August 26th, 2019

Federal Motor Carrier Safety Administration
Docket Management Facility
U.S. Department of Transportation
Room W12-140
West Building Ground Floor
1200 New Jersey Avenue S.E.
Washington, D.C. 20590-0001

Subject: FMCSA Docket No. FMCSA-2018-0037, "Safe Integration of Automated Driving Systems – Equipped Commercial Motor Vehicles" from Federal Register Volume 84, No. 102, Tuesday, May 28, 2019

Dear Gentlemen:

Haldex Brake Products, Inc. (Haldex), a global manufacturer of air brake system components for commercial vehicles including Disc Brakes, Antilock Braking Systems (ABS), Electronic Braking Systems (EBS), Electro-Mechanical Braking Systems (EMB), actuators, brake adjusters, brake block and disc brake pads supports the Agency's efforts to remove regulatory barriers and modernize regulations for the purpose of advancing technologies to improve the safety of drivers and passengers on public roads.

Please find attached Haldex responses to the following agency's questions provided in the ANPRM.

Regards,

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Cc: B. Marshall

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Questions:

1. Do the FMCSRs require a human driver?

FMCSRs regulations do not require a human driver.

1.1 How should FMCSA ensure that an ADS equipped CMV only operates consistent with the ODD for ADS equipped vehicle?

Industry Standards will be enough along with self-certification. Regulations are pointless when there is the legal system to keep manufacturer's and motor carrier's accountable and in line.

1.2 What are manufacturer's and motor carrier's plans when and how level 4 and 5 ADS-equipped CMVs will become commercially available?

Haldex is a supplier of braking systems for CMVs and is not a manufacturer or provider of 4 & 5 ADS-equipped CMVs. Haldex cannot respond regarding plans when and how.

1.3 Should FMCSA consider amending or augmenting the definition of "driver" and/or "operator" in 49CFR390.5 or define a term such as "ADS driver" to reduce the potential for misinterpretation of the requirements?

Haldex's position is "driver" referrers to human control and "ADS" referrers to Automated Driving System.

2. Commercial Driver's License (CDL) Endorsements

2.1 Should a CDL endorsement be required of individuals operating an ADS-equipped CMV?

Yes, if the ADS go bad and a driver takes control the driver must have a CDL. Human operators or drivers in CMVs that are ADS-equipped and can turn off ADS control must have a CDL.

2.2 What should be covered in knowledge and/or skills test associated with an ADS endorsement?

CDL – Commercial Driver's License is not a requirement for an ADS CMV. CDLs are for drivers not ADS-equipped vehicles. Industry Standards will be enough along with self-certification by the manufacturer of the ADS CMV. Regulations are pointless when there is the legal system to keep manufacturer's and motor carrier's accountable and in line.

2.3 What would be the impacts on State Driver License Agencies?

None.

2.4 Should a driver be required to have specialized training for ADS-equipped CMVs? Yes.

Yes. Drivers of ADS CMVs must know how to activate and deactivate the equipment. Drivers should be knowledgeable of ADS systems capabilities, limitations and warnings.

2.5 In an operational model that has an individual remotely monitoring multiple CMVs, should the Agency impose limitations on the number of vehicles a remote driver monitor?

Yes, three (3) maxima based upon location, congestion, etc. Studies need to be performed regarding the limitations on the number of vehicles because of differences in system design and operational requirements of the remotely monitor and control ADS-equipped CMVs.

2.6 Is there any reason why a dedicated or stand-by remote operator should not be subject to existing driver qualifications?

No. The human operator of a remotely operated ADS-equipped CMVs must have CDL.

3. Drivers' Hours of Service (HOS) Rules

3.1 Should HOS rule changes be considered if ADS technology performs all the driving tasks while a human is on-duty, not driving; off-duty or in the sleeper berth; or physical remote from the CMV?

No. HOS only apply to the driver when the driver is in control and the ADS is turned off.

3.2 Should the HOS requirements apply to both onboard and remote operators?

Yes.

