

BEFORE THE FEDERAL RAILROAD ADMINISTRATION
Docket No. FRA-2024-0032
RIN 2130-AC96

TRACK GEOMETRY MEASUREMENT SYSTEM (TGMS) INSPECTIONS

**COMMENTS OF THE ASSOCIATION OF AMERICAN RAILROADS AND THE
AMERICAN SHORT LINE AND REGIONAL RAILROAD ASSOCIATION**

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The Association of American Railroads (“AAR”), and the American Short Line and Regional Railroad Association (“ASLRRA”), on behalf of themselves and their member railroads, respectfully submit these comments on the Federal Railroad Administration’s Notice of Proposed Rulemaking in Docket No. FRA-2024-0032, entitled “Track Geometry Measurement System (TGMS) Inspections.” *See* Fed. R.R. Admin., *Track Geometry Measurement System (TGMS) Inspections*, 89 Fed. Reg. 84845 (Oct. 24, 2024), RIN 2130-AC96. AAR is an incorporated, nonprofit trade association representing the nation’s major freight railroads, Amtrak, and some smaller freight railroads and commuter authorities. AAR’s members account for the vast majority of the rail industry’s line haul mileage, freight revenues, and employment. ASLRRA is an incorporated, nonprofit trade association representing the interests of about 600 short line and regional railroads. In both legislative and regulatory matters, ASLRRA advocates for enlightened public policies promoting a strong regional and short line rail component for the national transportation infrastructure.

INTRODUCTION

A Track Geometry Measurement System (TGMS) is a type of automated track inspection technology that has made railroads safer. Automated track inspection systems detect defects in track that visual inspections cannot. A TGMS system can be autonomous. An Autonomous Track Geometry Measurement System (ATGMS) is one in which “the highly specialized, automated inspection equipment is mounted to on-track equipment . . .

and the inspections are conducted with minimum human involvement.” 89 Fed. Reg. at 84847.¹

The members of AAR and ASLRRA are committed to safety. They have used TGMS for years, and the data confirms that the automated inspection systems have led to continuous and demonstrable increases in safety. As FRA acknowledges, automated track inspection technologies “have been evolving since the 1970s and, with advances in rail safety, the number of track-caused derailments in the United States has steadily decreased since that time.” 89 Fed. Reg. at 84847.

FRA’s proposed rule, however, would prevent the full safety benefits of TGMS from being realized. The proposed rule generally requires that all qualifying Class 1 through Class 5 mainline track—as well as controlled sidings—be tested 3 times within any 365-day period, with at least 90 days between inspections. But the proposed rule would overlay this new TGMS mandate on top of the existing visual-inspection requirements, thus requiring human inspectors to continue walking the tracks looking for defects. Moreover, the proposed rule would impose arbitrary, unnecessary, and onerous requirements concerning TGMS inspections, some of which would be literally impossible to satisfy, such as the requirement that defects be remediated within an hour.

FRA should withdraw or substantially modify the proposed rule.

¹ Because an ATGMS is a subset of TGMS, references in these Comments to TGMS include ATGMS, unless the context dictates otherwise.

BACKGROUND

Automated track inspection (ATI) represents one of the most significant advances in rail safety in the last 50 years. TGMS technology is far superior to the human eye in identifying defects in railroad tracks. The proposed rule “acknowledges the safety benefits of this technology, specifically its ability to quickly and accurately detect small changes in track geometry.” 89 Fed. Reg. at 84846. The U.S. Court of Appeals for the D.C. Circuit has also noted that “automated inspections have proven to be significantly more effective at detecting and measuring geometry conditions” than visual inspections. *Bhd. of Maint. of Way Employes Div./IBT v. U.S. Dep’t of Transp.*, 781 F. App’x 7, 10 (D.C. Cir. 2019). Similarly, as the United States Court of Appeals for the Fifth Circuit observed, “FRA found” that BNSF’s use of ATI technology “identified two hundred defects for every one identified by visual inspection, improved the efficiency of the strategically employed visual inspections, and decreased the number of workers on the tracks.” *BNSF Ry. Co. v. FRA*, 62 F.4th 905, 909 (5th Cir. 2023).

Track “geometry” includes the gage (the distance between the rails), the alignment (lateral deviations in the track), and the profile (vertical deviations in the track), *see* 49 C.F.R. §§ 213.53, 213.55, 213.63, and geometry defects are some of the most common types of track-based defects. “Many years of research, development, and real-world use has proven the effectiveness of TGMS inspections at detecting geometry conditions.” 89 Fed. Reg. at 84847; *see also id.* (explaining that TGMS inspections “have been proven to increase railroad safety by detecting more geometry conditions and, in many instances, due to the sensitivity of the systems, detecting these conditions earlier in their degradation

process” when compared to manual, visual inspections). Although railroads currently deploy visual inspections to complement their automated inspections, visual inspections can be less frequent and can strategically target the types of issues where human inspectors might have a comparative advantage over automated systems.

