

DRAFT REPORT

Informal working group on Advanced Emergency Braking System for Heavy Duty Vehicles

September 21 & 22, 2021
MS-TEAMS meeting

Venue and date:

- 21 September: [Here](#)
- 22 September: [Here](#)

1. Welcome and Introduction

2. Approval of the agenda

Document: AEBS-HDV-06-01 (Chair)

Ambitions:

- Agree on performance requirements
- Conclude on all up to Section 5 of the skeleton
- Working document is 06-07 (including all comments received within the deadline of 14 September)

3. Adoption of report of the last meeting

Document: AEBS-HDV-05-06 (Secretary)

4. Discussion about Performance Requirements for AEB-Vehicle-Car & AEB-VRU

Document: AEBS-HDV-06-08 (J) – still awaited
[AEBS-HDV-06-10 \(ETSC\)](#)

J presented AEBS-HDV-06-08

DVR-ETSC presentation by Mr. Petersen

- Kick-down: OICA: Q: the users request removing the kickdown for fuel consumption reasons. A: “kickdown” is a shortcut, could be the movement of the pedal, not expressly the switch. Every system is possible, there is a need for AEBS deactivation, but this should be generated by a positive action.
- CLEPA: reference to ESC? A: This comes from the R152 text, not yet in the skeleton document.
- AEBS deactivation: OICA: drivers learn about when to deactivate the AEBS, hence need for manual AEBS deactivation >10kph. N and OICA support the possibility to manually deactivate AEBS > 10km/h. A: GSR mandates the sentence (sequence of actions for deactivation), we cannot have a text in contradiction to the GSR.

Paragraph 5.4.1.4.:

- UK, D support the ETSC proposal.
- OICA: need to provide a means to deactivate when needed (and not only at the beginning of the day). Let's find a compromise (automatic re-activation, etc.) since this requirement creates critical and danger situations
- Conclusion: OICA and ETSC/D to find a compromise proposal until 22 September, or later

Note of the Secretariat:

Text of EU-GSR reads:

“Article 7.4

Advanced emergency braking systems and emergency lane-keeping systems shall meet the following requirements in particular:

- (a) it shall only be possible to switch off such systems one at a time by a sequence of actions to be carried out by the driver;

- (b) the systems shall be in normal operation mode upon each activation of the vehicle master control switch;
- (c) it shall be possible to easily suppress audible warnings, but such action shall not at the same time suppress system functions other than audible warnings;
- (d) it shall be possible for the driver to override such systems.”

Paragraph 5.4.2.3.

- OICA committed to propose an alternative text.
- CLEPA: don't forget the vehicles still exempted from ESC
- chair proposal: changing ESC into ABS

fast interruption:

- OICA: need to review the proposal further.
- D: in the beginning, there were a lot of false override occurred (slight movement of the brake pedal, turn indicator, etc.) the driver confused ACC, AEBS and their overriding actions.
- Conclusion: wording to be reviewed.

Revision of document AEBS-04-06-Rev.1 (Summary V2C)

- D: intention is to avoid the collision as much as possible.
- OICA: Collision avoidance at 100 km/h is generating false positives in lots of conditions (curvy highways at high speeds)
- J questioned the background of the TTCBraking = 2.33 s in the ETSC proposal.
- D/ETSC found this a must. OICA calculated: 2.61s TTC is needed at 100kph
- ETSC: suggested that the preamble of the regulation states that the ambition is to avoid accidents up to high speeds.
- OICA: wondered whether a system behaving like that is still an assistance system. This was challenged by the chair and ETSC.
- CLEPA: OK that the target of 100 km/h in the preamble. Yet, supported OICA that such increase in the performance shifts the regulation toward automated driving since this leads to the addition of lots of driver monitoring and other sensors to avoid false positives and misunderstanding by the driver.
- Conclusion: preamble can be drafted while this is not the primary delivery to GRVA. “would be good for road safety to avoid accidents up to 100km/h” – chair to draft a preliminary wording.

Summary of requirements (AEBS-04-06-Rev.1)

OICA: M3/N3: OK with 70km/h as a nominal value. OICA flagged that some details need to be discussed further (M3<8T derived from M1N1, R152 as an alternative - provide R152 alternative to all vehicles with hydraulic braking" and "add M3<= 8t in the light vehicles row)

D and J accepted that compromise.

