Examining Best Practices for Keeping Trains on the Tracks: Integrating Technology in the Rail Network

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Introduction

Railroads have deployed Automated Track Inspection (ATI) to help identify certain types of track defects. Since the 1970s, a type of ATI technology called Track Geometry Measurement Systems (TGMS) has been used to supplement track inspections conducted by human inspectors. The Federal Railroad Administration (FRA) regulates 26 types of track defects under its Track Safety Standards (TSS; 49 CFR 213). Of these, TGMS can identify six. While TGMS excels at detecting specific geometric defects, it cannot detect many other safety issues including damaged ties, ballast and drainage problems, signs of ground movement, missing fasteners, and other defects that contribute to potentially dangerous derailments. Experienced inspectors, however, are capable of identifying all categories of FRA-regulated defects through visual track inspections. Combining both ATI and the expertise of human inspectors therefore produces the safest outcome for the rail network.

BMWED explained in its official comments filed in Docket FRA-2025-0059 that “Track Inspectors do not just detect; they evaluate contemporaneously with inspecting. Reducing the frequency of human track inspection while increasing the frequency of machine inspections is not just substituting machine ‘eyes’ for actual eyes; it is also eliminating on-site assessment of what is observed.” BMWED further emphasized that Track Inspectors “exercise judgment as to problems and potential problems in real time, which the machines cannot do” (BMWED Comments in Response to AAR Petition for Waiver, Docket No. FRA-2025-0059, pp. 6-7.).

Limitations of Automated Track Inspection

Automated inspection systems measure defined parameters against preset thresholds and detect geometry deviations and certain rail flaws. They cannot replicate human judgment, recognize visual anomalies, assess drainage, evaluate ballast, review the integrity of fasteners, or identify emerging sub-threshold degradation patterns. While ATI machines are very good at detecting certain track defects, they cannot detect other defects or problems in the larger railroad right of way that contribute to train derailments and other safety incidents. Track Inspectors following behind these machines frequently detect defects the technology missed—often defects that could have caused catastrophic derailments.

One of the most significant operational differences between ATI and human inspections is immediate response capability. Human inspectors can instantly impose speed restrictions, remove track from service, or physically repair conditions in real time. As BMWED explained in its formal comments to the FRA, “Track Inspectors are required to, and do, immediately redress defects; and they act to ameliorate unsafe conditions. The machines cannot do that” (BMWED Comments in Response to AAR Petition for Waiver, Docket No. FRA-2025-0059, p. 6.).

Track Inspectors repeatedly described this operational reality in their verified statements. One inspector explained: “When I find something, I act immediately. I either fix it, reduce train speed, or report it on the spot.” He contrasted this with ATI reports that “can take up to 48 hours to reach the people who need to act on them," warning that such delays are unacceptable where hazardous materials and passenger operations are involved (Statement of Christopher P. Barnard.).

Another Track Inspector explained the difference even more directly: "Machines log data. Humans respond. Humans prevent." He further explained that Track Inspectors are "the early warning system that sees problems before they become defects." (Statement of Joseph J. Mangello.)

BMWED's official comments filed with the FRA further explain that ATI systems only evaluate one portion of the federally regulated inspection framework under 49 CFR Part 213. As BMWED stated, "The machines only inspect for Track Geometry; they do not, and cannot, detect structural, mechanical, or environmental hazards that fall under the other three required areas of track inspection." BMWED additionally noted that non-track geometry defects include "cracked or broken rails, compromised joint bars and fasteners; washouts, fouled ballast, and poor drainage; switch, frog [point where rails cross], and turnout failures; and track obstructions or environmental threats" (BMWED Comments in Response to AAR Petition for Waiver, Docket No. FRA-2025-0059, pp. 12-13.).

The limitations of ATI technology are particularly significant in switches and turnouts, where many derailments originate and where multiple interacting components must be visually evaluated together. As one Track Inspector explained, "Switches are particularly dangerous. Most derailments happen there because they contain the most possible points of failure in a condensed space." He further noted that geometry systems cannot inspect switch rods, cotter pins, frog bolts, point wear, or other critical turnout components that require direct visual examination and immediate corrective action when defects are found (Statement of Theodore K. Elser.).