The use of automated inspection technologies results in earlier detection of track defects and enables changes in maintenance practices from reactive to preventative. Under a visual approach, defects are addressed once they become apparent to a visual inspector observing the track. In contrast, an automated approach—in which massive amounts of data are gathered and analyzed for patterns or warning signs—allows for a modernized approach to track maintenance that shifts from a reactive approach to a predictive model anticipating and focusing maintenance needs. This enables railroads to redeploy track inspectors to perform inspections for developing issues in areas specifically identified by the automated system.

TGMS systems provide another type of safety benefit. Because visual inspections rely on employees taking measurements on active rail tracks, an automated system reduces the dangers to railroad employees who otherwise would need to drive over the tracks themselves, or walk alongside the tracks. *See* National Transportation Safety Board, 2021-2022 Most Wanted List of Transportation Safety Improvements: Improve Rail Worker Safety (May 3, 2021), <https://www.nts.gov/Advocacy/mwl/Pages/mwl-21-22/mwl-rph-02.aspx> (explaining that “[t]oo many people working on or around railroad tracks . . . are getting killed or injured in preventable accidents” and urging FRA to “act now . . . to establish adequate . . . protections”).

TGMS systems also improve the efficiency of the rail network, as defects can be identified and fixed more quickly, thereby reducing service interruptions. In addition, these systems increase the capacity and fluidity of rail lines by reducing the track time consumed by dedicated inspection vehicles, thus eliminating delays that arise when tracks cannot host freight or passenger traffic because they are being inspected.

In sum, as the Fifth Circuit concluded, the available data and evidence “suggest[] that ATI has at least four benefits over visual inspection alone”:

First, ATI finds significantly more defects—according to observation by BNSF, manual inspections detected 0.01 defects per 100 miles compared to 4.54 using ATI technology. Second, ATI allows inspectors to identify and follow patterns or warning signs that may lead to a defect instead of identifying it post-formation. That shift from reactive identification to proactive predictions “enables a railroad to re-deploy its track inspectors to perform inspections for developing issues in areas specifically identified by ATI.” In other words, visual inspections can be used more strategically. Third, the ATI operates without manpower, which leads to fewer employees walking down the tracks, reducing the risk of on-track injuries. Finally, an increased rate of efficiency in defect identification leads to increased railroad operational efficiency, given that fewer trains are delayed on account of track inspections and service interruptions.

BNSF, 62 F.4th at 908.

In recognition of these substantial benefits, and consistent with the principle that modern regulations should be performance-based rather than prescriptive, in 2022 the rail industry proposed a performance-based approach to track inspections. The proposal (attached hereto), permitted railroads to select one of several combinations of track inspection methodologies in lieu of the visual track inspection requirements under 49 CFR

§ 213.233(b)(3) and (c), provided that the defect metrics were at or below specified levels. This approach permits railroads to design track inspection protocols and methods that achieve safety objectives while permitting flexibility and optimization of the balance between visual and machine inspections.

DISCUSSION

The proposed rule “would require all Class I and II railroads, as well as intercity passenger railroads and commuter railroads, to operate a qualifying Track Geometry Measurement System, a type of automated track inspection technology, at specified frequencies on all Class 1 through 5 mainline and controlled siding track that transports: annual tonnage greater than 10 million gross tons; regularly scheduled passenger rail service; or trains containing hazardous materials.” 89 Fed. Reg. at 84845 (cleaned up). For the reasons below, the proposed rule should be withdrawn or substantially modified.

I. Overlaying TGMS Requirements On Top Of Existing Visual-Inspection Requirements Is Arbitrary And Unjustified.

The proposed rule would maintain existing visual-inspection requirements. But FRA should not issue a TGMS mandate without allowing railroads to reduce the frequency of visual inspections. Under existing regulations, railroads must perform visual inspections “[t]wice weekly,” “[w]eekly,” or “[m]onthly,” depending on the type of track. 49 C.F.R. § 213.233(c). Particularly for railroads that have ATI programs with frequent TGMS inspections, there is no need to maintain the schedule of visual inspections contemplated by existing regulations, as FRA recognized in granting BNSF waivers.

Relaxing the existing visual-inspection requirements is necessary to achieve the full safety benefits of TGMS technologies. This is so for two reasons.

