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May 7, 2018

Raymond P. Martinez
Administrator
Federal Motor Carrier Safety Administration
1200 New Jersey Ave., SE
Washington, DC 20590

Drue Pearce
Deputy Administrator
Pipeline & Hazardous Materials Safety Administration
1200 New Jersey Ave., SE
Washington, DC 20590

Re: Federal Docket IDs:

- FMCSA-2018-0037: Request for Comments Concerning Federal Motor Carrier Safety Regulations (FMCSRs) Which May Be a Barrier to the Safe Testing and Deployment of Automated Driving Systems-Equipped Commercial Motor Vehicles on Public Roads
- PHMSA-2018-0001: Request for Information on Regulatory Challenges to Safely Transporting Hazardous Materials by Surface Modes in an Automated Vehicle Environment

Dear Administrator Martinez & Deputy Administrator Pearce:

On Monday, March 26, the Federal Motor Carrier Safety Administration (FMCSA) asked for comments regarding required changes to the Federal Motor Carrier Safety Regulations (FMCSRs) to facilitate the testing and implementation of autonomous vehicle technology in commercial motor vehicles (CMVs).[1] Three days later, the Pipeline & Hazardous Materials Safety Administration (PHMSA) issued a similar corrected request for information regarding necessary changes to the Hazardous Materials Regulations (HMRs) necessary for the implementation of the same technology covered by the FMCSA Notice.[2] The National Tank Truck Carriers, Inc. (NTTC) appreciates both agencies' outreach and efforts to solicit public input.[3] NTTC's members own and operate CMVs that transport bulk products by highway. Our membership does not design or produce such products, but we are experts in their use. Accordingly, we cannot speak to technical issues. But, we believe that we can present common

[1] 83 Federal Register 58 REQUEST FOR COMMENTS CONCERNING FEDERAL MOTOR CARRIER SAFETY REGULATIONS (FMCSRS) WHICH MAY BE A BARRIER TO THE SAFE TESTING AND DEPLOYMENT OF AUTOMATED DRIVING SYSTEMS-EQUIPPED COMMERCIAL MOTOR VEHICLES ON PUBLIC ROADS 12933 ("FMCSA Notice").

[2] 83 Federal Register 61 Request for Information on Regulatory Challenges to Safely Transporting Hazardous Materials by Surface Modes in an Automated Vehicle Environment 13464 ("PHMSA Notice").

[3] The National Tank Truck Carriers has represented the tank truck industry before Congress and various federal agencies since its founding in 1945. NTTC's mission is to champion safety and success in the tank truck community through advocacy and education. NTTC also operates Tank Truck University, an in-house educational program designed to disseminate best practices in safety, tank truck operations, and leadership to all individuals working in the segment, including drivers, dispatchers, mechanics, and management all the way to the C-suite. NTTC's membership is comprised of over 600 companies that specialize in bulk transportation services by cargo tank throughout North America. The tank truck industry generates roughly 6% of all truck freight revenue, but that represents 30% of all truck freight in terms of tonnage due to the heavy nature of the liquid bulk products we handle.

sense solutions that will facilitate the implementation of automated vehicle technology while preserving safety on the highways for the passenger vehicle and CMV drivers that must interact with increasingly computer-operated vehicles.

NTTC believes that FMCSA and PHMSA can allow for these vehicles while remaining true to their statutory missions by following the following recommendations:

- A vehicular Hippocratic Oath: First, do no harm to existing drivers and vehicles;
- Don't change what works: Existing rules for human drivers should remain in place;
- Place Responsibility Responsibly: Technological changes provide an opportunity to examine which parties can now most efficiently ensure safe transport and place responsibility appropriately;
- Move to a performance-based, operator-neutral perspective: While maintaining existing rules for humans, when possible, the FMCSRs and HMRs should be updated to performance standards that encapsulate the current rules for humans while holding automated vehicles driving (or assisting in driving) to an equivalent safety standard; and
- Safe is Better Than Sorry: Ensuring the autonomous vehicle's security systems are robust enough to prevent them being used as weapons by terrorist organizations or enemy nations.

