FEDERAL RAILROAD ADMINISTRATION

DOCKET NO. FRA-2025-0059
PETITION FOR WAIVER OF COMPLIANCE FILED BY THE ASSOCIATION OF AMERICAN RAILROADS

COMMENT SUBMITTED BY NORFOLK SOUTHERN RAILWAY COMPANY

Norfolk Southern Railway Company, on behalf of itself and its operating subsidiaries ("Norfolk Southern"), respectfully submits this comment in response to the petition filed by the Association of American Railroads ("AAR") for waiver of compliance from certain provisions of the Track Safety Standards found at 49 CFR Part 213. Norfolk Southern supports AAR's petition and respectfully urges the Federal Railroad Administration ("FRA") to approve it.

The basis of the relief sought by AAR is the significant safety benefits expected to be derived from combining Track Geometry Measurement Systems ("TGMS") with visual inspections at levels not permitted by current FRA regulations. Norfolk Southern has had considerable experience testing its own TGMS technology – which we have termed Automated Track Geometry Measurement Systems ("ATGMS") – under a program approved by FRA.[1] While the test conditions under that program were not identical to the waiver conditions proposed by AAR, the data gathered during the Norfolk Southern program provides compelling evidence that the AAR waiver petition should be approved.

[1] Docket No. FRA-2019-0099.

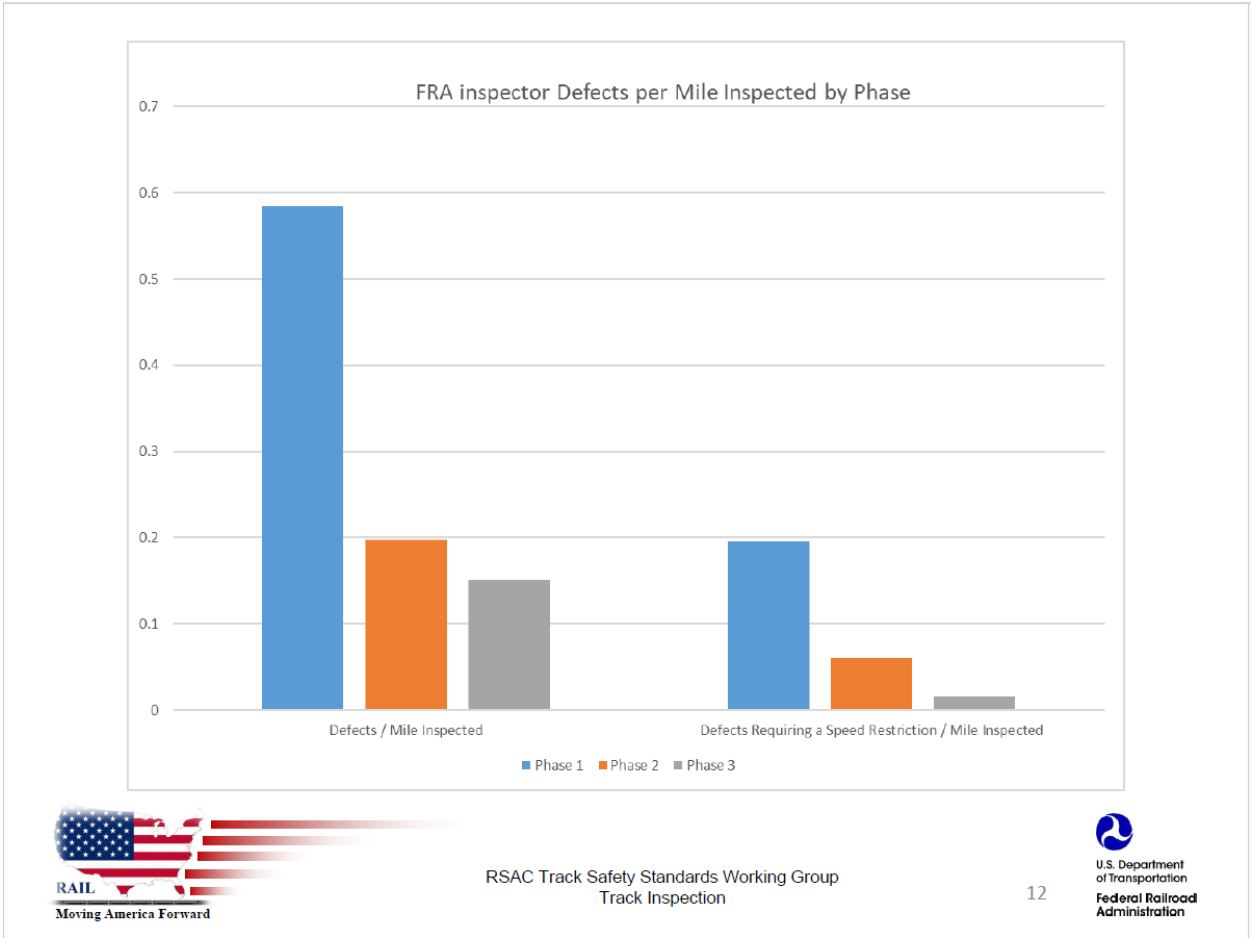
Norfolk Southern Test Program Data: Enhancing Track Quality and Safety