First, reducing the visual inspection requirements increases safety by reducing employee track occupancy. This eliminates unnecessary safety risk for railroad employees as the possibility of rail equipment incidents, walking hazard injuries, and other incidents that may arise from on-track work events are reduced. Specifically, “track authority duration”—the amount of time rail workers spend on the track—is substantially reduced. FRA has evidence that this is so. *See* BNSF, Request to Expand Automated Track Inspection Program 4, FRA-2020-0064-0014 (June 15, 2021), <https://www.regulations.gov/document/FRA-2020-0064-0014> (under waiver allowing for reduced visual inspections, track authority duration was “reduced by nearly 25 percent from the comparable period” the prior year on the Southern Transcon route, and was “reduced by 30% . . . from the same period” the prior year on the Powder River Territory). “[P]eople working on or around railroad tracks” face dangers from “train or equipment movement,” and the National Transportation Safety Board has recently admonished FRA to “[i]mprove” safety for railway workers who “are getting killed or injured in preventable accidents.” NTSB, 2021-2022 Most Wanted List of Transportation Safety Improvements: Improve Rail Worker Safety (May 3, 2021), <https://www.nts.gov/Advocacy/mwl/Pages/mwl-21-22/mwl-rph-02.aspx>. Reducing the time workers must spend working on or around tracks necessarily reduces their risk. *Cf. Transp. Div.*, 40 F.4th at 657 (discussing “‘slips, trips, and falls incurred’ . . . by workers ‘bending or stooping’ over, ‘stepping on[,]’ and ‘walking’ on train tracks while on the job” and upholding FRA’s

“reasonable predictive judgment” that “fewer occasions for workers to be on the tracks . . . would lead to fewer injuries” (brackets in original)). Deploying TGMS technology without modifying the visual inspection requirements would not deliver the safety benefits arising from reduced track occupancy.

Second, reducing visual inspection requirements increases safety by freeing up rail inspectors to focus on the most problematic areas of track—areas where visual inspections are more likely to detect defects. The vast amount of foot-by-foot track condition data produced by ATI technology allows visual inspectors to focus on those track segments that are performing marginally, driving inspections of those segments at frequencies dictated by operating conditions. In practice, that often results in those segments being inspected more frequently than required under current FRA regulations. The result is to shift track inspection from a reactive approach to a predictive model that anticipates maintenance needs, allowing railroads to redeploy their track inspectors to perform inspections for developing issues rather than dedicating that work force to the less effective visual inspections required under the existing regulatory scheme. FRA has previously recognized the benefits of this “[d]ata-driven” approach to visual inspections, which allows inspectors to target critical areas of track. 83 Fed. Reg. 55,449, 55,450 (Nov. 5, 2018). Indeed, FRA determined that under BNSF’s automated track inspection program, “BNSF inspectors found the same number or more defects (geometry and otherwise) each month, despite conducting progressively fewer visual inspections.” Letter from Karl Alexy, Chief Safety Officer, FRA to BNSF Railway Company 8, FRA-2020-0064-0011 (Jan. 19, 2021), <https://www.regulations.gov/document/FRA-2020-0064-0011> (BNSF Waiver Letter). If

railroads cannot reallocate inspectors to focus their attention on areas of track flagged by the automated-inspection systems—inspecting those areas of track more frequently than required by FRA regulations—they will not realize the full safety benefits of TGMS.

When FRA approved BNSF’s test program, it did so for the express purpose of determining the optimal mix of visual and automated inspections. The Brotherhood of Maintenance of Way Employees Division objected to any modification of the visual-inspection requirements, arguing that BNSF could test its automated systems without reducing the frequency of visual inspections. FRA rejected the union’s arguments, explaining that “[t]he purpose of the Test Program [wa]s to test the effectiveness of . . . new combinations of visual and automated inspections at different frequencies,” which necessarily meant departing from the regulatory schedule. FRA, Resp. to Pet. for Recons. 7, FRA-2018-0091-0004 (Feb. 8, 2019), <https://www.regulations.gov/document/FRA-2018-0091-0004>. The union unsuccessfully petitioned for review in the D.C. Circuit. *See Bhd. of Maint. of Way Employees Div./IBT*, 781 F. App’x at 9. The court held that FRA had “adequately and consistently explained” that “continuation of the current manual inspection schedule” would prevent the test program from “determin[ing] whether a specific combination of visual and automated inspections produces the greatest results for both safety and operational benefits.” *Id.* at 10.

The test program proceeded and was a resounding success. FRA found that “for every geometry defect identified by visual inspection,” BNSF’s automated inspection system “identified over 200 defects.” BNSF Waiver Letter, *supra*, at 5. And by combining the automated inspections with targeted visual inspections, under the test program more

defects were identified by visual inspections, even though fewer visual inspections were conducted. *See* BNSF, Petition for Limited Waiver of 49 C.F.R. § 213.233 at 8, FRA-2020-0064-0001 (July 28, 2020), <https://www.regulations.gov/document/FRA-2020-0064-0001> (“[M]annual inspections on the pilot territory were significantly more effective than on the rest of BNSF’s network, recording nearly three times the number of geometry defects per 100 miles than were identified by track inspectors systemwide.”). In addition, by reducing the frequency of visual inspections, the number of hours that track was occupied by BNSF employees decreased substantially, thereby “reducing the potential hazards faced by track inspectors.” *Id.* at 10.