First, Do No Harm

Highway transportation in America today is among the safest experiences it has ever been. According to FMCSA's *2017 Pocket Guide to Large Truck & Bus Statistics*, in 2015, there were just over 12 million registered CMVs on the highways, making up 4.6% of all vehicles on the road.[4] Yet, CMVs traveled almost 10% of all miles on the roads that year.[5] Some 88,000 of those carriers transport hazardous materials.[6] Despite that, hazardous materials inspections continue to boast the lowest out-of-service (OOS) rate of any type of inspection.[7] None of the top 20 most-cited violations are hazardous materials violations.[8] And, the most frequently-cited hazardous materials violation, 49 C.F.R. § 177.834A – Package Not Secure in Vehicle, was only cited once for every three times the 20th most-cited violation was charged.[9]

Hazardous materials transportation is safe. Shippers, carriers, trailer manufacturers, and packaging manufacturers all work diligently to ensure that the over 900,000 hazardous materials shipments that move by highway every day are transported as safely as possible.[10] Former Chairman Lee Miller stated at our Annual Meeting, "Safety is the number one priority for all fleets, all the time."[11]

And it needs to remain so. Accordingly, as FMCSA examines the FMCSRs and PHMSA examines the HMRs, each organization should recognize how each requirement contributes

[4] Page 7
[5] *Id.*
[6] *Id.* at 10.
[7] *Id.* at 20.
[8] *Id.* at 23.
[9] https://ai.fmcsa.dot.gov/SafetyProgram/spViolation.aspx?rpt=RDHV
[10] Paul W. Rankin TESTIMONY BEFORE THE SUBCOMMITTEE ON RAILROADS, PIPELINES, & HAZARDOUS MATERIALS 2 (accessed online at https://transportation.house.gov/uploadedfiles/2017-04-26_-_rankin_testimony.pdf on May 7, 2018) (April 26, 2017).
[11] Lee Miller NTTC CHAIRMAN'S REMARKS AT NTTC ANNUAL CONFERENCE & EXHIBITS (April 17, 2018).

towards highway safety. Recognizing not just *what* those requirements are but *why* those requirements are what they are will go miles towards ensuring that any changes considered will truly enhance highway safety. For each of the FMCSRs and the HMRs, an agency staff person should be able to articulate, in writing, "How does this regulation contribute to highway/hazardous materials transportation safety?"[12] Only by answering this question can the agencies consider the questions that follow: "Is this regulation working correctly today?" "Have we placed compliance responsibility on the proper party?" and, "Can this regulation be drafted as a performance-based standard or do we need to articulate specific, different standards for humans and machines?"

In some cases, this will be obvious. For instance, FMCSA's prohibitions on the use of drugs and alcohol clearly do contribute to highway safety.[13] PHMSA's adoption of those rules into the HMRs via reference is also clearly a strong plank in a safety platform. But, those rules are meaningless when applied to a computer.

Don't Change What Works

As we noted above, highway safety, especially hazardous materials transportation safety, is experiencing one of its best periods.[14] The current system works. New technologies may be able to improve safety. Indeed, PHMSA notes, "Automated Driving Systems…have shown the capacity to drive and operate motor vehicles, including commercial motor vehicles, as safely and efficiently as humans, *if not more so*."[15] But, as the new entrants, the burden is on these technologies to bend to an already safe system. There is a place for new technology after it proves itself.

As FMCSA and PHMSA examine and update their rules, they must focus on ensuring that these new technologies integrate with existing systems with as little danger to existing vehicles as possible. While there may be a day in the future where all vehicles operate at Level 5 autonomy and are connected to each other and to smart roadways through wireless sensors, that day is far off. And, until that day, new technology needs to be interoperable with existing models. Let the current safe practices prevail and be improved by new developments rather than forcing current safe operators, many who have decades of accident-free miles, to change their ways.[16]

Place Responsibility Responsibly

Our previous comment is not to say that there is no place for change. Autonomous vehicles mean change and that means changing mores. While the first automated vehicles are entering service, they must bend to the needs of highway users overall. But, as time goes by, it

[12] Yes, we are aware there are thousands of regulations. But, the changeover from fully human-operated vehicles is a paradigm shift that requires this level of attention. Only this process can ensure that innocent lives are not lost that could otherwise have been saved.

[13] 49 C.F.R. §§ 383.51(b) (providing graduated penalties from a one-year to a lifetime commercial driver's license suspension for operating a CMV under the influence of alcohol or a controlled substance), 391.15(c) (2) (providing that driving under the influence merits license suspension), 392.4 (prohibiting the use of controlled substances while operating a CMV), and 392.5 (prohibiting the use of alcohol while operating a CMV).