Norfolk Southern conducted its test over approximately 1,042 miles of main track and sidings in what was then part of our Blue Ridge Division. The track segment chosen for the test extended from Norfolk, Virginia westward to Portsmouth, Ohio, and was selected because its diversity in climate, elevation, and geography provided a fair representation of Norfolk Southern's entire system.

The test was conducted in three phases, which ran for a total of 18 months. During all phases, there were at least three valid ATGMS inspections of the test segment every month. However, the required visual inspections varied. After Phase I (which ran for three months, and where the frequency of required visual inspections was set at the level required by the Track Safety Standards to establish a baseline), the frequency of required visual inspections was reduced. During Phase II (which also ran for three months), it was reduced from twice per week to once per week. During the final phase (Phase III, which ran for one year), the frequency of required visual inspections was reduced to twice per month.

The program demonstrated that required visual track inspection intervals could be reduced below levels required by the Track Safety Standards without adversely affecting safety. As the test proceeded through each phase, track quality and safety actually *increased* as required visual track inspection frequencies *declined* below the prescribed regulatory minimums. During Phase I of the program, track geometry defects were discovered at a rate of 0.11 defects per 100 miles. In Phase II, that rate declined to 0.04 defects per 100 miles, and in Phase III it declined *yet again* to 0.02 defects per 100 miles.

But the safety improvements demonstrated by the test program were not limited to a reduction in track geometry defects – the type of defect ATGMS is specifically designed to find. Because track inspectors spent less time looking for geometry defects during Phases II and III, they were able to spend more time visually inspecting switches and crossing diamonds. The percentage of defects found in this so-called "special trackwork" increased as the test progressed through the phases – 75% in Phase I, 81% in Phase II, and 89% in Phase III. These additional track safety benefits (that is, those benefits beyond reduced track geometry defect rates) were confirmed by FRA, which independently collected its own data during the test program. While it noted that it conducts visual inspections at a slower pace and less frequently than Norfolk Southern, FRA acknowledged in an April 12, 2022 presentation to the



Rail Safety Advisory Committee Track Safety Standards Working Group that its own data showed "a decrease in visual defects as the Test Program progressed."[2] In support of that assertion, FRA produced the very noteworthy graph reproduced on page 3 of this comment.[3]

This FRA data refutes the criticism that reducing visual inspections below the minimums required by the Track Safety Standards will be less safe because defects unrelated to track geometry will be less likely to be detected and remediated. To the contrary, FRA's data confirms that during the Norfolk Southern test track defect rates of *all types* declined as required visual inspection intervals grew longer. This data, which to the best of Norfolk Southern's knowledge is unrefuted, presents clear evidence that a different mix of ATGMS inspections and visual inspections than is currently permitted by the Track Safety Standards will produce superior track safety performance. Coupled with Norfolk Southern's own findings on the ratio of defects discovered in special track work, it also makes intuitive sense. By freeing track inspectors and their managers to leverage their own experience, problem-solving skills, deductive reasoning, and overall professional judgment to spend more of their time on productive, specialized visual tasks while leveraging the analytical precision and predictive power of ATGMS to focus on current and emerging geometry defects, railroads can improve track quality and improve safety results.

