



*A bold voice for transportation workers*

May 7, 2018

Peter Cipriano  
Special Assistant to the Administrator,  
Federal Railroad Administration  
1200 New Jersey Avenue, SE  
Washington, DC 20590-0001

**RE: Automation in the Railroad Industry  
Docket No. FRA-2018-0027**

Dear Mr. Cipriano,

On behalf of the Transportation Trades Department, AFL-CIO (TTD), I am pleased to provide comments on the Federal Railroad Administration (FRA)'s solicitations for information related to the future of automation in the railroad industry. By way of background, TTD consists of 32 affiliate unions representing workers in all modes of transportation, including workers across all crafts in the railroad industry who will be impacted by automation. We therefore have a vested interest in the notice.<sup>1</sup> TTD also endorses the comments of the International Association of Sheet Metal, Air, Rail and Transportation Workers, Transportation Division (SMART-TD), a TTD affiliated union.

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<sup>1</sup> A complete list of TTD affiliate unions is attached. TTD's Rail Labor Division includes: American Train Dispatchers Association; Brotherhood of Railroad Signalmen; International Association of Machinists and Aerospace Workers; International Brotherhood of Boilermakers, Iron Ship Builders, Blacksmiths, Forgers, and Helpers; International Brotherhood of Electrical Workers; National Conference of Firemen and Oilers, SEIU; Sheet Metal, Air, Rail and Transportation Workers; Transportation Communications Union/IAM; Transport Workers Union of America; International Association of Sheet Metal, Air, Rail and Transportation Workers, Transportation Division; UNITE HERE!

Transportation Trades Department, AFL-CIO  
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Larry I. Willis, President / Greg Regan, Secretary-Treasurer



Through the notice, FRA requests information on railroad automation, and how this technology may impact the railroad industry going forward. This request encompasses the entirety of the railroad industry, and seeks input on the impacts of automation on duties performed by operating and non-operating crafts of workers.

While DOT and FRA have made clear their interest in promoting these technologies, the agencies must ensure that any actions undertaken to introduce automation does not jeopardize safety or undermine the good middle-class jobs connected with rail commerce. Unleashing unsafe, untested and unreliable technology, whether in a locomotive, on a signal or dispatch system, or elsewhere, creates untenable risks on a national railroad network that moves millions of people and billions of tons of freight each year. Additionally, TTD continues to believe that as the federal government takes actions to promote autonomous technology, it should promote labor practices which seek to address any job loss and displacement that occurs in these industries. Regardless of the appeal of these technologies, they must not be deployed at the expense of safety or the railroad workforce. Given the scope and potential impact of automation in the railroad industry, FRA should consider a number of critical issues discussed below.

#### **Assistance, Not Replacement**

For as long as it has existed, the railroad industry has continually pursued and deployed technological advancements which alter the nature of work in the sector, from the invention of the steam locomotive to electrified rail, to the integration of computers. Rail unions have stood at the forefront of the deployment of these technologies, working to perfect and implement those that improved safety and service, and urging caution against those that did not. TTD and its rail affiliates do not oppose automated technology which can assist railroad workers in better performing the multitude of tasks required to make a railroad operate. However, we believe that the human factor is a key element of this performance, and urge extreme caution towards any technology which purports to entirely replace the skill and knowledge of railroad workers. As an example, rail labor has championed the adoption of Positive Train Control (PTC) as a valuable tool in promoting rail safety and preventing accidents. We have also been clear that PTC is just that – a tool, and not a replacement for trained, qualified human operators, and FRA has agreed. In 2009, FRA released its Final Report on the agency’s Task Analysis for Locomotive Engineers, in which it stated “Train crews must avoid too much reliance on the new train control technologies. In particular, it is important to continue to run the trains without the PTC system activated. Therefore, if the system ever fails, the engineer will still be able to operate the train safely”. Automation technology should be viewed similarly, as an augmentation, not a replacement.

On a related note, we believe strongly that now is the time to ensure that trains are fully crewed with a qualified and trained engineer and conductor. These workers are the most powerful safety tool aboard a train, and should not be replaced with unproven autonomous technology.

#### **Automation Technology Challenges**

As mentioned, FRA must not allow the zeal for new technology to supersede the agencies safety mission. In determining what technology truly improves safety, and when it is appropriate, FRA should consider the following items.