[14] *See* n. 4-11, *supra*.

[15] PHMSA Notice at 13464 (emphasis added).

[16] *Accord* American Trucking Associations ATA-ART CAPTAINS 2017 (accessed online at http://www.trucking.org/article/art-captains-2017 on May 7, 2018).

will become apparent that there are existing responsibilities that need to change. FMCSA and PHMSA should be cognizant of these changes today and plan for them in advance.

For instance, 49 C.F.R. 177 Subpart B governs the loading and unloading of hazardous materials by highway.[17] Presently, the HMRs place responsibility for the loading and unloading of hazardous materials on both the offeror[18] (or consignee[19]) and the carrier.[20] The U.S. Chemical Safety & Hazard Inspection Board has already recommended that consignees of bulk hazardous materials shipments exercise increased responsibility over unloading at their facilities.[21] They did so because the consignee is the party that can, with the least effort and for the least cost, identify where the shipment should be unloaded safely.[22] Today, the facility employee can direct the driver where to unload a truck. But, in the distant future when the vehicle has no driver at all, facility employees will be the only ones available to do so.[23]

FMCSA has designated comments about the proper liability rules as outside the scope of this notice.[24] The agency rightfully notes that assigning liability in vehicular accidents is the provenance of state legislatures and court systems.[25] However, the FMCSRs and the HMRs rely on underlying assumptions regarding tort liability to place responsibility. For instance, the strict liability rules governing the transportation of explosives are a baked-in assumption in the transportation of all Class 1 materials.[26] State laws governing speeds, rights of way, and routing will all affect the best possible implementation of the FMCSRs and HMRs that incorporate autonomous technology.

Therefore, both agencies need to work with the National Highway Transportation Safety Administration, state legislatures (either directly or through their proxies such as the National Council of State Legislators), insurance companies, original equipment manufacturers, carriers, shippers, drivers and other interested parties to ensure that liability is placed properly. Today, traffic liability is the responsibility of the operator of a vehicle. But, manufactured articles that operate improperly are generally the responsibility of their producer, not their user.[27]

The agencies need to work closely with all of these groups, think about these questions, and develop the answers that produce the most efficient regulatory scheme possible. Despite touching on the areas declared "off limits" any changes to the FMCSRs and the HMRs must do the following:

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[17] (2017).
[18] 49 C.F.R. § 171.1(b) (12) (2017).
[19] Within limits. *See* 49 C.F.R. § 171.1(d) (2).
[20] 49 C.F.R. § 171.1(c) (2)-(4).
[21] KEY LESSONS FOR PREVENTING INADVERTENT MIXING DURING CHEMICAL UNLOADING OPERATIONS: CHEMICAL REACTION AND RELEASE IN ATCHISON, KANSAS Report No. 2017-01-I-KS, 22-23 (December 2017) ("Procedures should also establish a process that requires facility personnel to be physically present during deliveries because they are more familiar with their equipment.")
[22] *Id.*
[23] At least until the more distant future, when the vehicle can unload itself.
[24] FMCSA Notice at 12933.
[25] *Id.*
[26] *East River SS Corp. v. Transamerica Delaval Inc.*, 476 US 858, 865-66 (June 16, 1986) ("strict liability should be imposed on the party best able to protect persons from hazardous equipment — is equally applicable when the claims are based on products liability.").
[27] *Id.*

- Spell out, as exactly as possible, the safety expectations of all regulated parties regarding the other users of the road; and
- Spell out, as exactly as possible, how various technologies will interact.

When dealing with Level 2 cruise control, this isn't difficult—responsibility remains where it would if all vehicles weren't equipped with any special safety technology. But, when a Level 3 vehicle interacts with a Level 5 vehicle, things may be significantly different. Both agencies should consider the various types of safety technology in use today (LIDAR, RADAR, forward-collision warning/mitigation, lane-departure warning/prevention, etc.) and those expected to mature in the near future and how a multitude of vehicles, each equipped with differing safety technologies can safely share the road.

Move to a Performance-Based, Operator-Neutral Perspective

Some regulations can be left alone, such as rules governing the operation of a CMV when under the influence of drugs or alcohol. Other rules can be modified (or left as is) to impose a performance-based standard on the vehicle. The equipment regulations in Parts 180 and 393 already do so admirably. When possible, a single standard for both parties is optimal.