3.3 If so, how should HOS be recorded when an individual is not physically in control of the vehicle?

Driver is required to document their time in control of vehicle, not in control of vehicle during ADS operation and sleeping when inside the cab of an ADS CMV.

Remote operators/drivers required to document their time in control of vehicle(s).

4. Medical Qualifications for Human Operators

4.1 Should some of the physical qualification rules be eliminated or made less stringent for humans remotely monitoring or potentially controlling ADS-equipped CMVs?

Studies need to be performed because of possible differences in system design and operational requirements of the remotely monitor and control ADS-equipped CMVs.

4.2 If so, which of the requirements should be less restrictive for human operators who would take control of an ADS-equipped CMV remotely?

Studies need to be performed because of possible differences in system design and operational requirements of the remotely monitor and control ADS-equipped CMVs.

4.3 should the Agency consider less restrictive rules for humans who have the benefits of ADS technology to assist them in controlling the vehicle (i.e. technologies that would enable individuals with limb impairments to operate at a level comparable to individuals without such impairments)?

Studies need to be performed because of possible differences in system design and operational requirements of the remotely monitor and control ADS-equipped CMVs.

5. Distractive Driving and Monitoring

The FMCSRs prohibit individuals from texting and using hand-held wireless phones while driving CMVs in interstate commerce.

5.1 How should the prohibition against distracted driving (i.e. texting, hand-held cell phone) apply to onboard operators responsible for taking control of the CMV under certain situations, and to remote operators with similar responsibilities?

The prohibition needs to remain the same for when the driver is in the cab and the CMV is in motion. The prohibition against distracted driving also needs to apply to operators/drivers of remotely monitor and controlled ADS CMVs while the vehicle or vehicle(s) are in motion.

6. Safe Driving and Drug and Alcohol Testing

6.1 Should FMCSA consider revising its rules to ensure that (1) any human exercising control of an ADS-equipped vehicle must continue to comply with all the rules under Part 392, and (2) a CMV under the control of a Level 4 or Level 5 ADS must satisfy the operational rules?

Yes. ADS equipped CMVs must comply with Rules of the Road.

6.2 For example, should FMCSA require that the ADS be capable of identifying highway-rail grade crossing and stopping the CMV prior to crossing railroad tracks to avoid collision with trains, or going onto a highway-rail grade crossing without having sufficient space to travel completely though the crossing without stopping?

Yes. ADS CMVs must be capable of stopping and accessing conditions at railroad tracks prior to crossing to avoid collisions with trains.

6.3 For scenarios in which the control of the ADS-equipped CMV alternates, or may alternate, between a human and the technology, should FMCSA require that both the human operator and ADS comply with the applicable rules?

Yes, both human operators and ADS CMVs must comply with applicable rules of the road.

7. Inspection, Repair, and Maintenance

Vehicle pass an annual inspection.

Safety rules should establish minimum performance or equipment criteria and test procedures for self-certification and markings as ADS equipped vehicles.

7.1 What qualifications should be required of the individual performing the pre-trip inspection?

Same as today, a driver with a CDL "Commercial Driver's License" plus knowledge of the ADS.

7.2 What kind of routine or scheduled inspections should be performed and what types of ADS-related maintenance records should be required?

ADS CMVs will have advance sensors and electronics onboard allowing for system health monitoring and self-checks that satisfy 95% of the safety checks. Onboard system diagnostics will perform majority of the pre-trip inspection requirements and will identify bad sensors. If a critical ADS component fail's the ADS CMV shuts downs until fixed. ADS CMVs with onboard system health monitoring can provide a minute by minute inspections.

7.3 Should the inspection period be frequent than annual for an ADS-equipped CMV?

No. ADS CMVs will have advance sensors and electronics onboard allowing for system health monitoring and self-checks that satisfy 95% of the safety checks. Onboard system diagnostics will perform majority of the pre-trip inspection requirements and will identify bad sensors. If a critical ADS component fail's the ADS CMV shuts downs until fixed. A more frequent inspection period is not required, because ADS CMVs with onboard system health monitoring can provide a minute by minute inspections.