Another inspector similarly warned, "You cannot inspect a switch with a drone or a drive-by sensor. You have to physically check for movement, verify that everything is locked and secured, and ensure nothing is out of alignment" (Statement of Jonathan G. Van Buskirk.).

Numerous Track Inspectors explained in sworn statements that environmental and weather-driven failures often develop too rapidly for scheduled ATI passes to identify. One inspector described how "weather impacts everything," explaining that ballast movement, shifting anchors, and developing track instability can occur within days, particularly near rivers and unstable roadbed conditions. He emphasized that "track conditions can deteriorate fast" and warned that reducing inspections means trains will continue operating over unsafe territory before defects are physically observed (Statement of Russell E. Cobb.).

Another Track Inspector explained that "the combination of temperature swings, debris buildup, and high tonnage can wreck a section of rail overnight," adding that mud pumping, fouled drainage, and ballast failure are often undetectable by automated systems before conditions become dangerous (Statement of James I. Childress.).

Table 1 on the next page shows the capabilities of a human track inspector versus an automated track inspection machine. An ATI/TGMS machine can only find 26% of what a human track inspector looks for. This disparity exists because ATI systems primarily evaluate track geometry conditions, while qualified human inspectors evaluate all four FRA-regulated categories of track safety under 49 CFR Part 213, including track geometry, track structure, roadbed and drainage, and track appliances and devices.

In the rail industry, human inspectors and the labor unions that represent them do not oppose the increased use of these machines. In fact, BMWED supports the FRA requiring the railroads to use TGMS machines on a regular basis. As safety professionals tasked with keeping the rail network safe, however, Track Inspectors do have concerns with drastically reducing safety-critical inspections, particularly because the only reason for doing so is to reduce costs through cutting employment. Because FRA's mission is to promote safety in every area of railroad operations and reduce railroad-related accidents and incidents, any proposal that seeks to remove a key component of the current safety regime should demonstrate equivalent or superior detection capability under varied field conditions through independent testing and validation.

Table 1: Showing Human Inspector Capabilities vs. Automated Track Inspection Machine

Key: ✓ = Inspected for X = NOT Inspected For

	FRA Defects	Human Visual	ATI
Sub Part B	**Roadbed**		
	213.33 - Drainage	✓	X
	213.37 - Vegetation	✓	X
Sub Part C	**Track Geometry**		
	213.53 - Gauge	✓	✓
	213.57 - Curves, elevations, and speed limitations	✓	✓
	213.55 - Track alignment	✓	✓
	213.59 - Elevation of curved track; runoff.	✓	✓
	213.63 - Track surface	✓	✓
	213.65 Combined track alinement and surface deviations	✓	✓
Sub Part D	**Track Structure**		
	213.103 - Ballast; general	✓	X
	213.109 - Crossties	✓	X
	213.113 - Defective rails	✓	X
	213.115 - Rail end mismatch	✓	X
	213.121 - Rail joints	✓	X
	213.122 - Torch cut rail	✓	X
	213.123 - Tie plates	✓	X
	213.127 - Rail fastening systems.	✓	X
	213.133 - Turnouts and track crossings generally	✓	X
	213.135 - Switches	✓	X

	213.137 - Frogs	✓	X
	213.139 - Spring rail frogs	✓	X
	213.141 - Self-guarded frogs	✓	X
	213.143 - Frog guard rails and guard faces; gage	✓	X
Subpart E	**Track Appliances and Track-Related Devices**		
	213.205 Derails	✓	X
Non-Regulatory			
	Trespassers	✓	X
	Vandalism/ Terrorist activity	✓	X
	Track Obstructions	✓	X
	Right of Way	✓	X

Table data consistent with industry raw data available in the federal register under ATI test raw data.

