BEFORE THE
FEDERAL RAILROAD ADMINISTRATION
WASHINGTON, D.C.

DOCKET NO. FRA-2018-0027: AUTOMATION IN THE RAILROAD INDUSTRY: REQUEST FOR INFORMATION

COMMENTS OF THE AMERICAN SHORT LINE AND REGIONAL RAILROAD ASSOCIATION

May 7, 2018

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May 7, 2018

ASLRRA represents approximately 500 Class II and Class III railroads in the United States, as well as numerous suppliers and contractors to the short line and regional railroad industry. ASLRRA thanks the Department of Transportation for inviting the comments of interested parties. The American Short Line and Regional Railroad Association (ASLRRA) on behalf of itself and its member railroads, submits the following comments in response to the Notice published by the Department of Transportation (DOT), Federal Railroad Administration (FRA) soliciting public comment on the request for information concerning automation in the railroad industry (March 29, 2018):

Comments

Thank you for the opportunity to provide information related to automation in the railroad industry. The ASLRRA believes that there are
fundamental principles upon which automation should be based. The first principle must be a framework which rests on safety and productivity. An approach that focuses on the continuous introduction of technologies that enhance both safety and productivity such as bridge inspection by sophisticated yet inexpensive drone technology, autonomous testing of track structure and autonomous dispatching without excessive government restriction, would accelerate the benefits of technology in the rail industry.

Safety will be improved through automation, as gradually the risk of human error is reduced, especially in the automation of roadway vehicles. It will also be important to consider vehicles interactions with grade crossings, including passive and private crossings, to ensure that grade crossing safety is improved as well.

Automation in the shipment of hazardous materials can increase productivity by reducing certain regulatory requirements. Currently, regulations require physical shipping papers to accompany hazardous materials shipments, even when the information could be shared more quickly electronically. Similarly, electronic means of communication could be used to report the accidental release of hazardous materials to the national response center. Regulating agencies within DOT should encourage increased automation in the transport of hazardous materials in the rail industry because it provides a more controlled environment in which to test
with non-hazardous materials, with a fixed right-of-way and relatively controlled access.

The optimal adoption of technology in transportation is contingent upon replacing the prescriptive approach and regulatory culture at DOT, which have not changed in decades, with a more nimble approach that is responsive to the quick and fundamental changes that are integral to the technology revolution. As an example, inspection intervals and requirements for locomotive, car and brake systems are relatively unchanged from the 1950’s and do not take into consideration the operations of small business railroads at all. Further, the approach that a railroad must request approval (49 CFR PART 235) to remove antiquated technology, such as signal systems from the 1930’s, which take years to process and are then denied, are further examples of the antiquated approach.

FRA’s waiver process can be complicated and economically burdensome without any benchmarks or timelines. In many instances, there is no clear process for application, acceptance or implementation. Similarly, Class 1 railroads are investing in technologies that will benefit the safety of the entire industry, such as automated car and brake inspections, which translate into improved quality of car conditions across the North American railroad system, but only to the extent the FRA permits its use in lieu of current requirements. FRA should develop a clear process with benchmarks, so railroads know what is expected to obtain a waiver regarding technology.
Due to the uncomplicated operations of short line railroads, FRA should seek partnerships with our industry to allow testing and investment in modern technologies.

DOT has embraced autonomous highway operations publicly by commenting on the enhancements to safety. However, FRA resists autonomous operations in railroads by issuing an NPRM regulating minimum human crew size, requiring a waiver process for autonomous track testing and the increased burden of ever more complex regulatory recordkeeping systems.¹

The regulatory landscape for the introduction of safety-critical technology must be level across all transportation modes. For example, autonomous trucks and autonomous trains should be under a similar safety regulatory framework or harmonized to a degree where modal deployment of technology is not bound or tilted to disadvantage the rail industry. This is particularly important given the current modal inequity for infrastructure funding.

For railroads to remain profitable and competitive in the transportation industry, they must be allowed to utilize modern technologies. If not, railroads will suffer and quite possibly disappear. The use of modern technologies is changing how people buy and transport goods. Change will come to the railroad industry; it is a matter of will this be a positive change

to enhance safety and improve efficiencies or will it be negative due to the inability of the regulatory environment to modernize and allow the development and use of these modern technologies.

ASLARRA has answered the questions posed by the FRA in the following appendix. We respectively submit for your consideration.

Respectfully submitted,

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Appendix

1. Short line railroads are monitoring the capabilities of automation technology and are interested in the potential cost savings once implemented. Most short lines would await the wide-scale availability of tested and proven technology that is accompanied by an appropriate depth of technical and user support.

2. The path to wide-scale development and implementation of autonomous rail operations is dependent on the pace of technology. Short line railroads will not be driving the development, but responding to new technologies as Class 1 railroads begin deploying and testing prototypes. Estimating a timeframe is out of short line industry control. Positive train control (PTC) has been the first step toward automation for many short lines. We anticipate that as PTC matures, that next-generation technologies develop and lead to further automation within our industry.

