needs maintenance and improving operational safety, railroads remain concerned that the FRA is not doing everything it can to support the deployment of other safety technologies, such as ATI, that have actually been shown to work. We respectfully urge policymakers at all levels—on this Committee, at the FRA, and elsewhere—to be proactive, collaborative partners with railroads to meet our shared safety goals.