Response to Concerns About Track Quality and Safety

Despite FRA's data showing a reduction in visual defects as Norfolk Southern's test program progressed, Norfolk Southern anticipates some commenters will express concerns that

[2] *See,* FRA's presentation to the Rail Safety Advisory Committee Track Safety Standards Working Group, RSAC document number TG2019-22-04-12-09, slides 11-13.
[3] *Id.*

certain types of defects will not be detected by TGMS technology, and therefore required visual inspections should not be reduced as requested in AAR's waiver petition. At a recent hearing conducted by the House Rail Subcommittee, a witness opposed to AAR's waiver petition stated that some categories of defects, such as broken rails, rotten ties, washouts, or track obstructions, cannot be detected by TGMS technology, so to reduce visual inspections below current FRA requirements would be risky.[4] The witness went on to criticize AAR's proposal to require remediation of defects within 72 hours of detection.[5]

Norfolk Southern's experience with ATGMS and its test program, coupled with other detection methods and existing regulations that will remain in place if AAR's waiver is approved, should put those fears to rest. First, while ATGMS does not technically look for all types of defects, the technology is able to find very subtle changes in track geometry that point to other types of defects, including broken rails, rotten ties, and changes in the track support structure. These defects create telltale signs that routinely are picked up by ATGMS and remediated by our engineering forces. Second, railroads have better methods in place than twice-weekly FRA-mandated track patrols to detect these other defect types:

- ***Broken rails,*** while rare, are most often detected by the signal system. And when they happen in areas not protected by the signal system, they are rarely found by track inspectors conducting FRA-mandated visual inspections. Our experience during the test program bears this out. During the course of Norfolk

[4] "America Builds: The Role of Innovation and Technology in a Safe and Efficient Rail System": Hearing Before the Subcommittee on Railroads, Pipelines, and Hazardous Materials, House Committee on Transportation and Infrastructure (June 24, 2025) (Written Testimony of Tony Cardwell, p.8)
[5] *Id.* at p. 9.

Southern's 18-month test, *zero* broken rails were detected by track inspectors conducting required visual inspections. The vast majority of the few broken rails Norfolk Southern experienced on the test track were detected by the signal system, and the remaining few (all located in areas not protected by the signal system) were detected by equipment or employees performing other functions – a Vehicle/Track Interaction monitor, a surfacing gang (which inadvertently caused the rail break it discovered), a welder, and a track supervisor performing a non-regulated special inspection. While track inspectors do occasionally detect broken rails during mandated inspections, nothing in the data gathered during Norfolk Southern's test program suggests that the visual inspection intervals established by the Track Safety Standards in the 1970s meaningfully reduce the risk of allowing broken rails to go undetected when ATGMS technology is in place.

- ***Rotten ties*** are reliably discovered by sophisticated x-ray technology used by Norfolk Southern and other railroads that can detect internal tie decay well before it shows any signs on the surface. And, because the purpose of ties is to hold the rail in place and maintain alignment, gauge, and elevation (i.e., to maintain track geometry), tie deterioration will cause track geometry changes that are picked up by ATGMS systems even if they are not discovered by our x-ray systems. In addition, deterioration in rail ties occurs gradually, over months and even years. Norfolk Southern is aware of no evidence that a twice-monthly

visual inspection regime is any less effective at detecting this slowly evolving deterioration cycle than twice-weekly visual inspections.

- ***Washouts*** can occur suddenly, which is why railroads rely on special inspections instead of required twice-weekly inspections "in the event of fire, flood, severe storm, or other occurrence which might have damaged [the] track structure." Those special inspections are required by the Track Safety Standards at 49 C.F.R. § 213.239, and AAR is not seeking relief from them in its petition. While washouts can also occur gradually, a symptom of an impending washout condition is a subtle degradation in track geometry. As noted above, our ATGMS technology is often able to detect subgrade issues because of telltale track geometry changes.
- ***Track obstructions***, such as fallen trees, boulders, and landslide material, are almost always created by severe weather events – the type of events for which special inspections are required by 49 C.F.R. § 213.239, as already noted. While they also occasionally appear in the absence of severe weather, they do so in areas prone to those conditions. If for no other reason than to avoid disruptions to their operations (to say nothing of their interest in safety), Norfolk Southern and other railroads are highly motivated to eliminate track obstructions. Rather than rely on mandated twice-weekly inspections, we instead leverage special track inspections to look for track obstructions in those areas susceptible to them. Resources would be *more available* to conduct these special inspections if the FRA granted AAR's requested relief, because railroads would not have to

conduct as many mandated inspections in areas with fewer known issues and could move their track inspectors to areas prone to landslides and falling trees.