Even though FRA set out to determine the optimal mix of visual and automated inspections, even though BNSF’s test program data showed the safety benefits of reduced visual inspections, and even though BNSF’s implementation of its automated track inspection program under the waivers has been safe and successful, the proposed rule ignores all of this evidence as though it does not exist. That is arbitrary, particularly since “[t]he purpose of the Test Program [wa]s to test the effectiveness of . . . new combinations of visual and automated inspections at different frequencies.” *Resp. to Pet. for Recons.*, *supra*, at 7. The agency even litigated and won in the D.C. Circuit in order to gather this data. Because the data shows that a combination of automated inspections with reduced visual inspections delivers safety benefits, the proposed rule should have provided for reduced visual inspections.

II. The One-Hour Remediation Requirement Is Arbitrary And Impossible To Satisfy.

The proposed rule would require the track owner to take remedial action within one hour of the identification of any defect. *See* 89 Fed. Reg. at 84846 (a “one-hour timeframe [is] the maximum permitted time between when a TGMS detects a geometry defect and when a track owner must take remedial action”). Compliance with this requirement in all instances is a practical impossibility. Even attempting to comply with this requirement would impose massive costs—vastly exceeding FRA’s estimates—on the railroads.

This requirement represents a dramatic and unjustifiable change from current practice. For example, 49 C.F.R. § 213.333(d) simply requires a TGMS to be “capable of producing” a report within 24 hours. Similarly, 49 C.F.R. § 213.234 provides that field verification of a defect must occur within 48 hours when there is an automated inspection of track with concrete ties. There is no practical way that railroads can remediate all defects within an hour of detection. Not only is the existing workforce insufficient, but severe weather conditions, remote track locations, and existing technology make it impossible that all defects can be communicated and remediated within an hour.

The one-hour remediation requirement will impose substantial and unnecessary costs on the railroads. The actual costs of the requirement vastly exceed FRA’s projections in the proposed rule. These costs include:

--Hiring new workers. The proposed rule’s statement that “affected track owners would be required to hire a total of 94 new maintenance-of-way (MOW) employees to accomplish this proposed requirement,” 89 Fed. Reg. at 84846, is a severe underestimation

of what it would take just to attempt to comply with the one-hour remediation requirement. The true number will be far higher. Railroads would incur the cost of recruiting, hiring and paying approximately 500 new MOW employees, as well as the cost of training them, providing them with personal protective equipment, portable electronic devices, and appropriate means of transportation to support them so they can closely follow TGMS equipment and be prepared to meet the one-hour remediation requirement. Railroads will also need to maintain a manned 24/7 desk to validate defects and place slow orders when necessary. One railroad estimates the manned desk will require 5 full-time employees. Railroads will need to add large numbers of full-time maintenance-of-way employees to handle inspections of the suspected defects. In addition, railroads will need to purchase or lease new inspection vehicles for their fleet, especially in light of the proposed rule's effective prohibition on hi-rail vehicles.

--Communications technology. The cost of the additional communications equipment necessary for a one-hour remediation requirement would be considerable. Railroads would be forced to acquire additional bandwidth from the Federal Communications Commission and dramatically expand their wayside data radio network. Alternatively, they would be forced to undertake construction of a private cellular network. Either of those alternatives would impose immense costs.

--Capital. Railroads will need to acquire additional TGMS systems for redundancy to cover downtime associated with system and vehicle maintenance. One freight railroad estimate it will need to acquire 4 additional systems. This additional capital associated

with these additional systems would be expected every 12 years as equipment reaches end of life and requires replacement.

--Slow orders. The rule will likely lead to an increase in unnecessary slow orders, as TGMS systems generate false positives. This is why field verification is critical before slow orders are issued (at least in cases where the potential defect is not significant enough to warrant a 2-class drop). For freight railroads, this will restrict the flow of interstate commerce, imposing costs on the railroads, shippers, and the public. For Amtrak, this will cause significant and untenable delays for passengers.

The 1-hour remediation requirement should be deleted. Unlike current FRA regulations, the proposed rule does not consider (a) the nature of the defect; (b) the level of risk the defect presents; or (c) the location of the defect, including whether traffic will be operating over the track. The proposed rule is also unclear as to whether it applies only to defects recognized by FRA, or whether it extends to “designer” defects cited by the vehicle.

FRA should not take a one-size-fits-all approach. Instead, if it does not withdraw the proposed rule entirely, it should both increase the time allowed for remediation and impose remediation deadlines for defects that reflect the nature of the safety risk presented. Under current regulations, which apply only to high-speed track (Classes 6 through 9), the time between TGMS inspections can be 4 months or more. Similarly, the time between visual inspections can be 3 days or more. Requiring a 1-hour remediation on a defect that, under current regulations, may not even have been *detected* for months makes no sense.