3. The short line railroad industry does not have an official definition of “autonomous operations.” As mentioned in the previous section, many companies are just now becoming familiar with autonomous train technology through the installation of PTC. We believe that there is value in developing a simple taxonomy, which would aid in the development of inevitable regulatory framework.
4. Government hurdles are currently creating barriers to adopting new cost saving technology. FRA should move forward with performance-based rather than prescriptive-based regulations. For example, short line railroads would like to use drones for all aspects of bridge inspection. Currently, 49 CFR 237 is written to address only human lead bridge inspection and does not directly comment on more efficient inspection technology of drones. We believe that humans should be participating in the inspection process by only inspecting the data obtained by the drone. This shift in workload would increase safety and efficiency, by saving time and money, and eliminating fall risks.

Initial capital cost is a significant barrier to short line railroads, which primarily consist of small businesses. FRA should consider a funding mechanism for short lines, which would allow our industry to test and implement technologies that are specific to our business needs, rather than relying solely on the Class 1’s to set the pace by developing technologies that match their business models.

5. Automation decreases crew costs which allows for the possibility of more frequent, shorter trains, which are less likely to suffer mechanical failure and result in few touch-points (i.e. hump yards, switching operations) enroute, which decreases dwell time
considerably. Automation would also reduce exposure to railroad employees while maintaining bridges. Fall risks during bridge inspections could be eliminated by using drones and other fully autonomous systems.

An automated railroad is a more predictable railroad, in that automation will enhance transparency, productivity, and efficiency, allowing greater visibility to the customer regarding shipment location. Efficiency gains can be significant where block lengths can safely be shortened, decreasing train spacing.

6. Safety, enhanced productivity, positive environmental impacts and noise reduction would be achieved through altering existing regulations without altering existing technology. For example: noise reduction could be achieved by relaxing the requirement of air brake tests after four hours of continuous air supply found in 49 CFR 232. Similarly, 49 CFR 235 mandates that FRA determine which signal systems are to be maintained. Money spent by a short line to maintain a signal system, that may not be needed, could be spent on track investments to improve safety and productivity.

7. Other railroad participants like suppliers and manufacturers can support short line railroad automation efforts by collaborating and fostering an environment of openness in data sharing. Short lines are
open to assisting other industry participants with beta testing and early deployment.

8. Australia and other countries outside of North America are running automated trains and deploying automated railroad technology at a pace far ahead of the United States. Countries outside of North America, who are deploying and testing automated railroad technology have a greater level of government investment and lower ROI expectations/requirements. One-man crews are also the norm in many other parts of the world due to the accessibility of automated technology. There are many factors unique to the United States that make automation more challenging, including: the vast size of the rail network in the United States, varying topographies and climate, a greater number of at-grade crossings, and increased switching.

9. Automated railroad technology could increase rail safety by assisting in adherence to track speed, reducing fall risks and eliminating other common human errors.

10. Many class 1 railroads follow the NIST framework and therefore evaluate any type of current and future technology against this framework and their own risk matrix. This type of framework is not

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2 This voluntary Framework consists of standards, guidelines, and best practices to manage cybersecurity-related risk. The Cybersecurity Framework’s prioritized, flexible, and cost-effective approach helps to promote the protection and resilience of critical infrastructure and other sectors important to the economy and national security. [https://www.nist.gov/cyberframework](https://www.nist.gov/cyberframework)
something frequently used by or accessible to most smaller class 2 and class 3 railroads. Smaller railroads would need financial and technical assistance in order address cybersecurity and the risks inherent with the adoption of technology.

11. Again, the class 1 railroads have safety and security risks adequately handled. Short line railroads will require financial and technical assistance when wide scale deployment of new technology is required. Most short lines do not have a framework in place to assess their current level of risk when it comes to new technology. Templates and suggested frameworks should be made available for short line railroads.

12. Short line railroads will require that any new technology be thoroughly tested in either lab situations or through pilot testing in the field. The Class 1 railroads will be the leaders of this testing, which will result in a much more gradual integration of new technology into short line operations.

13. Malfunction of technology or the ability for a bad actor to take over a train remotely are issues that could arise when using automated technology. DOT should coordinate with state and local agencies and railroads, because safety is everyone’s responsibility. Automation and technology should be able to improve safety by creating further
redundancy and additional prompts to increase public awareness. We are also concerned with how our current systems are interacting with technology that state and local entities are installing to control traffic around grade crossings. Railroads and governmental entities need to communicate once planning for a grade crossing project begins. Once these systems begin to coexist and work together, we can minimize grade crossing accidents.