While locomotives, alongside signaling and dispatching technologies differ immensely from those found in motor vehicles, many of the same automation problems present themselves. For example, as long as a human operator for any type of railroad equipment is present, that individual will be required to interact with the technology installed. This interaction, known as the human-machine interface (HMI) has a substantial impact on safety, and on whether the technology ultimately offers meaningful improvements. In any situation in which autonomous technology is present, FRA must ensure that HMI systems are designed to maintain awareness and engagement to best facilitate cooperation between machine and human operator. FRA must also ensure that data exchanged between the employee and technology must not cause interruptions, distractions or overload the employee's ability to synthesize and process information. A failure to do will have dangerous results for the railroad.

We also note FRA's reference to the Rio Tinto Group, and its tests of an autonomous freight train in Australia. While Rio Tinto's train may fulfil its particular needs, we caution FRA against the assumption that its operation is easily transferable to U.S. operation. The Rio Tinto train currently transverses track in a relatively remote area, with minimal grade crossings or other obstacles. Conversely, U.S. rail operations frequently have far more complex routes. For example, 25 percent of all U.S. freight trains, and half of all intermodal trains that ferry shipping containers and trailer trucks, pass through the Chicago area, most of it at Chicago's 75<sup>th</sup> Street Corridor hub. At this location, operations must contend with well over 100 other trains on any given day, and slow, careful movement for as long as 30 hours.<sup>2</sup> The technical and engineering capabilities required to navigate this challenge far outpaces the needs of Rio Tinto's operations. Any technology which cannot handle such conditions is technology which is not ready for U.S. railroads.

Similarly, railroad operations in an extremely limited or test setting cannot hope to replicate the realities of operating across the nation's 233,000 miles of railroad track. As seen with the deployment of PTC and the spirit of NHTSA's now-withdrawn Vehicle-to-Vehicle and Vehicle-to-Infrastructure communication rulemakings, interoperability across equipment and trains is a feature of upmost importance. FRA must determine how it plans to regulate a system in which different operators may propose to develop and install autonomous technology which is inoperable with trains and equipment currently installed, or that will be installed in the future. Relatedly, unlike motor vehicles which are frequently replaced every 10-15 years, locomotives and train cars are frequently built with lifespans of 30-50 years. Control and signaling systems can also be designed to function for prolonged periods of time. Mandating standardization and interoperability may prove difficult due to the realities of equipment lifecycle management in the railroad industry, and a lack of standardization is likely to produce unnecessary risks and confusion.

### **Regulatory Challenges**

FRA also requests information on regulatory challenges posed by automation in the railroad industry. While we have touched on a number of regulatory items above, there are additional regulatory requirements that cannot be met with autonomous technology, and which must be preserved regardless of what may be deployed on the nation's railroads. These include regulations which set requirements for employees to protect train passengers in an emergency (49 CFR § 239),

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[http://www.emap.illinois.gov/documents/10180/614540/08.23.17\\_As+The+Nations+Rail+Hub+Chicago+Is+An+Expensive+And+Dangerous+Bottleneck+BETTER+GOV.pdf/7275f3d5c-4895-2d22-3906-06218c1b4fd0](http://www.emap.illinois.gov/documents/10180/614540/08.23.17_As+The+Nations+Rail+Hub+Chicago+Is+An+Expensive+And+Dangerous+Bottleneck+BETTER+GOV.pdf/7275f3d5c-4895-2d22-3906-06218c1b4fd0)

that handle grade crossing activation failures in order to protect both the train and road users (§ 234.105) and provide for the inspection and repair of signal systems (§236). In all of these circumstances, there may be ways in which technology can assist the railroad employee in fulfilling their requirements, but the human factor element represented by the skills and knowledge of qualified and trained workers is essential to the achieving the safety objective of the regulation.

Additionally, as long as human operators work on trains and in railroads, they must not be unduly subjected to long shifts and crippling fatigue simply because some duties can be automated. To this end, we call on FRA to preserve critical hours of service regulations, regardless of technological progress. The installation of autonomous technology in any facet of the railroad sector does not eliminate the need for workers to be well rested, or the necessity for dignified working conditions.

FRA should also give consideration to the existence of circumstances in which automation may never be appropriate. Rail transportation of certain hazardous materials, as an example, represents such an extreme risk to life and environment that removing the safety benefits of a human operator and other railroad employees would be malfeasance. TTD expands on this issue in our comments filed to Docket No. PHMSA-2018-0001.