As to the 72-hour remediation interval proposed by AAR, this approach reflects the practical reality of conducting TGMS inspections and is very consistent with FRA's existing rules governing geometry car testing of tracks class 6 and higher found in Subpart G of Part 213. Notably, these regulations apply to tracks with maximum operating speeds of *up to 220 miles per hour*.[6] Far from requiring immediate correction of defects, FRA requires railroads using TGMS technology on these high-speed tracks to produce an output report within 24 hours following the inspection that identifies the location of defects applicable to the track class and to take remedial action *within two days*.[7] Understood in the context of that existing regulatory framework, AAR's proposal to require remediation of single-class defects (that is, defects that would result in a drop of one track class) within 72 hours and to require remediation within 48 hours of multiclass defects (that is, defects that would result in a drop of more than one track class) is entirely reasonable. If a two-day interval is good enough for 220 mph Class 9 track, then surely a remediation requirement of between 48 and 72 hours depending on defect severity will suffice for the nation's freight rail network, where operations are restricted to far lower speeds.

Norfolk Southern Test Program Data: Employee Safety

Beyond enhancing the quality and safety of its infrastructure, Norfolk Southern's test program also revealed that reduced manual inspections created employee safety benefits, as

[6] 49 C.F.R. § 213.307.
[7] 49 C.F.R. § 213.333(d), (e), and (f).

track inspectors were less exposed to the inherent hazards of traversing the track by foot or in high rail vehicles. FRA's accident database illustrates many examples of those very real hazards, including collisions between high rail equipment and trains, grade crossing accidents involving high rail vehicles and motor vehicles, and injuries suffered while engaging high rail equipment.[8] During Norfolk Southern's test program, fewer hours were spent visually patrolling and inspecting tracks as those hours were converted to more specialized and productive tasks, including the special track work noted above. Total track occupancy fell from 1,841 hours in Phase I to 1,727 hours in Phase II, and to 1,531 hours in Phase III. Fewer hours conducting visual inspections means fewer employee exposures, directly translating into yet another safety benefit of optimizing the mix of ATGMS and visual inspections.

Additional Safeguard: Performance-Based Defect Ratio

The petition filed by AAR will provide the regulatory relief that Norfolk Southern's own experience with its test program revealed is needed for the industry to take better advantage of TGMS technology and deliver higher track quality, improved employee safety, and an overall safer railroad network. AAR's petition would allow railroads to set visual frequencies at the same level demonstrated to improve safety in Norfolk Southern's test program. It would also create the safeguard of a performance-based defect ratio, which is set much lower than the current industry average defect ratio (4 defects per 100 miles vs. the industry average of 5.91 defects per 100 miles). In other words, just by achieving AAR's proposed defect ratio railroads would already be outperforming the track quality standard that is currently being delivered by adherence to the existing regulatory regime. And AAR is even proposing an additional

[8] The FRA's safety portal is found at https://railroads.dot.gov/safety-data.

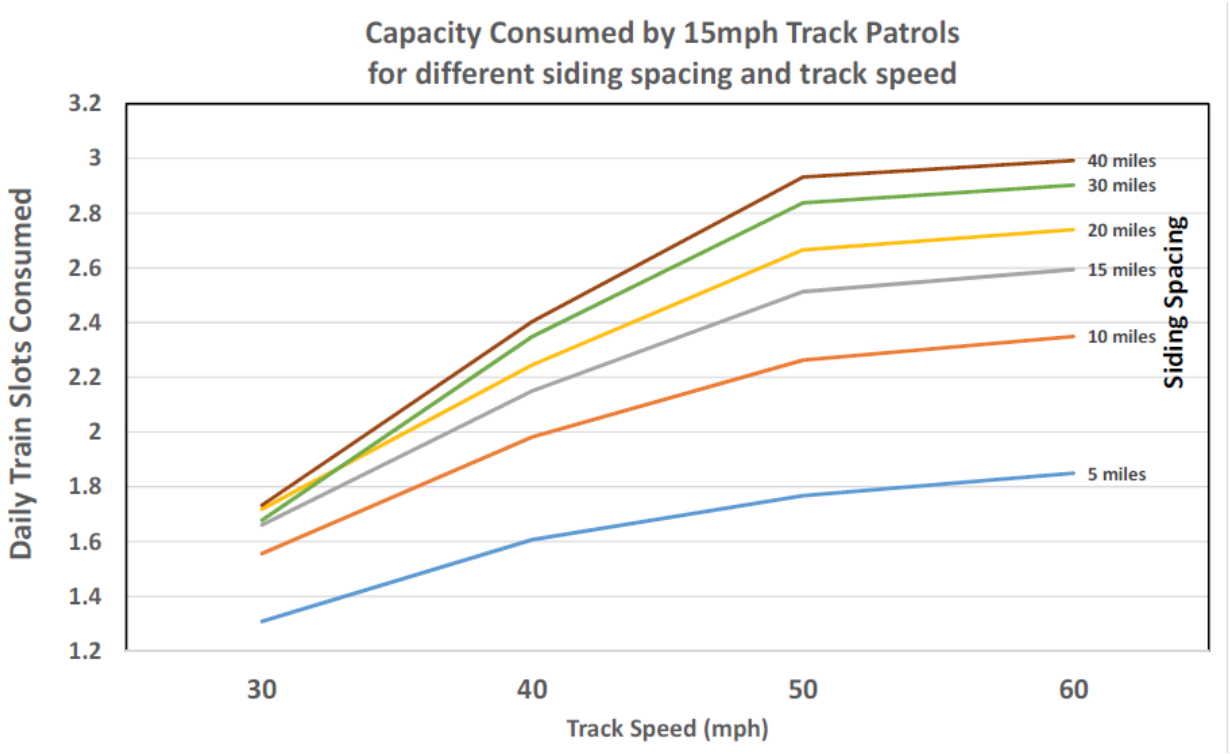
safeguard – a multi-class drop defect threshold of 0.2 defects per 100 miles (essentially, a ratio that measures defect severity) – that wasn't even found to be necessary during Norfolk Southern's test. Any railroad that fails to remain below either defect metric for two consecutive months would revert back to the existing regulatory requirements until it can once again achieve the minimum thresholds. AAR's petition proposes the best of all worlds – a pathway to a more desirable mix of TGMS and visual inspections, but only for those railroads who can objectively demonstrate that they are achieving *better* results than the industry as a whole is delivering by following the track inspection frequencies dictated by the Track Safety Standards.

