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Exchange of views on vehicle automation:

Categorization of automated vehicles and autonomous vehicle regulation screening

Proposal for supplement 1 to the original version of UN Regulation No. 102 (Close-Coupling Devices)

Submitted by the expert from the Kingdom of the Netherlands on behalf of the Task Force on Automated Vehicles Regulatory Screening*

The text reproduced below was prepared by the expert from the European Commission on behalf of the Task Force on Automated Vehicles Regulatory Screening (TF-AVRS). The modifications to the current text of the UN Regulation are marked in bold for new or strikethrough for deleted characters.

* In accordance with the programme of work of the Inland Transport Committee for 2025 as outlined in proposed programme budget for 2025 (A/79/6 (Sect. 20), table 20.6), the World Forum will develop, harmonize and update UN Regulations to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

Proposal

Insert new paragraphs 0. and 0.1. to 0.1.3., to read:

"0. Introduction

- 0.1. Supplement 1 to the 03 series of amendments is introduced to take into account vehicles of categories X and Y ¹, as well as vehicles with a manual mode operating at speeds above 6 km/h which are equipped with an Automated Driving system (ADS). ¹
- 0.1.1. The Regulation was originally drafted for vehicles with driver and manual driving controls. It is the intention of this new amendment to keep the spirit of the regulation and to extend its application to vehicles without driver and without manual driving controls inside the vehicle. In the absence of driver/manual driving controls in the vehicle, provisions related to them shall not be taken into account if not already covered by this amendment.
- 0.1.2. In case of vehicles equipped with an ADS other than vehicles of categories X and Y, in the manual driving mode no special provisions or exemptions apply. In a mode where an ADS feature is active the relevant ADS requirements apply."

Insert new Footnote 1, Paragraph 1.1., to read:

- "1.1 This Regulation applies to vehicles of categories N2, N3, O3 and O4 ¹.

¹ As defined in the Consolidated Resolution on the Construction of Vehicles (R.E.3.), document ECE/TRANS/WP.29/78/Rev.8, para. 2 - <https://unece.org/transport/vehicle-regulations/wp29/resolutions>"

Paragraph 5.1.5.2., amend to read:

- "5.1.5.2. Any power system and/or control system failure must be indicated to the driver by an acoustic and an optical signal. **In case the vehicle is equipped with an ADS, a logic signal shall be transmitted to ADS, indicating any power system and/or control system failure.**"

Paragraph 5.1.7.2., amend to read:

- "5.1.7.2. This control unit must be fitted outside the ~~driver's~~ cabin and shall be situated in such a position that the operator is not endangered by the movement of the trailer and can see the danger area between the vehicles at a glance. "

Paragraph 5.1.11., amend to read:

- "5.1.11. The CCD shall be designed so as to enable the vehicles to be coupled or uncoupled. All coupling operations shall be automatic, including the mechanical controls and the parts subject to towing and/or steering forces. Correct engagement of the positive locking system must be indicated or be easily visible from the side of the vehicle alongside the coupling device. Otherwise, a remote indication must be installed in the ~~driver's~~ cabin. **In case the vehicle is equipped with an ADS, a logic signal shall be transmitted to ADS indicating the engagement status of the locking system.** Manual coupling of control and power supply lines is permitted provided the connections are readily accessible from a standing position and the combination can be safely driven, without these lines being connected."

Paragraph 5.1.13., amend to read:

- "5.1.13. For hydraulic or pneumatic CCD's, an optical signal shall indicate that the CCD is about to reach its maximum extension. This signal may be the same as the optical signal mentioned in paragraph 5.1.5.2.

While an ADS feature is active, a logic signal shall be transmitted to ADS indicating that CCD is about to reach its maximum extension."

Paragraphs 13.3.1. and 13.3.2., amend to read:

- "13.3.1. The acoustic device must be located in the driver's cabin and must be easily audible by the driver under all circumstances, when the vehicle is in normal use **(if applicable)**.
- 13.3.2. The optical signal shall be red in colour and located on the instrument panel in the direct field of vision of the driver and must be easily visible even in daylight **(if applicable)**."

Annex IV, Paragraphs 2.2.1. to 2.2.3., amend to read:

- "2.2.1. Vehicles shall be tested at a speed of 85 +5/-0 km/h, **or 80 per cent of the maximum design speed, whichever is higher** and remain aligned. During the test, it must be possible to travel along a straight section of the road without unusual steering correction ~~by the driver~~.
- 2.2.2. ⁽¹⁾ An emergency straight line braking test from a speed of 60 km/h, **or 80 per cent of the maximum design speed, whichever is higher**, to rest at a mean fully developed deceleration of at least 4 m/s² shall not cause the combination to deviate outside a lane 3.5 metres wide.
- 2.2.3. Starting from rest, a forward acceleration of at least 2 m/s² shall not cause any movement between the vehicles of a degree likely to cause ~~the driver~~ difficulty in controlling the vehicle combination. (If the acceleration prescribed for this test cannot be reached by a vehicle combination, the test shall be performed with the maximum acceleration available)."

Annex IV, paragraphs 2.3.1. and 2.3.2., amend to read:

- "2.3.1. A simulated overtaking manoeuvre, as defined in the appendix, conducted at a progressively increasing speed up to 80 km/h, **or the maximum design speed, whichever is lower**, shall not cause ~~the driver~~ any difficulty in controlling the combination.
- 2.3.2. At a speed of 20 km/h steering from one side of the track to the other alternately at least 3 times by turning the steering wheel as fast and as far as possible, **or while an ADS feature is active, actuate the steering equipment at the maximum performance allowed by ADS**, no contact between the vehicles or damage to the CCD shall occur (track width is 10 metres)."

Annex IV, paragraph 3.1., amend to read:

- "3.1. Starting from rest and a straight ahead position, the combination shall be driven around a curve of 25 m radius to a speed of 20 km/h at an acceleration of 2 ± 10 per cent m/s². This shall not cause any movement between the vehicles of a degree likely to cause ~~the driver~~ difficulty in controlling the vehicle combination."