The 1-hour remediation period is inconsistent with FRA's prior position. In approving BNSF's automated track inspection program, the agency stated:

FRA notes that requiring immediate verification of defects identified by the ATGMS would eliminate the primary benefit of the system. The ATGMS can take key measurements continuously and at track speed, allowing the inspection of more track in any given period, as compared to manual visual inspections by track inspectors. The ATGMS transmits identified defects to a central location. The defects are then verified by a BNSF employee and transmitted back to field personnel. As allowed under the Test Program, if the defect requires a 1 class drop to properly protect it, BNSF has a 24-hour grace period between the time the remote desk operator verifies the defect and when a slow order or remedial action occurs. If the defect requires a 2 class drop to properly protect it, the remote desk operator must immediately call in a slow order to the BNSF dispatcher. **Based on the findings of the Test Program as discussed above, FRA finds that this system provides a level of safety that is appropriate based on the severity of the defect.**

BNSF Waiver Letter, *supra*, at 9 (emphases added). FRA offers no explanation for changing its position that "requiring immediate verification of defects identified by the ATGMS would eliminate the primary benefit of the system" and that less rigid remediation deadlines "provide[] a level of safety that is appropriate based on the severity of the defect." *Id.*

The consequences of the 1-hour remediation requirement will be severe and harmful. Employees will be forced to bear the exposure of leaving home, traveling by highway to a work location and occupying the track, simply to validate a suspected defect that (in many cases) has never before been deemed one that requires immediate remediation. This would be unplanned, off-shift activity. A benefit of TGMS is that it allows track inspectors to

evaluate conditions in a planned fashion during their normal workday. Here, however, FRA is going in the opposite direction, worsening the quality of life for railroad employees for little appreciable benefit, and at considerable cost. For one freight railroad, the 1-hour remediation requirement would require it to at all times have dedicated, trained, and qualified inspectors physically located around its network who are able to drop whatever they are doing, travel to the location, secure track time and hi-rail in to the location in question—all within 1 hour. This would mean having people permanently stationed at 10-20 mile intervals over the entire network. If these people do not exist or are not positioned in this way, the number of units required to sustain the test frequency demanded in the NPRM would go up dramatically, as the railroad would need to ignore non-compliant tests and test even more frequently to make up for them.

For Amtrak, the 1-hour remediation requirement will impose significant costs. On a high-speed run from Washington to Boston, Amtrak will usually get numerous level one exceptions. Requiring these exceptions to be remediated within an hour will have a significant adverse effect on track maintenance, as local track crews will be diverted from regular maintenance activities to address the exceptions. Moreover, they will not be able to effect immediate verifications or “repairs” on all the exceptions and will need to place slow orders. The process of placing slow orders in highspeed PTC territory will have a significant adverse effect on train operations and cause severe delays to the traveling public. Running at night will not provide a clear window to get over the tracks in light of the required testing.

Finally, the proposed rule states: “If a commenter believes that a one-hour remediation requirement is not feasible, FRA requests that alternative timeframes be proposed.” 89 Fed. Reg. at 84849. A much more reasonable timeframe would be to require remediation of a defect within a minimum of 48 hours of detection, but potentially more. Requiring remediation within 48 hours “is the current requirement for TGMS inspections for high-speed track.” *Id.* at 84854; *see also id.* at 84851 (existing regulations “give[] track owners two days following a TGMS inspection to field-verify and initiate remedial action”). Other regulators allow even more time for defect remediation. For example, Transport Canada requires remediation within 72 hours. *See* Transport Canada, *Rules Respecting Track Safety*, Part II, Subpart C, § 7.2(a), (c) (railroad has 48 hours to notify track supervisor of defect and must “bring the line of track into compliance” within 24 hours of such notification). Requiring remediation within 48 or 72 hours is sufficient for safe operations; a 1-hour requirement is unnecessary.