Advancing Other Regulatory Priorities

Finally, we note that by granting AAR's petition, FRA will help to advance the President's regulatory policy objectives as set forth in Executive Order 14219 (February 19, 2025). AAR is seeking partial relief from track inspection regulations that impede technological innovation, private enterprise, and entrepreneurship. These regulations, developed many decades ago, are holding the rail industry back by not allowing railroads to take full advantage of very promising TGMS technology.

Norfolk Southern has conducted Rail Traffic Control (RTC) modeling to estimate how much capacity would be added if required visual manual inspections were reduced from twice weekly (as dictated by FRA's existing regulations) to twice monthly (as proposed in the AAR petition and as Norfolk Southern's test program demonstrated would actually *increase* track quality and employee safety where its ATGMS technology is in place). According to Norfolk Southern's RTC modeling, a track patrol traveling at a speed of 15 miles per hour consumes

between 1.3 and 3 train slots on single track territory, depending on track speed and the distance between sidings. [9] Those results are summarized in the following graph:



Over the course of a month, that would mean Norfolk Southern would have the capacity to add between about 7.8 and 18 trains on that single-track segment.[10] Simply stated, granting the relief requested by AAR would give Norfolk Southern more capacity on its network to move freight for manufacturers, energy producers, and other customers who count on its rail service. Reducing the number of mandated track patrols would also improve network fluidity, enhancing the consistency and quality of service Norfolk Southern is able to provide to those customers. The development and use of ATGMS technology is precisely the sort of

[9] RTC modeling assumed no grade and a train 8000 feet long and weighing 12,000 tons. Modeling on double track territory was not performed.

[10] Eight track patrols per month would consume between 10.4 and 24 train slots per month (8x1.3=10.4 and 8x3=24). Two track patrols per month would consume between 2.6 and 6 train slots per month (2x1.3=2.6 and 2x3=6). The difference is between 7.8 and 18 trains per month (10.4-2.6=7.8 and 24-6=18).

entrepreneurial innovation that enables greater business activity and helps Norfolk Southern move the American economy. That it does so while also enhancing safety – its primary purpose – leaves no doubt that it ought to be encouraged by the federal government.

Conclusion

For the foregoing reasons, Norfolk Southern respectfully urges FRA to approve AAR's petition in this docket. Moreover, if FRA approves the petition under the conditions proposed by AAR, Norfolk Southern will withdraw the Petition for Reconsideration it filed in Docket No. FRA-2021-0044 on May 13, 2022. Granting the requested relief to AAR and its members will remove the need for Norfolk Southern's requested waiver and allow it to better realize the safety benefits of its own ATGMS technology.

Respectfully submitted,

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July 9, 2025