Multiple layers of inspection systems, including both machine and human inspections, are safeguards rather than inefficiencies. This layered approach is reinforced repeatedly throughout the verified statements submitted by current Track Inspectors from across the national rail network. As one Track Inspector explained, “Machines are accurate within their limitations, but they don’t cover everything.” He further noted that geometry systems “don’t detect loose bolts in a frog, missing signs, slewed ties, or vegetation that blocks a driver’s view.” When defects are identified visually, corrective action can occur immediately, while ATI systems often involve delays between detection, verification, and response (Statement of Tracy E. Balenger.).

This approach has been recommended by the National Transportation Safety Board (NTSB) across several transportation modes. The safest system is one that includes multiple layers of redundancy, which ensures that if one layer fails, there are other measures in place to protect against risk.

In its analysis of the *Empire Builder* Amtrak train derailment in September of 2021 on BNSF track that resulted in passenger fatalities and 49 injuries, the NTSB stated that all methods of track inspection such as ATI and visual track inspections are necessary for safety. The NTSB investigation found that:

> “Automated track inspections by geometry cars or railcar-attached devices provide detailed information on specific track parameters, but they do not capture the diverse array of unique track hazards detectable to human inspectors. They are intended to supplement an inspection program and should not be used to supplant an inspector physically examining a track.”[1]

This same principle of layered redundancy was emphasized throughout BMWED’s formal FRA waiver comments, which warned that reducing visual inspections while relying more heavily on ATI would “gut one of the core safeguards that has enhanced the safety of the American rail system, and protected the American public from rail accidents and catastrophes for decades” (BMWED Comments in Response to AAR Petition for Waiver, Docket No. FRA-2025-0059, pp. 2-3.).

Rail Safety Statistics

When looking at data about safety in the railroad industry, it is very important to have the proper context and baselines so that any claims being made are valid and not misleading. A comprehensive analysis of safety accident and incident data over the last two decades reveals that in the first decade of the 2000s, the rate of total railroad accidents and incidents per million train miles were at a particularly high point in recent history.[2] Using this timeframe of poor safety performance in the early 2000s as a baseline will thus give the impression of significant safety improvements. During this period, the Class I railroads were still undergoing the implementation of mega-mergers of BNSF and the Union Pacific-Southern Pacific mergers from the 1990s and working on the capital investments required by the Surface Transportation Board's approval of those mergers. CSX and Norfolk Southern were implementing the acquisition and restructuring of Conrail into their existing systems. Employees of the former entities were integrating into a single workforce and adjusting to new territories. As with any transitions in operational procedures and changes in workforce familiarity with the terrain, this created opportunities for improvements in safety practices. As merger implementation proceeded and capital projects were completed, rail safety improved as of the early 2010s. FRA's data shows steady improvements in rail safety from 2013 and then deterioration over the next decade as the railroads embarked on a new cost-cutting business model known as "Precision Scheduled Railroading." Simply stated, the early 2000s is not an accurate benchmark for scrutinizing improvements in rail safety.

Regulations that safeguard the public must be grounded in independent validation and transparent analysis. Over the last decade, the rate of derailments on mainline tracks, which are tracks that pass through communities and interact with the public, increased by nearly 18% at the largest railroads.[3] Track defects are a leading cause of train derailments and must be addressed promptly and proactively to prevent catastrophic incidents. In addition to the increase in the rate of mainline derailments over the last decade at the largest railroads, the largest railroads have made virtually no improvement in preventing the derailment or damage of cars carrying hazardous materials. Similarly, the amount of accidents costing more than $1 million in damages surged by 71% over the last decade. There are clear opportunities for improving the state of safety in the industry, and the results from the last decade indicate that now is not the time to weaken current safety standards.

It is important to note that currently, nothing in the existing FRA regulations prevents the railroads from using ATI/TGMS technology, which has been around since the 1970s. Additionally, the waiver petitions sought by the rail industry reveal that they are not merely seeking to deploy ATI, but rather to reduce the frequency of human track inspections by upwards of 75% from the current requirement of twice per week. The operational effect of these proposals is straightforward: fewer required visual inspections allow railroads to reduce the number of Track Inspectors needed to maintain compliance. These changes would save the rail carriers a lot of money—but would not enhance rail safety. BMWED has shown that track inspectors performing inspections following machine inspections have detected defects not picked up by the machines, which means machines *do not* detect all the defects that can be found by skilled track inspectors.