7.4 Should inspections be mileage-based or time-based (e.g. 1,000 miles, 3 month or 1,000 hours of operation)?

ADS CMVs will have advance sensors and electronics onboard allowing for system health monitoring and self-checks that satisfy 95% of the safety checks. Onboard system diagnostics will perform majority of the pre-trip inspection requirements and will identify bad sensors. If a critical ADS component fail's the ADS CMV shuts downs until fixed. A mileage-based inspection period is also not justified, because ADS CMVs with onboard system health monitoring can provide a mile by mile inspections.

7.5 Should FMCSA impose general requirements for motor carrier personnel responsible for ADS-related inspection, repair, and maintenance tasks like the Agency's brake inspector qualification requirements?

Yes – certified technicians. FMCSA should impose general requirements for motor carrier personnel responsible for ADS-related inspection, repair and maintenance tasks like the Agency's brake inspector qualification requirements. Driverless ADS CMV possibly should follow an inspection practice used with aircraft. The aircraft mechanic performs a detail inspection and performs a series of checks that gets recorded.

7.6 How could FMCSA ensure that motor carriers apply safety-critical software updates?

Software-critical updates that are not applied to the ADS CMV should prevent the CMV's ADS from operating or have system limitations such as vehicle speed. For example, if the trailer ABS malfunction lamp activates the ADS CMV does not operate.

8. Roadside Inspections

8.1 Should motor carriers be required to notify FMCSA that they are operating level 4 or 5 ADS equipped CMVs?

Yes.

8.2 If so, how should the carrier notify FMCSA?

Register the vehicle by applying for a tag, certificate or license that is placed on the side and kept inside the vehicle respectively that identifies the ADS equipment level 4 or 5.

8.3 Should FMCSA require markings identifying the ADS Level of a vehicle?

Have sticker on the side of vehicle for identifying ADS equipment level 4 or 5.

8.4 Should the Agency require motor carriers to utilize ADS-equipped CMVs that have a malfunction indicator?

Yes, communicate and notify the driver that the ADS CMV system is not operational. There needs to be a standard for the malfunction indicator and how it operates, so it does not create confusion with the driver operating multiple types of ADS CMV equipped vehicles. You do not want to have the malfunction indicator on for one ADS CMV indicating it is operational where with another ADS CMV indicator indicates a malfunction. The ADS CMV needs to be designed to shut down if a critical ADS component fails until the component is repaired or replaced.

8.5 Should the Agency require that motor carriers deploying ADS-equipped CMVs ensure the vehicle can pull over in response to Federal and State officials or move out of the way of first responders?

Yes. The ADS CMVs need to have the capability to respond or react by pulling over in response to Federal and State officials and first responders. FMCSA should perform operational studies of ADS CMVs for various traffic and road conditions such as emergency vehicles, road construction work zones and traffic congestion.

8.6 How might that be achieved, and at what cost?

Let industry and the private sector figure out.

8.7 How would roadside enforcement personnel know that a vehicle can no longer operate safely?

The operational light should be "ON" when the ADS CMV is operational. Require an ADS malfunction indicator be mounted inside the cab of the ADS CMV to notify the driver and activate "Flashers" or the hazard lights when there is an ADS malfunction and the ADS is operational.

8.8 Absent an FMVSS, how could standard indications be provided to enforcement personnel?

Send electronic logs regarding system status and condition. Let industry develop a policy standard, such as TMC (Technology Maintenance Council).

9. Cybersecurity

Follow NHTSA requirements regarding cybersecurity.
file:///C:/Users/dengelbe/Downloads/812333_CybersecurityForModernVehicles%20(1).pdf

9.1 What types of safety and cargo security risks may be introduced with the integration of ADS-equipped CMVs?

Cargo security risks exist with both human drivers and future ADS. Risk factors should be identified, and ADS can be allowed to haul any cargo if risk factors are properly addressed.

9.2 What types of rules should FMCSA consider too ensure that motor carriers' safety management practices adequately address cybersecurity?

FMCSA should provide guidance and share best practices with motor carriers operating ADS CMVs and not create rules. Cybersecurity is continually changing and advancing, which will require continual updates regarding cybersecurity best practices.