



*A bold voice for transportation workers*

July 3, 2017

Ms. Kim Toone  
Information Collection Clearance Officer  
Office of Information Technology  
Federal Railroad Administration  
1200 New Jersey Avenue, S.E.  
Washington, DC 20590

**RE: Proposed Agency Information Collection Activities: Autonomous Locomotive Technology**  
**Docket No. FRA-2017-0002-N-12**

Dear Ms. Toone,

On behalf of the Transportation Trades Department, AFL-CIO (TTD), I am pleased to provide comments on the Federal Railroad Administration's (FRA) Information Collection Requests (ICR) regarding locomotive automation. By way of background, TTD consists of 32 affiliate unions representing workers in all modes of transportation including those employed in the passenger and freight rail industries who will be impacted by automated train technology.<sup>1</sup> We therefore have a vested interest in this proceeding. Additionally, TTD strongly endorses the comments filed by the Transportation Division of the International Association of Sheet Metal, Air, Rail and Transportation Workers (SMART-TD), a TTD affiliated union.

Through these requests, FRA seeks to conduct two studies regarding automated locomotive technology. The first study proposes to identify and evaluate the potential for human error associated with automated systems in the locomotive cab, and seeks to identify training, operational procedures, or automation design standards that will improve safety. The second study proposes to design and evaluate a prototype locomotive operating mode with automated throttle control. FRA states that the results of that study will be used to assist the Federal government in recommending display design standards to manufacturers. To generate this data, the agency proposes that engineers will be tested in locomotive simulators.

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<sup>1</sup> Attached is a complete list of TTD's 32 affiliate unions.

**Transportation Trades Department, AFL-CIO**

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Edward Wytkind, President / Larry I. Willis, Secretary-Treasurer

TTD and its rail affiliates continue to strongly support efforts by FRA to ensure that any new locomotive technology is held to high safety standards before it is permitted on the nation's railways. To this extent, we support the agency in proactively identifying technical and safety challenges that come with new technologies. However, the two studies proposed by the information collection requests are significantly flawed, and in their current format may not generate data that contributes to DOT's strategic goal of safety. Our concerns are discussed below.

### **Study Design**

Both collection requests proposed by FRA intend to gather data from simulated locomotive exercises. However, it is not made clear from the "Supporting Statements" documents that the studies are designed to simulate the operation of a locomotive in a way that comes close to reflecting reality. If FRA intends to use the information collected to inform manufacturing and regulatory standards, it should ensure that these studies collect information that, in as much as is possible on a computer simulator, reflects the real life working conditions of locomotive operators. A failure to do so will result in the collection of information that may paint an inaccurate picture of the success and shortfalls of autonomous technology.

In designing these studies, FRA must consider the effects of fatigue. Particularly in the freight rail sector, engineers and conductors work long shifts on unpredictable schedules, often without adequate sleep in between. A simulated locomotive experience under unrealistic conditions like defined scheduling after a full night's sleep will not generate data that provides FRA meaningful insight into the real world operation of locomotives. FRA must observe not just how the individual performs in the simulator under the most optimal conditions, but also in the suboptimal conditions that they work in every day.

Similarly, FRA should consider the length of an engineer or conductor's shift versus the length of the simulator experience. In the first study, FRA is seeking to collect data on human error caused by automation technology. One of the most discussed automation-caused errors are those resulting from distraction or disengagement. This is the concept that an operator may have difficulty focusing if they are not frequently asked to perform operational functions, and how this ability would be affected over time. An engineer's ability to focus during a short simulator experience is not comparable to the same conditions that the engineer may face seven hours into a ten hour shift. To this point, FRA has not explained in the ICR how it plans on accounting for these variables. The agency must address these issues in the final study design.

The collection requests as published do not detail the simulator conditions that will be included. We recommend that FRA ensure that the simulations cover both day and night conditions, differing weather patterns, as well as both passenger and freight operations. The inclusion of these conditions may assist FRA in generating information that is more representative of the impacts of the proposed technology. Additionally, we note that FRA plans to contact labor unions that represent locomotive operators to find participants for the studies. We recommend that FRA also discuss with these unions the conditions and situations that should be included, as their members are unquestionably the most knowledgeable about real life operating conditions. Their input will assist FRA in ensuring that it has made necessary considerations in simulation design.

The above recommendations will support FRA in designing studies that somewhat mirror the actual operations of a locomotive. However, we caution that exercises conducted in a simulator cannot fully replicate real life operations, and that the information gathered through these studies should not be viewed as fully transferable to actual operations. The agency must consider this as it seeks to apply the data to future safety and design requirements.

### **Study Participants**

FRA states in the background information for both studies that because the research is not a survey, it does not need to propose a sampling method. Given that FRA intends to use this data to develop regulatory and safety standards, we believe that more consideration should be given to the sample, or group of engineers, to be tested in the two studies. For example, both studies call for 15 teams of two engineers each to participate in the simulator. This incredibly small sample size will be subject to a number of sampling errors and may struggle to generate statistically significant conclusions. We recommend that FRA increase the total amount of engineer teams in order to collect more accurate data. We also recommend that of the engineers selected for participation, that FRA include both freight and passenger rail engineers, as well as engineers from different railroads and geographic locations. By doing so, FRA can increase the quality of its data while decreasing the impacts of sampling biases.

### **Design and Evaluation of a Robust Manual Locomotive Operating Mode**

In the second collection, FRA proposes a study that will ultimately gather data on the operation of a prototyped automated throttle control system. FRA proposes to test both a group of freight rail engineers (experienced group) and a group of university students (apprentice group). We are concerned that a comparison of the performance of the two groups on one isolated element of locomotive operation may be used to overstate the readiness of automotive locomotives more generally. The ability of General Electric to design an automated system which requires less skill than current systems should not be interpreted to mean that automated locomotives are nearing deployment, or that FRA can determine that operating a locomotive without a skilled engineer in the cab is appropriate, or even possible.

TTD and its affiliated rail unions urge FRA to ensure that the collection of any data concerning autonomous locomotive technology be held to the highest standards. This is critical given that FRA may use this data, and data collected through other requests, to inform the future of railroading. Similarly, FRA must remain aware of the limitations of the data, particularly in light of the issues discussed above.

We appreciate the opportunity to comment on FRA's proposed Information Collection Requests, and encourage the agency to consider our concerns as it moves forward with this collection.

Sincerely,

A handwritten signature in black ink, appearing to read 'Edward Wytkind', with a stylized, looping flourish at the end.

Edward Wytkind  
President



**Transportation Trades Department, AFL-CIO**  
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***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***