J: M2/N2(pneumatic) should be 70kph together with M3/N3.

D: need to well distinguish pneumatic, air/hydraulic, hydraulic. CLEPA: the name addresses the “control transmission”.

V2P

OICA proposed compromises and to align the pneumatic braking vehicles on 20 km/h

D supported this approach

J: OK with OICA proposal

Chair: what about V2B in the preamble

J: Put V2B in preamble is accepted as MLIT cannot make a proposal on V2B since there no HDV application on the market equipped with V2B

5. Discussion about Skeleton Document

Document: AEBS-HDV-06-02 (Japan)
 AEBS-HDV-06-03 (Norway)
 AEBS-HDV-06-04 (Norway)
 AEBS-HDV-06-05 (Chairs)

AEBS-HDV-06-06-Rev.1 (CLEPA-OICA)

AEBS-HDV-06-07 (chairs)

AEBS-HDV-06-09 (ETSC)

AEBS-HDV-06-12 (CLAPE-OICA)

AEBS-HDV-06-13 (CLEPA)

Industry presented the document XXX as an introduction of the skeleton document:

1.Paragraph 5.2.1.4 (Conditions (a) to (g) and the *it-is-recognized* paragraph)

The chair acknowledged that the issue is a major point of discussion for the group.

Discussions on items h to j

NL: For (i) → suggests limiting the permission to limit the performances in case of obstruction to the lack of obstruction and during that time, not to the braking capabilities

J: these items are already covered by footnote. OK for (a) to (g), but not for (h) to (j). List from UN R152 should be taken

JRC: questioned the approach of the items (h) to (j). wanted to clarify the sentence: “It is recognised that the performances required in this table may not be fully achieved in other conditions than those listed above” such to read “It is recognised that the performances required in this table may not be fully achieved ~~in other~~ when the conditions than those listed above **are not met.**”

OICA: in current R131, the requirements are defined by the test. Hence the R151 approach brought improvement, but did not fix all conditions. the items (a) to (g) are the obvious ones, yet some items, obvious to reasonable engineers, are not indicated in the list.

UK: wondered whether all the debate is just a wording issue.

CLEPA presented AEBS-HDV-06-13 about runtime influence. There exist technical limitations based on the environment and scenario. Test conditions only simulate the real world conditions. The systems have to work in real world conditions, but cannot have always the identical performance.

The chair suggested keeping the list of R152, and list all what is particular to HDVs. NL reminded that AEBS is designed to intervene only at the last moment, vs. the driver who is aware of the context and can adapt his behaviour (speed, etc.). AEBS is no ADAS.

2. Vehicle longitudinal centre planes (offset)

Conclusion:

- interpretation adopted, wording of (d) adopted
- 0,2 m between [] and test section to be further discussed.

(d) In situations where ~~the vehicle longitudinal centre planes are~~ **the anticipated impact point is displaced by not more than 0.2 m compared to the vehicle longitudinal centre plane;**

3. Different types of vehicles with hydraulic braking

4. Use of R152 as an alternative

5. M2N2 derived from M1N1

6. Scope issue - Specification of the targets

JRC: supported the original R131 wording. >70% of accidents in North Saxony is trucks against trucks.

Increasing number on road work places, vehicles with AEBS are part of the figure.

Debate

Conclusion: proposal from CLEPA/OICA adopted, except paragraph 5.2.1.4., where O3/O4 are in []

Proposal from chair to permit collision on small trailers.

5.2.1.4. Speed reduction by braking demand

In absence of driver's input which would lead to interruption according to paragraph 5.3.2., the AEBS shall be able to achieve a relative impact speed that is less or equal to the maximum relative impact speed as shown in the following table:

- (a) For collisions with unobstructed and constantly travelling or stationary ~~targets~~ **vehicles of category M, N, [O3/O4]** ; ...

It is recognised that the performances required in this table may not be fully achieved in other conditions than those listed

7. Performance (V2C and V2P)

The group then scrutinized the document AEBS-HDV-06-07 (skeleton document with comments received until 14 September).