BMWED ATI Waiver Data Analysis

The data submitted by Union Pacific and BNSF railroads as part of their waiver applications to the FRA to reduce visual track inspections from twice a week to once a week also raises questions about whether ATI is producing the claimed safety benefit as well as concerns that the railroads are missing serious track defects.

That disparity is evident in the railroads' own data. BNSF data shows:

- Human inspectors identified 7,142 total defects, including 156 geometry defects and at least 42 geometry multiclass drop defects.
- ATI systems identified only 719 total defects, including just 10 multiclass drop defects.

Union Pacific data shows:

- Human inspectors identified 645 total defects, including 16 geometry defects.
- ATI systems identified only 35 total defects, including 14 multiclass drop defects.

These figures demonstrate a substantial disparity between defects identified through human inspection and those identified by automated systems. The records also show repeated detections of the same defects over multiple inspection cycles, as well as cases where track inspectors identified defects days or weeks after TGMS had already inspected the same territory. That does not prove ATI has no value, but it does show that the current submissions do not provide a clear, data-supported demonstration that automated inspection is consistently delivering early detection or timely corrective action.

Lack of TGMS Complete Territory Testing

Condition 7 of the FRA's ATI waiver permits a reduction in visual inspection frequency based on reliance on automated inspection; however, this reduction is predicated on consistent and complete inspection coverage across the waiver territory. Where TGMS inspections are fragmented or incomplete, and where full coverage cannot be verified, the FRA cannot determine whether all track has been inspected within the required cycle or whether the reduction in visual inspections is supported by a complete and representative inspection record.

Union Pacific Example:

The submitted inspection data from Union Pacific's January application for a reduction in visual inspection frequency reflects TGMS activity conducted in discrete milepost segments rather than continuous coverage across entire subdivisions. In addition, reported coverage by grouping indicates that no reporting group achieved full (100%) inspection coverage during the baseline period, with several groups showing substantial portions of track untested.

Grouping	Total Track Miles	Total Track Miles Untested	% TGMS Tested
1	240.75	178.67	25.79%
2	267.63	185.23	30.79%
3	211.9	105.69	50.12%
4	59.59	10.18	82.92%
5	272.73	14.01	94.86%
6	286.47	3.43	98.80%
7	141.34	8.99	93.64%
8	338.95	6.56	98.06%
9	150.96	1.89	98.75%
10	228.15	14.53	93.63%

Takeaway:

Inspection coverage cannot be independently verified as complete and continuous based on the available record. As a result, the FRA does not have a sufficient basis to determine whether the requirements of Condition 1(h) have been satisfied or whether reduced visual inspection frequency under Condition 7 is supported by complete and representative inspection coverage.

Under 49 U.S.C. §20103(d), the FRA may only authorize alternatives to existing safety regulations where the railroad demonstrates that the proposed alternative provides an equivalent level of safety. Any proposal to reduce the frequency of qualified human visual track inspections therefore requires clear and independently verifiable evidence that the alternative inspection method can reliably identify and address the full range of safety hazards currently detected through human inspection. The currently available ATI waiver data does not demonstrate that equivalency.

Shift from Hazard Elimination to Acceptable Risk

For decades, federal rail safety policy has followed a precautionary framework. Inspection frequencies, geometry tolerances, verification requirements, and layered oversight mechanisms were designed to progressively eliminate preventable hazards. As often the case with regulations in the transportation industry, the current regulations governing rail safety were developed in response to particular hazards and incidents that killed or injured people. These regulations that were written in blood should not be discarded simply because the railroads do not want to comply with the cost of visual inspections anymore. The rail industry's argument that regulations ought to be relaxed to make way for new technologies implicitly reframes safety around acceptable aggregate risk levels, so long as accident statistics remain comparatively favorable.

This approach fails to consider the harmful public health and safety impacts of preventable catastrophes on communities and the public, which must live with the consequences of devastating derailments. The East Palestine, Graniteville, SC and Lac-Mégantic derailments are just three accidents/incidents, but they were all catastrophes that left a heavy toll on the communities. The mere numbers do not tell the whole story on rail safety.