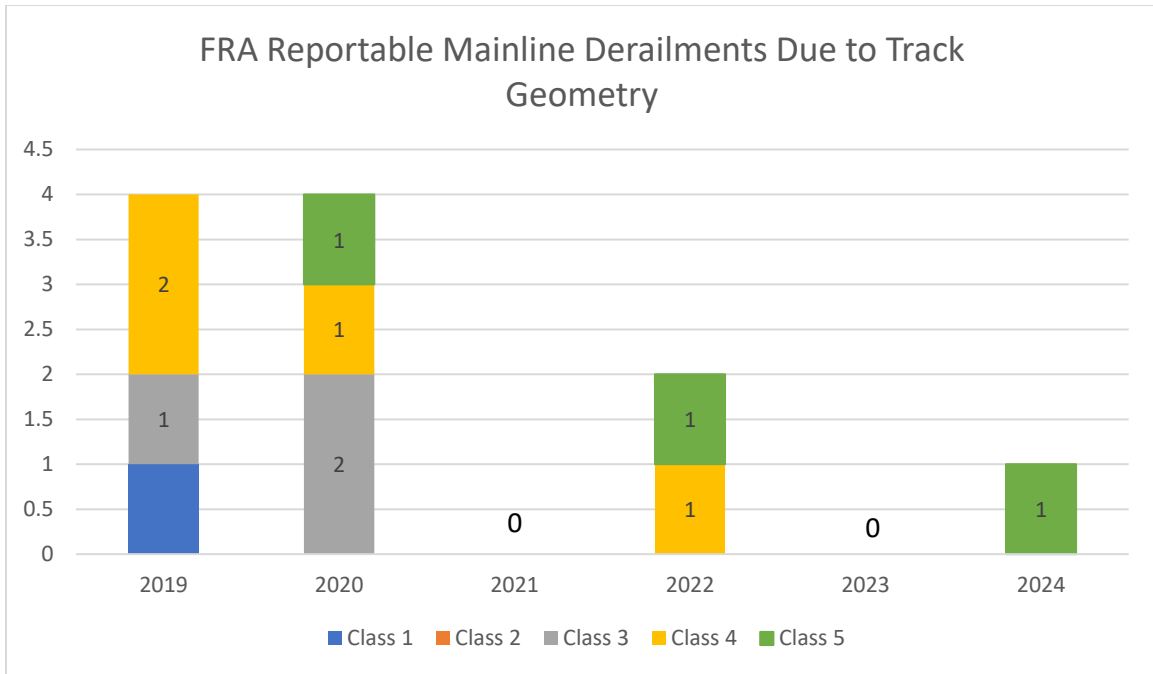
The proposed rule also requests “that the comment include a discussion about the potential risks of leaving a geometry defect in the track for a longer period of time and possible ways to mitigate such a risk.” 89 Fed. Reg. at 84849. Because the potential risk of leaving a geometry defect unaddressed varies based on the nature and severity of the defect, the reasonable approach would be to adopt different timeframes for remediation. As noted above, a 48- or 72-hour remediation period would be the baseline, but that timeframe could be tightened for categories of defects that present a higher and more immediate risk, and relaxed for categories of defects that present a lower and less immediate risk.

III. The Required Frequency Of Automated Inspections Should Be Reduced.

The proposed rule provides that “TGMS inspection[s] must be conducted at least three times within any 365-day period, with not less than 90 days between inspections.” 89 Fed. Reg. at 84848. If FRA does not withdraw the proposed rule, it should modify this provision by reducing the required frequency of inspections to 1 or 2 times a year instead of 3.

The preamble to the proposed rule contains an incorrect assumption. It states: “FRA’s research indicates that all railroads covered by this proposed rulemaking are already performing TGMS inspections on their networks at or above the frequencies FRA is proposing in this rule.” 89 Fed. Reg. at 84846. That is not accurate. To take just one example, Norfolk Southern inspects its sidings twice a year (at most) and does not monitor to ensure a 90-day interval. Similarly, there are approximately 8,000 mainline miles on BNSF’s network (which are not part of the waiver program) that are not inspected at this frequency. FRA’s assertion that the proposed rule would simply “codify . . . industry practice,” 89 Fed. Reg. at 84846, is wrong.

The proposed rule’s inspection frequency is not necessary for safety. The chart below reflects mainline derailments caused by track geometry defects (codes T101, T102, T103, T106, T108, T111, T112, T113, T199) on the BNSF network. Derailments caused by track geometry defects have decreased over time, reflecting that a test frequency more relaxed than what FRA is proposing is safe and appropriate.



FRA Reportable Mainline Derailment (Cause Codes T101, T102, T103, T106, T108, T111, T112, T113, T199)

Because the proposed rule’s required inspection frequency rests on the incorrect assumption that “all railroads covered by this proposed rulemaking are already performing TGMS inspections on their network at or above the frequencies FRA is proposing,” 89 Fed. Reg. at 84846, FRA should reduce the required frequency to 1 or 2 inspections within a 365-day period to be more consistent with actual industry practice. Making this change would bring the proposed rule in line with existing regulations for automated inspections of concrete ties, which set the frequency of inspections at 1 or 2 times per year based on factors such as track class, annual tonnage, and type of service. *See* 49 C.F.R. § 213.234(b).

In addition, the proposed rule fails to explain what happens if the minimum number of tests are not conducted on a track (or if data is unavailable within one hour of testing). A final rule should include contingent procedures that allow a railroad to remain in

compliance under such circumstances. For example, it could require the railroad to perform increased or more focused testing during the next inspection.

Finally, FRA's mistaken assumption also resulted in an erroneous estimation of the rule's costs. After stating, incorrectly, that the rule would require no "change from current industry practice," the preamble then concludes: "Therefore, the affected railroads would not incur any additional costs related to conducting the inspections." 89 Fed. Reg. at 84852. That conclusion is incorrect, so at a minimum FRA must recalculate the true costs of its rule.