But, realistically, a single standard will rarely be applicable. What is fatigue to most computers? Copious research has documented human's daily circadian rhythms and underpins the current 14-hour on-duty window and the 10-hour off-duty requirement.[28] Long haul operations have a demonstrable need for a rest break.[29] But, as FMCSA has already recognized through several exemptions, multiple different types of short-haul operations don't require one.[30] That can be because the driver spends significant time outside the vehicle, the vehicle makes multiple stops, or because the vehicle does not travel very far.[31] In all these cases, there is no need for a rest break.

Humans operating computer-assisted vehicles, such as Level 3 and Level 4 technologies, might have radically different rest needs than those who currently operate in the long haul space on the open road. The fatigue issue is just the tip of the iceberg. Both agencies will need to research two questions:

- "Does automation technology necessitate a new rule for the vehicle?" and
- "If automation is present, does it significantly change the proper regulatory requirements on the human driver being assisted?"

Safe is Better Than Sorry

Finally, any responsible set of rules for automated vehicles must mandate vehicle security. Hackers demonstrated the ability to take control of a passenger vehicle as early as 2013.[32] By 2015, they could exercise fine control over the vehicle, essentially driving it

[28] *See generally* Federal Government Docket ID FMCSA-2004-19608 HOURS OF SERVICE OF DRIVERS (December 21, 2011)
[29] *Id.*
[30] *Accord.* 83 Federal Register 68 HOURS OF SERVICE OF DRIVERS: NATIONAL TANK TRUCK CARRIERS AND MASSACHUSETTS MOTOR TRANSPORTATION ASSOCIATION; APPLICATION FOR EXEMPTION 15221 (April 9, 2018).
[31] *Id.*
[32] Andy Greenberg "Hackers Remotely Kill a Jeep on the Highway – With Me in It" WIRED (July 21, 2015) (accessed online at https://www.wired.com/2015/07/hackers-remotely-kill-jeep-highway/ on May 7, 2018).

remotely.[33] Or, if they were more nefarious, killing the driver or, worse, transforming a motor vehicle into a mobile bomb. Large trucks are just as vulnerable to these exploits.[34] Upping the vehicle's technology shrinks the driver's role relative to the computer's. If the computer can be compromised for malicious purposes, the vehicle has become a weapon.

We already know that organized terrorist groups have used CMVs in ramming attacks[35] and as mobile bombs.[36] This has even happened in the U.S.[37] This means that any truck on the highway could be vulnerable to such perfidy. Accordingly, regulators have a safety responsibility to ensure that such hacks are as difficult as possible. The Electronic Logging Device Mandate's "temper-resistant" standard will not be good enough.[38] Autonomous vehicles are a hack away from weapons of war. If our autonomous vehicles are vulnerable to attack, another country with a well-resourced suite of hackers could take control of an entire fleet of trucks. Some could be used as traditional attacks on selected targets and civilian populations while the others could be crashed selectively, blocking roads and preventing first responders from saving lives.

Thank you for soliciting the view of the National Tank Truck Carriers on this issue. Automated vehicles are coming and the FMCSRs and the HMRs must be updated to account for their arrival. Some steps will be required today while other measures should be considered today but implemented when the technology is more widespread. By ensuring that the current driving population can continue as they are doing so today while keeping an eye on incremental change over time, both agencies can ensure the highway mode of transportation remains safe for hazardous materials, general freight, and—most importantly—for all the drivers on the roads. If you'd like to discuss this matter in greater depth, please contact me at your convenience at either (703) 838-1784 or bstephenson@tanktruck.org.

Sincerely,

Boyd Stephenson
SVP, Government Affairs & Counsel
National Tank Truck Carriers, Inc.

[33] *Id.*
[34] Andy Greenberg "Hackers Hijack a Big Rig Truck's Accelerator and Brakes" WIRED (August 2, 2016) (accessed online at https://www.wired.com/2016/08/researchers-hack-big-rig-truck-hijack-accelerator-brakes/ on May 7, 2018).
[35] Sonya T. Proctor "Surface Transportation Security Awareness Message" Transportation Security Administration Doc. Control Num. 2018-SAM-200-007, 1 (April 27, 2018) (describing CMV vehicle ramming attack).
[36] *Id.* at 2.
[37] *Id.*
[38] 80 Federal Register 241 ELECTRONIC LOGGING DEVICES AND HOURS OF SERVICE SUPPORTING DOCUMENTS 78292, 303 (December 16, 2015).