BMWED's formal comments repeatedly emphasized that the consequences of missed defects extend well beyond railroad operations and directly threaten communities, waterways, and public health. Track Inspectors repeatedly referenced hazardous material movements through populated areas and environmentally sensitive locations.

One inspector explained that trains on his territory regularly transport hazardous materials alongside rivers and through populated communities, warning that "one derailment here and that contamination flows for miles." He further emphasized that reducing visual inspections would leave dangerous conditions undetected for extended periods while trains continue operating (Statement of Russell E. Cobb.).

Another inspector stated plainly: "When you reduce that presence, you are not saving time or money. You are gambling with people's lives, with their water, with their homes" (Statement of Stephen R. Akers.).

The FRA's founding purpose is to promote safety in every area of railroad operations and reduce railroad-related accidents and incidents (49 U.S.C. §20101)[4] and the statute mandates that the agency must make safety its highest priority (49 U.S.C. §103c).[5] An approach consistent with the statute would be to use new technology to augment existing protocols and help further reduce accidents and incidents, not to simply replace existing mechanisms so long as safety data shows maintenance of existing levels of safety. A precautionary regulatory system that prioritizes safety treats layers of redundancy as necessary protection. On the other hand, an acceptable-risk framework views redundancy as inefficient and costly. Policymakers must seriously consider whether reducing costs ought to outweigh the public interest. While incorporating new technology can help improve safety, current technology is not mature enough to replace skilled human workers. Gutting long-standing regulations that have protected communities and workers from derailments and accidents in the name of "technology advancement" is a recipe for disaster from a safety perspective.

Selective Statistical Framing and Exposure Distortion

The rail industry cherry-picks certain benchmark years to make it seem like there have been long-term reductions in accident rates. This practice fails to account for dramatic operational changes over the same period that have undoubtedly weakened safety. Modern freight trains frequently measure upwards of 15,000 feet in length, and reports of blocked crossings have been on the rise, leading to dangerous safety incidents.[6] Axle counts per train have increased, as have total tonnage concentrations leading to more derailments due to improper train handling and makeup.[7]

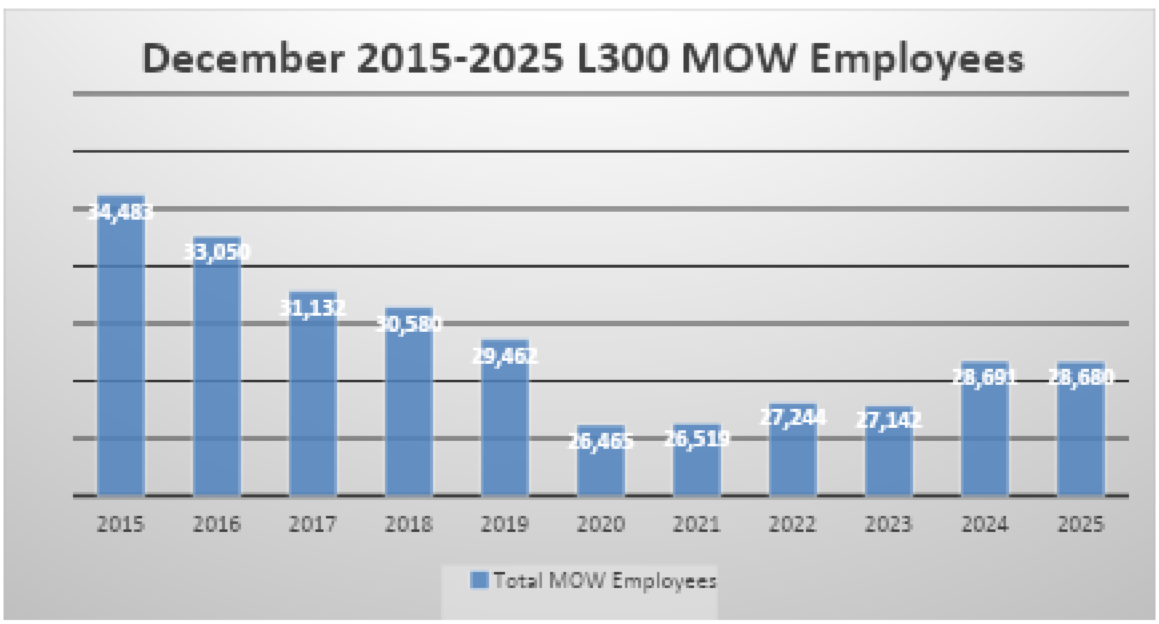
This distortion is compounded by the absence of exposure-adjusted workforce metrics. Safety cannot be accurately evaluated without considering the relationship between system demand and the resources available to manage that demand. STB employment filings show that while train length, tonnage concentration, and network utilization have increased, the workforce responsible for inspecting and maintaining that infrastructure has declined significantly. Without incorporating workforce-to-exposure ratios, reliance on accident rates alone presents an incomplete and potentially misleading picture of system risk. See below for a more in-depth discussion of the dramatic decreases in maintenance of way workforce levels and a correlated increase in track miles per worker.