14. The short line railroads plan to ensure safety and security from cyber risks by using technology, training, and by creating greater awareness of such issues within their companies. The majority of successful cyberattacks are due to employees not realizing that they are leaving the door open to an attack or opening the door for an attacker. As mentioned before, the Class 1 railroads are using the NIST framework to do this along with internal governance that involves review committees. Most short lines do not have the internal infrastructure to address cyber risks and would need to utilize a third-party IT expert or consultant. IT experts are in high demand, which means they come with a high price and little room for negotiating. The lack of IT expertise in the short line industry would be a potential roadblock for addressing cyber-attacks and security. The financial strain placed upon these small businesses would require funding assistance.
15. No Comment

16. Financial support to expand cabling, cellular coverage, and high-speed Wi-Fi access would assist in deploying new technology. Greater use of sensor technology on assets would help with integration as well. Smart grade crossings and the complexities of involving railroads, government entities, commercial motor vehicles and passenger vehicles should be a DOT priority. As technology focuses more and more on autonomous operations, human and machine interactions with grade crossings will change dramatically.

17. Access to land where the rail infrastructure resides is important to scale and upgrade existing infrastructure. Also, there are data collection points that can be utilized (cabling and communication channels). Utilization of wayside infrastructure to equip and implement PTC within the rail industry will assist the further development of autonomous operations.

18. At a minimum, the adoption of these technologies will create more analytical and potentially fulfilling jobs (problem solving vs. data entry/mundane). In some cases, it may decrease the workforce and drive the evolution of certain jobs. Short lines are facing a shrinking pool of qualified workers and this shift in workforce could shrink the pool even further. As technology continues to develop, short line staff
will need to be trained. As small businesses, these small railroads will need funding and other technical assistance to constantly train and retrain as technology requirements change.

19. Please refer to answer 18.

20. We anticipate that there will be significant training needs with the adoption of new technology. Employees would need to learn the new technology and be taught how to analyze and troubleshoot issues. Again, with short line railroads being small businesses, funding assistance will be needed to implement new training programs.

21. No Comment.

22. Current regulations do not allow the use of certain technologies, e.g., autonomous rail or track testing. This has required railroads and suppliers to apply for waivers to utilize the technology. The waiver process can be long and complicated without a clear view of the outcome. In some instances, the technology has improved before the waiver is ever denied or approved. Standards need to be developed with a clear and simple acceptance criteria and FRA/DOT needs to move efficiently forward for approval and/or allowance of these technologies. The FRA process to obtain waivers tends to be lengthy and lacks transparency. FRA should review the composition and operation of
the safety board to ensure that it is staffed by individuals that understand how railroads operate and provide greater transparency. FRA has yet to take any meaningful deregulatory action that would assist in the adoption of autonomous rail vehicles and should promptly do so.

23. The electronic recordkeeping requirements in 49 CFR 213, could be accomplished by off-the-shelf programs that small railroads could use, which provide a digital signature, date and time stamp. The railroad could develop an internal process for a unique login and delivery of the inspection through an email to a secured server. Small railroads are reluctant to use these systems due to lack of direction, input and acceptance by FRA.

Electronic recordkeeping complication by regulation was realized by FRA regarding 49 CFR 228. FRA issued a NPRM August 24, 2015 to simplify the requirements in which stated, “In general, the current regulations require covered service employees whose hours are recorded to sign the record by hand (the traditional, manual system) or ‘certify’ the record using a complex computerized system (an electronic system). FRA proposes to allow railroads with less than 400,000 employee hours per year, and contractors and subcontractors

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providing covered service employees to such railroads to use an automated system, in which employees apply their electronic signatures to the automated records, which are stored in a railroad computer system." ASLRRA filed comments supporting FRA’s actions. To date, the final rule has not been published. FRA should publish the final rule.

Electronic recordkeeping systems that have been utilized by multiple small railroads for years have encountered a non-regulatory exception from the field. FRA will not provide direction to the field. This lack of direction can cause railroads and suppliers to modify the system to continue use, which requires increased cost for software upgrades and retraining of employees. This lack of direction creates a large economic impact.

Regarding 49 CFR 236, Subpart H, FRA notified suppliers these systems were governed by Subpart H. In one instance, a supplier spent over $1,000,000 in seven years to obtain a waiver to utilize the system, which was already in use by short lines.

The FRA needs to simplify and streamline regulations and processes for modern technology approval and field application. FRA should take the lead in embracing technology, recognizing small railroads as an asset for utilization and testing through pilot programs.
24. Implementation of PTC is the largest industry wide project related to railroad autonomy to date. We anticipate that other autonomy focused technologies will emerge as wide scale deployment of PTC occurs. We would like FRA to provide financial and technical assistance as these technologies emerge and develop.

25. All data created within the railroad industry is relevant to future research needs. Short line railroads rely on state and federal grants to obtain data and update systems. A funding mechanism to allow smaller railroads to participate in data collection would be beneficial to all classes of railroads.