While somewhat beyond the scope of this proceeding, we also urge FRA to view with caution any attempt to carry out critical functions like track inspection with the use of unmanned aerial vehicles (UAS). From the perspective of FRA, we have serious concern about the ability of a drone to replicate the capabilities of a human inspector, but we also note that petitions filed with FAA contain alarming requests for exemptions from federal regulation. Any effort to integrate commercial UAS into the National Airspace System must be done through measured regulation, not patchwork exemptions which allow UAS to fly in contradiction to prohibitions on flight beyond visual line of sight, at night, and over people, endangering aircraft, rotorcraft, their occupants and individuals on the ground.

### **Job Displacement and Worker's Issues**

As FRA contemplates actions to ease the entry of autonomous technology into the railroad sector, it must recognize the potential impact of this technology on job dislocation and unemployment. FRA, and all DOT modal administrations must ensure that if any efforts are undertaken which promote autonomous technology, equal efforts are taken to reduce the effects on the impacted workforce.

Questions of if, when, and how many workers will ultimately be impacted by autonomous technology in the railroad industry will dictate the precise level and depth of employment disruption and dislocation. It is imperative that policymakers at FRA, DOT and in Congress take actions in advance to mitigate these effects before they occur, not in the aftermath. We are too familiar with the impacts of waiting too long – research shows that U.S. workers who were displaced from employment face substantial and long-lasting difficulties in the labor market, including elevated levels of unemployment, lowered labor force participation, and long-term wage losses.

DOT, in conjunction with Congress must seize this opportunity to act, and should explore active labor market programs and financial support, before these technologies have the chance to imperil worker's livelihoods. FRA and DOT should consider training and re-training programs to accommodate both displaced workers and to fill new opportunities in the sector. This training should be continuous and proactive in order to best serve rail workers by preparing them for an easier transition to other jobs before, not after, their current job is automated.

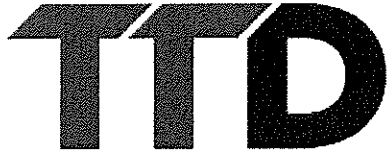
As this technology is further developed, FRA must ensure that any technology deployed on the nation's railroads only increases current levels of safety. This can be best accomplished by viewing automation technology as tools to augment, not replace, the current skilled and qualified workforce. In as much as the eventual use of automation technology impacts the livelihoods of railroad workers, we strongly urge FRA and DOT to address job displacement issues.

We thank FRA for the opportunity to comment on these dockets and look forward to working with the Agencies on autonomous vehicle issues going forward.

Sincerely,

A handwritten signature in cursive script that reads "Larry I. Willis".

Larry I. Willis  
President



**Transportation Trades Department, AFL-CIO**  
*A bold voice for transportation workers*

***TTD MEMBER UNIONS***

Air Line Pilots Association (**ALPA**)  
Amalgamated Transit Union (**ATU**)  
American Federation of Government Employees (**AFGE**)  
American Federation of State, County and Municipal Employees (**AFSCME**)  
American Federation of Teachers (**AFT**)  
Association of Flight Attendants-CWA (**AFA-CWA**)  
American Train Dispatchers Association (**ATDA**)  
Brotherhood of Railroad Signalmen (**BRS**)  
Communications Workers of America (**CWA**)  
International Association of Fire Fighters (**IAFF**)  
International Association of Machinists and Aerospace Workers (**IAM**)  
International Brotherhood of Boilermakers, Iron Ship Builders,  
Blacksmiths, Forgers and Helpers (**IBB**)  
International Brotherhood of Electrical Workers (**IBEW**)  
International Longshoremen's Association (**ILA**)  
International Organization of Masters, Mates & Pilots, ILA (**MM&P**)  
International Union of Operating Engineers (**IUOE**)  
Laborers' International Union of North America (**LIUNA**)  
Marine Engineers' Beneficial Association (**MEBA**)  
National Air Traffic Controllers Association (**NATCA**)  
National Association of Letter Carriers (**NALC**)  
National Conference of Firemen and Oilers, SEIU (**NCFO, SEIU**)  
National Federation of Public and Private Employees (**NFOPAPE**)  
Office and Professional Employees International Union (**OPEIU**)  
Professional Aviation Safety Specialists (**PASS**)  
Sailors' Union of the Pacific (**SUP**)  
Sheet Metal, Air, Rail and Transportation Workers (**SMART**)  
SMART-Transportation Division  
Transportation Communications Union/ IAM (**TCU**)  
Transport Workers Union of America (**TWU**)  
**UNITE HERE!**  
United Mine Workers of America (**UMWA**)  
United Steel, Paper and Forestry, Rubber, Manufacturing, Energy, Allied Industrial and Service  
Workers International Union (**USW**)

*These 32 labor organizations are members of and represented by the TTD*