A single modern ultra-long train may impose mechanical stress equivalent to multiple historical trains. Measuring safety solely per train mile fails to incorporate axle miles, ton miles, detector interval exposure, or cumulative in-train forces. Exposure-adjusted metrics are essential for accurate evaluation.

Workforce Contraction and Risk Concentration

Over the last ten years, the largest railroads have dramatically reduced their workforces, consolidated territories, and increased inspection responsibilities assigned to each employee. Fewer inspectors overseeing larger territories in an increasingly complex operating environment creates additional safety risk. Filling in that gap with ATI, as opposed to augmenting human inspections with technology, cannot improve safety due to the limitations in ATI's ability to detect the full range of rail defects.

Employment data from the Surface Transportation Board provides a clear and quantifiable measure of this trend in workforce reductions. Among the Class I carriers, Maintenance of Way and Structures employment declined from 34,483 employees in December 2015 to 28,680 employees in December 2025[8]. This represents a 16.8 percent reduction of the workforce responsible for inspecting and maintaining the nation's rail infrastructure.



This decline is consistent across the industry. Union Pacific reduced its Maintenance of Way workforce by approximately 30.9 percent. Norfolk Southern reduced its workforce by approximately 24.5 percent. BNSF and CSX each reduced their workforce by approximately 15.5 and 13.6 percent. These are structural reductions in core safety personnel; not temporary fluctuations tied to market conditions.

Railroad	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
BNSF	9,581	8,896	8,062	8,214	8,242	7,328	7,565	7,942	8,071	8,111	8,092
CSXT	5,823	5,844	5,570	5,176	4,992	4,710	4,798	4,948	5,108	5,133	5,030
GTC (CN)	1,849	1,919	1,993	1,959	1,869	1,794	1,843	1,798	1,833	1,926	1,949
NS	6,057	5,479	5,209	5,203	5,012	4,521	4,215	4,448	4,564	4,560	4,576
UP	11,173	10,912	10,298	10,028	9,347	8,112	8,098	8,108	7,566	7,663	7,715
CPKC										1,298	1,318
TOTAL	34,483	33,050	31,132	30,580	29,462	26,465	26,519	27,244	27,142	28,691	28,680

Source: STB Form 1246 — L300 MOW Employment Data

Note: CPKC began reporting to STB in 2024. Totals for 2015–2023 reflect BNSF, CSXT, GTC (CN), NS, and UP only.

Union Pacific illustrates the practical consequence of this trend. Its STB R-1 filings show total track mileage held virtually consistent between 2015 and 2024.[9] Its MOW workforce, meanwhile, fell by nearly 31 percent over that same period. The result is that track coverage per employee rose from approximately 4.6 miles to 6.8 miles, a 48 percent increase in individual workload with no corresponding reduction in the infrastructure being maintained.