Scope: agreed

2.13 (“dry road / PBC”): OICA proposes removing the PBC definition and measurement from the text since the concern does not apply to HDVs. OF to c/p the R152 solution, but there would be no added value. In addition, there is no ASTM tyre for trucks. Conclusion: OICA proposal adopted.

2.16 (“mass in running order”): alignment on R51 (Noise emissions): Adopted

2.17: idem

2.18 / 2.19: OICA questioned this since they did not find any solution for this. Conclusion: postponed to next opportunity (check with the test section

5.1.4.2.: postponed to next meeting.

5.1.6.: J committed to provide input for the next meeting.

5.1.8.: adopted

5.2.1.1.:

- Scope adopted
- Reference to the test: “This shall be verified according to paragraphs 6.4. and 6.5. Additionally, the specifications not covered in paragraphs 6.4. and 6.5. may be verified with an (reproduceable and repeatable) appropriate test method.” New wording to be C/Ped to all relevant sections.

5.2.1.2.: additional tests wording adopted. Proposal from Industry adopted

5.2.1.3. adopted, with “and”

5.2.1.4.: list of conditions where the system does not have to fully comply.

Japan, UK, D fully agree with Chair: Basically copy and paste from UNR152 and modify only just for necessary due to the differences between PV and HDV.

1. Take R152 list

2. Overriding item (d) with the adopted wording of lateral offset

3. Add item (i)

Conclusion:

- c/p and adapt R152 list as below
- ask guidance to GRVA

[5.2.1.4. Speed reduction by braking demand

In absence of driver’s input which would lead to interruption according to paragraph 5.3.2., the AEBS shall be able to achieve a relative impact speed that is less or equal to the maximum relative impact speed as shown in the following table:

- (a) For collisions with unobstructed and constantly travelling or stationary targets;
- (b) On flat, horizontal dry roads;
- (c) In maximum mass and mass in running order conditions;
- (d) In situations where the vehicle longitudinal centre planes are **the anticipated impact point is** displaced by not more than 0.2 m **compared to the vehicle longitudinal centre plane**
- (e) In ambient illumination conditions of at least 1000 Lux without blinding of the sensors (e.g. direct blinding sunlight);
- (f) In absence of weather conditions affecting the dynamic performance of the vehicle (e.g. no storm, not below 0°C) and;
- (g) When driving straight with no curve, and not turning at an intersection.
- (i) **In absence of conditions resulting from the usage of the vehicle which are directly affecting the braking performance (e.g. brake temperature, severe uneven load distribution)**

It is recognised that the performances required in this table may not be fully achieved in other conditions than those listed above. However, the system shall not deactivate or unreasonably switch the control strategy in these other conditions. This shall be demonstrated in accordance with Annex 3 of this Regulation.]

Table of speed reduction: add a row for 35km/h

Two star proposal from Industry **: adopted

**** The vehicle manufacturer shall demonstrate to the technical service that the vehicles are derived one from the other.**

Alternative from Industry “[Notwithstanding the table above, for those vehicle driving in urban areas where the speed is limited to 60kph or below, the speed shall not be lower than 40 kph. The safety concept shall be described by the vehicle manufacturer and assessed by the Technical Service according to Annex 3 of this regulation.]” in []

Para 5.2.3. removed

5.3. Interruption by the driver:

Conclusion: item in [] for GRVA

5.4. Deactivation

Conclusion: request for guidance from GRVA

General conclusion:

- chairs to report back to GRVA
- IWG to review pending items at next meeting
- IWG to inform GRVA that the IWG does its best to reach the target of the Feb GRVA session, yet inform that there is a possibility that IWG request an extension of mandate
- Next meeting to be 3-day meeting (26-28 Oct – 9:00 to 12:00 CEST) – still virtual

6. Discussion about Feedback and Reporting to GRVA-11 (September 23-27) & Review of timing of IWG

Document: -

7. Other business

Quick update on the discussion about standardized marker to trigger AEB intervention would be appreciated.

Document: AEBS-HDV-06-11 (NL)

NL presented document AEBS-HDV-06-11 as the outcome of the workshop organized on the necessity and feasibility of defining a standardized AEBS marker.

Due to lack of time, there was no comment.

8. Next steps