Texas Department of Transportation

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January 21, 2020

Mr. James Clayton Owens
Acting Administrator
National Highway Traffic Safety Administration (NHTSA)
U.S. Department of Transportation
1200 New Jersey Avenue, S.E.
Washington, DC 20590

Re: Docket No. NHTSA-2019-0102

Dear Acting Administrator Owens:

The Texas Department of Transportation (TxDOT) appreciates the opportunity to provide you with comments on three of the nine draft research test procedures developed by NHTSA to assess the performance of certain types of Advanced Driver Assistance Systems available to consumers.

Our attached comments speak to the numbers as listed in your Request for Comments (RFC), as follows:

#4. Intersection Safety Assist
#5. Opposing Traffic Safety Assist
#8. Traffic Jam Assist

If you have any questions concerning TxDOT's comments, please contact me directly at (512) 305-9508 or at Darran.Anderson@txdot.gov.

Sincerely,

Darran Anderson
Director, Strategy and Innovation

cc: James Bass, Executive Director
Marc D. Williams, P.E., Deputy Executive Director
Jerry Haddican, Director, Government Affairs

4 — Intersection Safety Assist (ISA) System Confirmation Test

ISA is a driver-assistance system designed to actively help a driver avoid an intersection-based collision with another vehicle that is approaching or has entered, the forward path of their vehicle.

This test procedure uses the following three scenarios to assess Traffic Jam Assist operation on the test track:

1. Principle Other Vehicle (POV) straight across a Subject Vehicle's (SV) path with different combinations of SV and POV speeds;
2. POV Left Turn Across SV Path with different combinations of SV and POV speeds; and
3. SV Left Turn Across POV Path with different combinations of SV and POV speeds.

The SV in tests is capable of SAE automation Levels 0, 1, 2 or 3.

The Operational Design Domain (ODD) for ISA includes:

- stopped and low speed traffic;
- intersections;
- residential and urban roads,
- outdoor with good GPS reception.

However, the type of traffic control for the test intersections is not identified in the ODD.

On Page 4, according to Section 4.3.3, the double line width in Figure 1 should have a range from 12.0 in to 18.0 in.

On Page 11, in Section 5.1.3.2, the phrase, "Scenario 1", should read "Scenario 2?"

On Page 11, in Section 5.1.3.3, the phrase, "Scenario 1", should read "Scenario 3?"

On Page 14, in the definition of "near-miss" timing, how was 6.6 ft obtained for classifying near misses?

Please revisit the remaining definitions of "near-miss" timing if necessary.

On Page 16, Section 5.3.5.1. B-v-b reads "if an ISA intervention occurs, the driver shall release the SV accelerator pedal within 500 ms of the ISA intervention onset." What is the typical perception reaction time for a test conductor? Would 500 ms be a reasonable amount time?

This test procedure proposes three different scenarios, each of which has three different combinations of SV and POV speeds. However, these scenarios are still far from covering all potential interactions between the SV and POV.

- In addition, how would the SV and POV be tested for situations that are outside of the defined ODD?
- The ODD can include traffic volume, speed, traffic mix, roadway geometric features, roadway surface conditions, work zones, traffic incidents, lighting, weather, and visibility.

5 – Opposing Traffic Safety Assist (OTSA) System Confirmation Test

OTSA is an advanced driver assistance system which is designed to bring a vehicle back into the original travel lane after a path deviation causes it to move towards an oncoming vehicle driven in an adjacent lane.

This test procedure uses the following five scenarios to assess OTSA operation on the test track:

1. SV Departure into Oncoming POV Lane, No SV Turn Signal, Manual Steering
2. SV Departure into Oncoming POV Lane, SV Turn Signal Enabled, Manual Steering
3. SV Departure into Oncoming POV Lane, SV Turn Signal, Automated Steering (Level 2 or 3)
4. OTSA False Positive Assessment with SV Lane Change, SV Turn Signal Enabled, and Manual Steering
5. OTSA False Positive Assessment with SV Lane Change, SV Turn Signal Enabled, and Automated Steering

The SV in tests is capable of SAE automation Levels 0, 1, 2 or 3.

The ODD for OTSA includes paved undivided roadways supporting moderate speed traffic.

On Page 4, Section 4.3 defines lane lines to be spaced 12 to 14 ft apart. However, it is not unusual to see roadways with narrow lanes (e.g., less than 12 ft).

- How would such situations be tested?

On Page 13, it is mentioned a few times in the procedure that a spacing of at least 1.5 ft is maintained between any part of the SV and any part of the POV. Intuitively, this spacing should vary according to vehicle speeds.

- Please elaborate how this was determined.

On Pages 17, 24 and 34, the time headway between SV and Lead Vehicle (LV) seems to be too low (1.79 seconds when SV and LV equal 25 mph, and 1.49 seconds when SV and LV equal 45 mph) for both manual speed control and conventional cruise control.

- The AASHTO design standards include 1.5 seconds for perception and decision and 1.0 second for making the response, for a total of 2.5 seconds.

8 – Traffic Jam Assist (TJA) System Confirmation Test

TJA is a driver assistance system capable of automatically controlling the lateral position of the SV within its travel lane while simultaneously and automatically establishing and maintaining a constant longitudinal headway behind the vehicle immediately ahead of it at speeds up to 25 mph.

This test procedure uses the following three low speed car-following and crash-imminent driving scenarios to assess TJA operation on the test track:

1. Lead Vehicle Decelerates, Accelerates, then Decelerates (LVDAD)
2. Suddenly Revealed Stopped Vehicle (SRSV)
3. Lead Vehicle Lane Change with Braking (LVLCB)

Each scenario is conducted with different SV, POV and if applicable a Secondary Other Vehicle (SOV), at variable speeds and includes the SV Adaptive Cruise Control (ACC) set to its nearest and farthest settings.

The POV in tests is a strikable object with the characteristics of a compact car. If the SOV is an actual vehicle, it is a passenger car.

The SV in tests is capable of level 2 or 3 autonomy (i.e., both lateral and longitudinal controls), with speeds of up to 25mph.

The ODD for TJA includes:

- low speed;
- stop-and-go traffic;
- residential and urban roads;
- dry, straight, flat (with a constant slope between level and 1%); and,
- outdoor with good GPS reception.

On Page 2, Section 2.0 reads: "at no time shall the SV contact the POV and/or SOV during the conduct of any trial described in this document."

- However, Sections 5.3.5.3, 5.3.6.3 and 5.3.7.3 seem to suggest that it is possible that the SV could contact the POV. Please elaborate on this.

On Page 4, Section 4.3 defines lane lines to be spaced 12 to 14 ft apart. However, it is not unusual to see roadways with narrow lanes (e.g., less than 12 ft).

- How would such situations be tested?

In Table 2 of Page 14, in the column "POV Acceleration" the phrase "braking onset" should read "acceleration onset."