Union Pacific — Track Miles vs. MOW Workforce (2015 vs. 2024)

Source: STB R-1 Report, Schedule 700 (Track Miles) | STB Form 1246, L300 (MOW Employees)

	2015	2024	Change	% Change
Total Track Miles	51,439	52,372	933	1.8%
MOW Employees (December)	11,173	7,663	-3,510	-31.4%
Track Miles per Employee	**4.60**	**6.83**	**2.23**	**48.4%**

When these reductions are evaluated alongside increased train length, higher tonnage concentrations, and greater reliance on high-density corridors, the result is a measurable increase in system exposure. Fewer inspectors are now responsible for more track, more tonnage, and more operational complexity. That is not modernization. That is risk concentration.

Conclusion

Inspection integrity is inseparable from community safety, as reduced detection margins increase the consequences of failures that affect first responders, surrounding neighborhoods, railroad workers, and critical supply corridors. The AAR authored paper presents an optimistic narrative emphasizing automation and aggregate safety improvements. However, it omits ultra-long train exposure, workforce contraction, automation limitations, and financial incentive conflicts.

The carriers' own regulatory filings show that the Maintenance of Way workforce, including the employees responsible for track inspection and maintenance, has been reduced by more than one quarter over the past decade. At the same time, the demands on the network have increased. Trains are longer, tonnage is more concentrated, and more traffic is moving over fewer mainline corridors.

BMWED's formal comments to FRA correctly recognized that ATI technology can serve as a valuable supplemental tool, but not as a substitute for qualified human inspection. As stated in the Morrison

Declaration submitted in Docket FRA-2025-0059, "We support innovation, but innovation must not come at the cost of oversight, accountability, or safety." The declaration further concluded that the "industry's own data confirms that track geometry machine systems are limited in scope and capabilities [and] cannot replace the skilled judgment and comprehensive situational awareness that only a qualified human inspector provides" (Declaration of Roy L. Morrison III.).

Against that backdrop, proposals to reduce visual inspections should raise concern. Fewer people, fewer inspections, and greater operating demand do not reduce risk. Those factors strengthen it. Rail safety policy must remain grounded in layered precautionary oversight designed to reduce preventable risk to the lowest practicable level. Automation should supplement inspection, not replace qualified professionals absent independent proof of equivalency. The safest railroad system is not one that replaces human judgment with automation, but one that uses technology to strengthen the ability of skilled railroad workers to identify hazards before communities pay the price for failure.

Endnotes

1. https://www.ntsb.gov/investigations/AccidentReports/Reports/RIR2308.pdf#page=44
2. https://data.transportation.gov/stories/s/dsuf-xcni
3. Ibid.
4. https://www.law.cornell.edu/uscode/text/49/20101
5. https://www.law.cornell.edu/uscode/text/49/103
6. https://www.propublica.org/article/trains-crossing-blocked-kids-norfolk-southern
7. https://railroads.dot.gov/sites/fra.dot.gov/files/2023-05/Safety%20Advisory%202023-02.pdf
8. This does not include former Kansas City Southern properties and Canadian Pacific. The two separate entities do not appear on STB-1246. Once the two entities merged and became CPKC, the Carrier began reporting employment data to the STB in 2024 (https://www.stb.gov/reports-data/economic-data/employment-data/).
9. UP Total Track Miles 2015=51,439; 2024=52,372

About the Authors

Tony D. Cardwell has served as President of the Brotherhood of Maintenance of Way Employes Division of the International Brotherhood of Teamsters (BMWED-IBT) since 2022. Beginning his career as a track laborer on the Union Pacific Railroad in 1999 at 22 years old, President Cardwell has a long and distinguished record of Union service, first as Local Chairman of Local Lodge 1054 and then as a full-time Officer for the BMWED-IBT's Unified System Division in 2010. In 2018, Cardwell was elected to the principal officer position of General Chairman of the USD and remained in that position until he assumed the current office of BMWED-IBT National Division President.

About MTI

The Mineta Transportation Institute (MTI) is a university transportation center located within the Lucas Graduate School of Business at San José State University. MTI supports the advancement of safe, efficient, and innovative surface transportation through research, education, workforce development, and technology transfer.

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