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Department	Executive
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Attention: The Honorable James C. Owens
Acting Administrator
National Highway Traffic Safety Administration

RE: Docket No NHTSA-2020-0014

Dear Administrator Owens;

ZF North America (ZF) appreciates the opportunity to respond to NHTSA's Notice of Proposed Rulemaking (NPRM) regarding amendments to federal motor vehicle safety standards (FMVSS) to accommodate automated driving systems (ADS). As a leading producer of technologies that enable automated driving, ZF is pleased to inform this process.

ZF North America is headquartered in Livonia, Michigan, and is a primary developer and producer of active, passive, and integrated safety systems, serving all major vehicle manufacturers. We proudly design and produce many of these technologies and products here in the United States.

ZF is appreciative of this initiative to ensure that FMVSS reflect the real-world design and safety considerations of increasingly automated vehicles. In preparing the following feedback, ZF considered each of the questions posed in the NPRM, focusing our responses on areas that we believe deserve the greatest amount of attention.

Highlights of ZF's Comments:

- ZF is comfortable with NHTSA's preferred approach of aligning ADS and non-ADS standards where possible and pursuing a bifurcated regulatory structure where necessary.
- In response to NHTSA's inquiry as to whether additional language changes might be helpful to accommodate new technologies for FMVSS occupant protection, ZF suggests that out-of-position protection of occupants by airbags should explicitly accommodate non-traditional airbag mounting locations (e.g. roof-mounted).
- ZF agrees with NHTSA's preliminary conclusion that no amendments are needed to FMVSS Nos. 202a, 209, 210, 212, 213, 217, 218, 219, 220, 221 and 222.

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- Overall, ZF is in general agreement with the suggested changes proposed for FMVSS 208, 201, 203, 204, 205, 206, 207, 214, 216a, 225, 226. However, ZF provides additional feedback regarding proposed changes to FMVSS 208 and 214, including:
 - If there is a single seat installed in the front of the vehicle without driving controls, ZF believes that occupant should be protected in the same manner as an outboard passenger.
 - To mitigate risk of underage individuals operating the vehicle, recognition of a 12-month dummy alone would not suffice. New sensing technologies may be needed to address this challenge.
 - For buses, it would be appropriate to require type 2 seatbelt assemblies for all front row seating positions that do not provide compartmentalization or a forward ejection barrier.
 - Rather than leaving infrequently used or unused sections of regulations unamended, generally speaking, ZF believes that efforts should be made to alter all relevant FMVSS text, and to delete inactive and/or superseded sections.

ZF's full comments are provided on the following pages.

Again, ZF appreciates this opportunity to share our perspective with NHTSA. We stand ready to provide further clarification and insights regarding this feedback, as needed.

Best regards,



Dr. Martin Fischer
President
ZF North America, Inc.

ZF Response to NHTSA-2020-0014: Occupant Protection for Automated Driving Systems

ZF is pleased to offer its perspective on this NPRM. For each enumerated question posed, ZF has itemized its responses to indicate which specific topic its comments address.

NHTSA Goal of Minimal Disruption to Existing Regulatory Text:

NHTSA asks for comment regarding its preference to maintain the existing regulatory text structure, where possible. ZF is comfortable with NHTSA's preferred approach of aligning ADS and non-ADS standards where possible and pursuing a bifurcated regulatory structure where necessary.

One example of an opportunity to align standards is occupant positioning in FMVSS 208 for a Low Risk Deployment test. The procedure calls for positioning the dummy relative to the rim of the steering wheel. However, in some concept vehicles, steering controls do not have an upper rim. To address this shortcoming, NHTSA might consider amending the regulatory text to position the dummy relative to the air bag module.

Additional Changes Needed to Accommodate New Technologies:

NHTSA asks whether additional changes might be made to be more accommodating of novel technologies for FMVSS occupant protection. One suggestion from ZF is that out-of-position protection of occupants by airbags should explicitly include the possibility for future non-traditional vehicle interior designs and alternative airbag mounting locations – for example, airbags mounted to the roof of a vehicle, as ZF has in production in some European vehicles today. One way to achieve this would be to define “front seat occupant” relative to the windshield, rather than the instrument panel.