IV. The TGMS Mandate Should Be Narrowed And Should Not Extend To Sidings.

The proposed rule would require TGMS on all mainline and "controlled siding track" for track Classes 1 through 5 with annual tonnage greater than 10 MGT, regularly scheduled passenger service, or the transportation of hazardous materials. 89 Fed. Reg. at 84848. Requiring TGMS inspections on mainline track *and* controlled sidings does not accord with industry practice and would impose a massive burden on railroads.

This requirement translates into a doubling of the inspection miles along corridors with sidings. While a single pass along a route could cover all of the main track, a second pass would be required to inspect the sidings along the segment. This translates into additional TGMS equipment hours and necessitates adding TGMS vehicles to the fleet. FRA did not include the costs associated with purchasing and operating (fuel, emissions, and maintenance) additional TGMS equipment to comply with this mandate. Nor did the agency include the costs associated with the back office equipment and data analysis

personnel required to support the additional new equipment or the impacts on network fluidity (including Amtrak and commuter service) of the additional time that track is out of service. In addition, the increased demand for the highly-specialized TGMS equipment in a market with a very small number of suppliers will likely drive up the cost of production and sale price substantially. FRA failed to include such impacts.

The preamble provides no explanation for why FRA chose to require TGMS on such a broad scope of track. The scope of the proposed rule forgoes any sort of risk-based analysis that would prioritize TGMS inspections in areas where the technology could have the most significant impact. As a result, it would force railroads to commit TGMS resources to lower priority areas rather than focusing those resources in areas that maximize safety benefits. For example, the proposed rule would require Amtrak to significantly increase testing for tracks other than its designated high speed route in the Northeast Corridor. The inclusion of Class 1 and 2 track is especially burdensome because it would be very difficult for Amtrak to test all of the station tracks in the Northeast Corridor three times a year as well as adding extra testing for other lines, including the Empire and Michigan lines. In many cases, the additional TGMS inspections that FRA would require will serve no safety purpose because most modern TGMS cars use IMU measuring systems that do not even measure geometry at speeds below 15 m.p.h. Additionally, Amtrak uses numerous station sidings throughout the country. Those sidings are for the most part controlled, and would now require TGMS inspection. Amtrak will not be able to provide for the TGMS inspections of these disparate locations scattered around the nation. Finally, not all railroads currently use TGMS on sidings and would need to immediately apply for

waivers. Acquiring the necessary equipment to do so will impose significant costs on the railroads—costs that are not justified for other than mainline track.

The rule at a minimum should exclude Class 1 and 2 track as well as controlled sidings from the requirement.

V. The Proposed Rule Would Eliminate Use Of Hi-Rail Vehicles.

Hi-rail vehicles are an integral part of many railroads' automated inspection fleet. Hi-rail trucks test portions of main lines not easily accessible by rail-bound cars, including spur/branch lines, sidings, critical tracks, and crossovers. Yet under the proposed rule, hi-rail vehicles would be unable to conduct inspections. That is because the proposed rule's vertical load requirement of no less than 10 kips per wheel effectively eliminates the use of hi-rail trucks. *See* 89 Fed. Reg. at 84848. As a result, railroads would need to purchase or lease additional inspection vehicles for their fleet.

FRA should modify the proposed rule to permit the continued use of hi-rail vehicles. Hi-rail vehicles are a critical supplement to a rail-bound TGMS fleet. They enable railroads to maximize the total track miles tested. Disqualifying hi-rail vehicles would reduce the ability of railroads to monitor main lines and sidings at a consistent and repeatable frequency. Not having a hi-rail vehicle capable of quickly accessing areas would make compliance on all tracks nearly impossible as many tracks are difficult to access with manned TGMS cars. And there is no safety reason to exclude hi-rail vehicles. BNSF has compared the accuracy and precision of employing TGMS on both traditional rail cars and hi-rail vehicles and found the results from hi-rail vehicles to be substantially similar to traditional rail cars.

Relatedly, the proposed rule would mandate a testing distance that is unnecessarily limited. Specifically, it “would require geometry measurements to be taken no more than 3 feet away.” 89 Fed. Reg. at 84848. That is an arbitrary limitation that locks in existing technology and forecloses the use of alternative inspection systems such as drones. Particularly in a rule that FRA says is intended to “promote innovation,” 89 Fed. Reg. at 84846, railroads should not be forced to conduct inspections with existing technology in perpetuity.

VI. The Proposed Rule Is Arbitrary In Many Other Respects.

If the proposed rule is not withdrawn in its entirety, it should be modified in many additional ways.

A. The proposed rule applies to certain routes where “transportation of hazardous materials” occurs. 89 Fed. Reg. at 84848. But the proposed rule does not clarify what qualifies as such a route and “invites comment on . . . the timeframe and frequency that should be required before this element is met.” *Id.* For purposes of this provision, FRA should adopt the definition of Key Routes as defined by the Association of American Railroads, and provide that “transportation of hazardous materials” occurs on (and only on) Key Routes.