Agreement Regarding FMVSS 202a, 209, 210, 212, 213, 217, 218, 219, 220, 221, and 222:

ZF agrees with NHTSA's tentative conclusion that no amendments are needed to FMVSS Nos. 202a, 209, 210, 212, 213, 217, 218, 219, 220, 221 and 222 as part of the effort reduce burdens to deployment of ADS vehicles. While there are aspects of these standards not specific to accommodating ADS that we would support or encourage, including establishing a standard for seat belt pretensioners under FMVSS 209, they are not germane to the goals of this rulemaking.

NHTSA Does Not Seek to Provide Regulatory Certainty Regarding Unconventional Seating Arrangements:

ZF understands that this rulemaking is not intended to establish regulatory certainty for manufacturers that wish to self-certify ADS-equipped vehicles with unconventional seating arrangements. Nonetheless, we appreciate that those efforts are ongoing at NHTSA, as those novel seating positions may change the understanding of a “front seat” and, therefore, call for further amendments to these standards in the future.

Proposed Changes to FMVSS 208, 201, 203, 204, 205, 206, 207, 214, 116a, 225, and 226:

The NPRM outlines specific language changes proposed for FMVSS 208, 201, 203, 204, 205, 206, 207, 214, 216a, 225, and 226. ZF is in general agreement with the amendments proposed in this NPRM but provides feedback below regarding proposed changes to FMVSS 208 and 214, on which we have additional or different views.

- a. 208: FMVSS No. 208; “Occupant crash protection”; and
- g. 214: FMVSS No. 214; “Side impact protection”

3. The Treatment of Outboard Versus Center Seating Positions in the Front Row of Light Vehicles.

ZF believes that if there is a single seat installed in the front of the vehicle without driving controls, that occupant should be protected in the same manner as an outboard passenger occupant including seatbelts, airbags, dynamic and out of position protection requirements. Such a seat could be defined as a front outboard seating location.

6. Treatment of ADS Vehicles with Driving Controls When Children are in the Driver’s Seat.

The proposed changes are not all encompassing, as recognition of a 12-month dummy would not suffice in accurately determining whether the person in the driver seat is of the appropriate driving age. New sensing technologies may be needed to address the classification of children of varying ages. Once appropriate calibration is required to accurately determine whether an adult is in the driver seat, a motion start inhibit function could be considered as a measure to prevent children from riding in a seat with driver controls, especially if there is a chance that the driver could be required to take control of the vehicle.

7. Driver’s Seat Used as a Spatial Reference

i. Buses

We seek comment on whether it would be more appropriate to require seat belts at only one DSP, rather than at all front passenger seating positions.

ZF believes that it would be appropriate to require type 2 seatbelt assemblies for all front row seating positions that do not provide compartmentalization or a forward ejection barrier.

We note that S4.4.4.1.1, which refers to a regulatory option for complete passive protection that to the agency’s knowledge has never been used, is not being modified in this proposal. We seek comment on the need to modify this seldom used regulatory option.

Generally speaking, ZF believes that efforts should be made to amend all relevant FMVSS text, and to eliminate text that is no longer considered relevant. This consistency will help provide certainty in the event that the text in question eventually becomes relevant or will otherwise reduce the length and complexity of the standards where the language adds no value.

iii. Left versus Right Vehicle Side

The agency requests comment on whether stakeholders agree that this option will result in the same performance outcome.

This question requires further study – it is not clear if the occupant will be in the exact same position.

10. Regulatory Text Not Modified Due to Non-Active Requirements

Various sections of the regulatory text of FMVSS No. 208 are no longer active because they have been superseded by revisions NHTSA has made over the years. NHTSA has tentatively decided to only provide translated regulatory text for active sections...NHTSA seeks comment on whether this is the correct approach.

Generally speaking, ZF believes that efforts should be made to amend all relevant FMVSS text, and to use this opportunity to delete inactive and/or superseded sections.