B. The proposed rule would require that the TGMS system provide a continuous plot of measured track geometry with the resulting reports and data, including any revisions thereto, “documented, signed, and certified by a § 213.7(b) qualified person.” Proposed Rule § 213.236(d)(3), (g). FRA should modify this requirement. Manned geometry car supervisors and individuals responsible for reviewing TGMS data are not currently

§ 213.7-qualified inspectors. Their skillset is analyzing track geometry data and maintaining the associated equipment, not inspecting. Qualification under § 213.7 has never been necessary for these individuals to perform high-quality testing services in the past. Moreover, continuous plots are not regularly created for TGMS. *See* 89 Fed. Reg. at 84849 (proposed rule would require “that the TGMS provide a continuous plot, on a constant-distance axis, of all measured track geometry parameters”). There is no point in having a new track geometry graph every day when the district is run multiple times a day. Requiring that individual plots of all data from all equipment be produced and available is an unnecessary burden. Producing plots for the entire railroad continuously, for subsequent human review, defeats the purpose and primary benefit of TGMS—leveraging the technology to detect anomalies with greater consistency and less human error.

C. The proposed rule unduly restricts who can perform visual inspections. *See* 89 Fed. Reg. at 84849 (“A visual inspection . . . may not be performed by any individual involved in the TGMS inspection. . . . A visual inspection may be performed so long as it is by a dedicated track inspector whose sole responsibility is conducting a visual inspection.”). This requirement should be deleted, as there is no need for two persons in the vehicle. There is no basis in the evidence or safety data for FRA’s apparent belief that an inspector cannot properly conduct a visual inspection unless he or she has no other responsibilities. Indeed, it is common practice to send someone who is not a “dedicated” track inspector—*e.g.*, supervisors, foremen, or laborers—to assess potential defect locations, and then make repairs. All of these personnel are 213.7-qualified to inspect, as

well as to supervise restoration and renewal, but unless the person is a “bid-in” track inspector they would not be compliant under the proposed rule.

D. The calibration procedure—which would require repeated runs at the same site and speed—should be modified. *See* 89 Fed. Reg. at 84848 (proposed rule “would further require that measurements recorded by the [TGMS] system not differ more than 1/8 inch on repeated runs at the same site and same speed”). Norfolk Southern’s current calibration procedure is a two-part process that is more thorough than FRA’s requirement—but it would not be considered compliant because the procedure is not run on the same track at the same speed. Step one of the process involves overlay of data from multiple TGMS units at multiple speeds over the entire Norfolk Southern network each week, using statistical analysis to find outliers with a threshold much tighter than 1/8 inch. The second part involves performing sensor verification against a fixed known measurement from a calibration car in a static environment every six months. Requiring a calibration process that is both less accurate and more time consuming than Norfolk Southern’s current method is an unnecessary burden. Compliance would require removing existing equipment from service for an extended period. This would in turn require a significant capital outlay to account for the lost service time, along with additional staff necessary to perform the required calibration.

E. The proposed rule would require an immediate slow order from the car for every suspected defect. *See* Proposed Rule § 213.236(f). This requirement will cause substantial and unnecessary delays. A suspected defect should not be considered a defect requiring a slow order until it has been field-verified (other than suspected defects that are

so significant they warrant a two-class drop). A blanket requirement of this type is not a balanced approach to managing the risk from geometry defects and increases the potential to miss critical defects. This requirement should be deleted and replaced with a more balanced approach in which suspected defects are categorized, inspected, and remediated within an appropriate time period.

F. FRA erroneously classified this rulemaking as “a nonsignificant regulatory action.” *See* 89 Fed. Reg. at 84852. Executive Order 12,866 provides that for “significant regulatory action[s],” the agency must provide the Office of Information and Regulatory Affairs a cost-benefit analysis of the proposed regulation and potential alternatives. While Executive Order 12,866’s threshold was originally \$100 million in annual impact to the economy, Executive Order 14,094 increased that threshold to \$200 million. Here, there can be no serious dispute that the proposed rule, if adopted, would have an annual economic impact of well over \$200 million. As explained above, railroads will need to make substantial expenditures in hiring additional workers, and acquiring new equipment and technologies, in order to comply with the regulatory mandate. There will also be a significant cost to railroads, shippers, and the public in the form of slow orders and increased congestion that impairs the fluidity of the national rail network. This rulemaking should not have been classified as “nonsignificant.”

CONCLUSION

FRA should withdraw the proposed rule and issue a supplemental NPRM (or open a new rulemaking) to consider a proposed performance-based TGMS rule in lieu of the current proposed rule’s rigid approach that will lock current technology in place. A

performance-based rule, like that proposed by the industry in 2022, will promote safety and encourage innovation by (1) pairing a TGMS requirement with reduced visual inspections, (2) providing for a more reasonable and balanced approach to the required frequency of inspections and the time for remediation; and (3) allowing railroads to implement TGMS without imposing the substantial costs and inefficiencies threatened by the current proposed rule.

Respectfully submitted,

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